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Exploring the engagement of an Environmental Centre with the discourse of Sustainable Development: A Southern African Case Study

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For the Degree of Doctor of Philosophy.

A research report submitted to the Faculty of Science, University of the Witwatersrand, Johannesburg, South Africa, in fulfillment of the requirements for the Doctoral Degree.

10 November 2008

DECLARATION

I declare that this research report is my own unaided work, apart from the assistance acknowledged. It is being submitted in fulfillment for the Degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted before for any degree or examination in any other university.



_____

Rajendran Perumal Pillay

10 November 2008

ABSTRACT

Sustainable development has become a popular discourse in response to both current and potential environmental issues faced by the world in the present millennium. Nations have shown support for the discourse and its translation into action through the World Summit for Sustainable Development and through the United Nation's Declaration of the Decade of Education for Sustainable Development (2005-2014). This thesis consists of a case study of the Delta Environmental Centre, located in an urban residential suburb in Johannesburg, South Africa. The aim of the study was to explore, analyze and understand the engagement of an environmental centre with the discourse of sustainable development with reference to views, debates and key agreements (e.g. the present United Nations Decade of Education for Sustainable Development). Through exploration and analyses of the engagement with the discourse, an understanding and identification of antecedents (norms) that support or provide a challenge to the engagement with the discourse of sustainable development was sought. The sources of the data for the study consisted of the following: document analyses of *EnviroTeach* (a key publication of the environmental centre) and Annual Reports of the environmental centre, interviews and questionnaires. The staff members and the beneficiaries (clients) of the centre responded to a questionnaire and an interview which focused on key aspects such as their understanding of sustainable development, and on how the discourse was facilitated to the beneficiaries.

Three theoretical frameworks underpinned the conception and analysis of the data in this study. Critical Discourse Analysis, based on the work of Norman Fairclough, more widely used in linguistic studies, was adapted for document analysis. Diffusion Theory (key proponent being Everett Rogers) based on how ideas (innovations) that are considered (or are) new, are facilitated ("spread") in society. The third framework was 'Boundary Organizations' and is based on the role of organizations between external systems of society.

The analysis of the information gathered in this study confirms views in the literature that there is no one definition of sustainable development. It was evident in the analysis that sustainable development was used interchangeably with sustainability and sustainable living. It can be inferred from the study that there is no one best way to facilitate the discourse of sustainable development to the beneficiaries. It was also evident that in the engagement with the discourse of sustainable development there are antecedents (norms that are present within the centre) that support the discourse. One of the antecedents is that staff of the centre identified similarities between environmental education and sustainable development. This is to the advantage of the centre since the key focus of the centre is environmental education. However, there are also challenges in engaging with the discourse of sustainable development. One of the challenges is that different interpretations of sustainable development make it difficult to facilitate workshops especially where the beneficiaries come from different backgrounds.

A key criticism in the literature is that sustainable development should not be used as a blueprint to address environmental issues but provide a point of departure for people to make more informed lifestyle choices. The research shows that the engagement with sustainable development is not an end but a dynamic process with "multiple expressions" and challenges. Examples of "multiple expressions" of the discourse include: the way the discourse is communicated in publications and documents and the use of the National Education Curriculum to communicate the discourse. However, within these "multiple expressions" of the discourse there are challenges e.g. in attempting to change environmental practice not all staff and beneficiaries show the same level of commitment.

DEDICATION

With love and appreciation to my Guru Avatar Shri Sathya Sai Baba, and to my parents Dixon and Kamla Pillay.

and

To all those who may have not registered at an academic institution for a qualification but who have contributed in their own way to make our world a better place to live in.

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ABBREVIATIONS AND ACRONYMS

The following abbreviations are used in discussions in this thesis:

CDA……	Critical Discourse Analysis
DEC……	Delta Environmental Centre
DESD……..	Decade of Education for Sustainable Development
DWAF……	Department of Water Affairs and Forestry
EE……	Environmental Education
ESD……	Education for Sustainable Development
ETDP-SETA…..	Education, Training and Development Programme – Sector Education Training Authority
FSB……..	Financial Services Board
GET……	General Education Training
GDACE……..	Gauteng Department of Agriculture, Culture and Environment
IUCN……	International Conservation Union
IDIB……	*Integrated-Discourse-Innovation-Boundary* Framework
IISD……	International Institute for Sustainable Development
IPCC……	International Panel on Climate Change
IRI……	International Research Institute
JPOI……	Johannesburg Plan of Implementation
MDG……	Millennium Development Goals
NCS……	National Curriculum Statement
NEEP……	National Environmental Education Programme
NGO……	Non-Governmental Organization
NSSD……..	National Strategy for Sustainable Development
OBE……	*Outcomes Based Education*
SADC……..	South African Developing Countries
SD……	Sustainable Development
UNCED……..	United Nations Conference on Environment and Development
UNDESD……	United Nations Decade of Education for Sustainable Development
UNEP……..	United Nations Environmental Programme
UNESCO……	United Nations Education, Scientific and Cultural Organization
UN……	United Nations
WCED……	World Commission of Environment and Development
WSSD……	World Summit on Sustainable Development
WWF……..	World Wildlife Fund

Chapter 1

Introduction and Context

At last, the human inhabitants of Planet Earth are beginning to wake up to the reality: our collective behaviour is doing huge damage to the world, some of it irreversible, and if we don't change our ways now (if not sooner!), we will be in big, big trouble within our own lifetimes.

Mandi Smallhorne (Skyways, March 2007, p40)

Introduction

The world is facing many current and anticipated environmental challenges. The United Nations Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report has indicated that global warming can be traced unequivocally to anthropogenic causes (IPCC, 2007; Corcoran and Osano, 2007). According to the IPCC (2007) overall summary, human activities over the recent decades have had considerable influence on many physical and biological systems of the environment. Global warming, however, is only one of the issues that have impacted on the natural environment and on human life. Deforestation, loss of biodiversity, diseases, the use and the exploitation of natural resources are among the many other concerns related to human impact contributing to environmental degradation. The concern for environmental degradation is not geographically isolated, however, but has become evident in many parts of the world.

Individuals, organizations, and governments with environmental interests, are taking note of the threats and opportunities that such changes may mean for ecosystems and society, not only to the present generation but to the future generation as well. In response to the environmental threats and opportunities, individuals and organizations who care and seek to care for the environment have sought more structured ways in which to organize their efforts to reduce or prevent further environmental threats (Jickling, 1999). Organizations responding to the state of the environment include environmental centres. One of the topical and dominant responses of an attempt to better manage and steward the environment, and one that is fostered in such centres, is through a better understanding of sustainable development. One of the ways to understand sustainable development is to interrogate how the concept is used including a discourse analysis of sustainable development.

There are thus two critical dimensions in this research, that of examining the *discourse of Sustainable Development as used in an environmental centre* and the *medium through which such a discourse is articulated*. Each of these aspects is briefly introduced in the paragraphs which follow.

Sustainable development is approached in three ways in this research viz. as a discourse, as a conceptual framework to guide practice and as related conceptions. A conceptual framework of sustainable development and the related concepts has been provided at the end of this section as used in the context of this research. A commentary on discourse however, is presented in the paragraph that follows to provide the context in which the researcher uses discourse.

Discourse is used in this research, as ways of representing the world through processes, relations, structures, feelings, beliefs, as well as projections and imaginaries different from the actual world (Fairclough, 2003). Since it is this dimension that forms a critical component of this work, the following discussion provides a brief introduction as to how 'discourse' is understood and is explored in this research and how it is used to better understand complex concepts such as sustainable development. The theory of discourse, in the form of a theoretical framework, is discussed in more detail in Chapter 3 (Section 3.1) and the discourse of sustainable development is discussed in detail in Chapter 2. Discourse theory is used in this study to explore the engagement of an environmental centre with the wider discourse of sustainable development.

According to Torfing (1999) and Fairclough (2003) discourses inform rather than guide social interaction, are not based on prescriptive norms but instead are made of significant sequences through which meaning is constantly negotiated. Torfing (1999), however, points out that discourses should not be misunderstood as a chaotic flux or a mere reductionist concept of linguistics or semantics but rather understood as integral to understanding the "social". The reference to "social" in the context of the discourse of sustainable development shifts the focus from language, terminology or underpinning philosophy in isolation. Instead it draws attention to the activities and behaviour of humans within a social context as well.

According to the literature, and as will be shown in more detail in Chapter 2, sustainable development is not a straightforward discourse and there is no one interpretation of sustainable development (Jickling, 1994; Scott and Gough, 2003; Judson, 2007). According to Blackburn (2000) sustainable development will involve a departure from traditional environmental foci (like the singular focus of conservation), making change necessary and the likely emergence of new norms. The challenge is in implementing or trying to implement sustainable development. Common interpretations, which are discussed in detail in Chapter 2, are that sustainable development is about how natural resources are used, the challenges of economic development and also includes various social dimensions. There is also the belief that sustainable development in reality cannot exist because "sustainable" and "development" seem to be opposing ideas (Judson, 2007).

The discourse of sustainable development has been criticized as being misrepresented in a way that prescribes rather encourages critical thinking (Jickling, 2002). Other critics, including Brown (1996) and Dale and Newman (2005) believe that the discourse of sustainable development provides a possible framework to respond to global challenges. World leaders have engaged and came together for discussions and resolutions to world issues, with focus of sustainable development in South Africa in 2002 at the World Summit for Sustainable Development. The gathering for the Summit, showed that the world has recognized some worth in the discourse of sustainable development. Engagement with the discourse of sustainable development covers a range of foci viz. What are the challenges to sustainable development? What does sustainable development mean to individuals or organizations? and, What principles underpin the programmes of sustainable development? The range of foci to explore the engagement of an environmental centre with the discourse of sustainable development is discussed in Section 1.4 of this chapter and in more detail in Chapter 2.

Due to the nature of discourses, some kind of response (personal or collective) in engaging with the discourse is inevitable. A response could range from taking no action, to developing a vision for major changes in individuals or organizations, including those created via environmental centres (Schmandt and Ward, 2000). Responses cannot, however, be easily predicted, and their outcomes would usually only be known over a period of time (Schmandt and Ward, 2000). The analysis of discourse, however, is useful to draw attention to issues of a social nature, historical origins and to controversial issues (Taylor, 2001). Exploring the engagement with the discourse is thus also about understanding the responses to the discourse.

Education and learning has been recognized as having an inter-relationship with sustainable development or with its related conceptions (Janse van Rensburg, 2000; Scott and Gough, 2003). UNESCO has pointed out that although education alone is insufficient to drive education for sustainable development it is an important strategy for sustainable development (UNESCO, 2004). The ownership of the vision of education for sustainable development by the different stakeholders is thus crucial for the implementation of sustainable development (United Nations Education, Scientific and Cultural Organization, 2004).

The United Nations recognized the important role of different organizations in education for sustainable development and acknowledged that the momentum of education for sustainable development will only be as effective as the extent to which stakeholders at every level own the vision (United Nations Education, Scientific and Cultural Organization, 2004) – a crucial point within the context of this study. Roles of organizations alluded to in the United Nations document are: advocacy, capacity development (both in formal and non-formal education), engaging in community dialogue and the modeling of sustainable behaviour. Different organizations are

recognized as being important in getting across sustainable development practices to communities directly or indirectly. Environmental centres are one of these organizations and thus form the 'medium' through which the sustainable development discourse is interrogated in this world.

The discourse of sustainable development and its related conceptions have been used to analyse the information that was gathered from the environmental centre in this study. Table 1.1 (below) provides a conceptual framework of sustainable development and its related conceptions as used in this research.

Table 1.1 A conceptual framework of sustainable development and related conceptions as used in this study (Table 1.1 continues on the next two pages).

Conception	Explanatory comments
Sustainable development discourse	Chouliaraki and Fairclough (1999) refer to discourse as discursive activities within practice e.g. talking, writing, medium for communication and as an ideology when discursive practices become dominant and repetitive. In the context of this thesis sustainable development discourse focuses on the different views that people or organizations have about how environmental and the related issues should be approached, how people represent their ideas of what should be done to approach the environmental issues of the present and future generations, the current debates, agreements and disagreements in the context of sustainable development, the proposed ideas of change (environmental or otherwise), as well as how people actually do things in relation to their ideas. The discourse of sustainable development has also been used as a point of departure to communicate related concepts and to discuss problems related to communication (Gonzalēz-Gaudiano, 2007)
Sustainable development	The researcher has pointed out throughout Chapter 1 that there are various interpretations of sustainable development. However, in this research the concept has been used in three ways viz. as an organizing framework and process (Harrison, 2000), as a learning process (Scott and Gough, 2003) and as an outcome of the WSSD to define environmental issues within economic, environmental and socio-political dimensions (Gonzalēz-Gaudiano, 2007).

Sustainable development practice / activities	In the context of this thesis sustainable development practice refers to the intent or what actually manifests in action (Sterling, 2007). Examples are: planning a programme, conducting a programme, the making of choices and changes to the organizational environment or personal lifestyles. The researcher interprets practice with reference to the discursive aspects of discourse as recognized by Chouliaraki and Fairclough (1999), and referred to in the previous section of this table. Sustainable practice/activities are also used to explore both integrative and disintegrative contexts that relate to paradigms of thinking and environmental concern (Sterling, 2007) within the context of the case study.
Sustainable living	Sustainable living while used interchangeably with the other related concepts like sustainability and sustainable development focuses on world views, values and action that influence lifestyle choices to reduce destructive impacts on the environment. The view of Wals (2007) and Harrison (2000) is adopted i.e. sustainable living is used to describe the shaping and reshaping of changing situations and conditions, and as a complex adaptive process of survivability.
Sustainable development as moral obligation	Hattingh (2002), Secrett (2004) and Wals and Heyman (2004) has pointed out the importance of the ethical component as part of the transformational agenda of sustainable development. Sustainable development as a moral obligation focuses on issues of values, ethics and responsibilities either as individuals, communities or organizations.
Education for sustainable development	Different views on education for sustainable development are discussed in Chapter 2. The researcher uses this concept in a non-prescriptive way to explore ideas on sustainable development with focus on education and learning. Education for sustainable development is used, as suggested by UNESCO (2005) as an organizing framework, as well as to discuss the links and inconsistencies between education and sustainable development (Scott and Gough, 2003).

Sustainable livelihoods	Sustainable livelihoods refer to the ways in which individuals, communities or organizations engage in activities for their "survival" (DEAT, 2006). Sustainable livelihoods in this study, is interpreted as used in the contextual reference made in the documents analysed and in responses to the questionnaires and the interviews.
Science and sustainable development	According to Scott and Gough (2003) appropriate learning will not necessarily take the form of a transmission approach about sustainable development but rather create options for people to increase their skill in recognizing and managing their environment. In reference to science the researcher focuses on how scientific knowledge, scientific skills and world-views are approached when the environmental centre engages with the beneficiaries in the context of the sustainable development discourse.
Sustainability	This concept has been used interchangeably with sustainable development, and as pointed out in the literature that there is no clear conception (Harrison, 2000; Hopkins and McKeown, 2002; Wals, 2007). Janse van Rensburg (2000) has pointed out that the notion of sustainability has its roots with sustainable development in the *World Conservation Strategy* and in the *Brundtland Report* and is a potentially problematic concept.

There have been various responses to the discourse of sustainable development which include support, opposition and criticism for the discourse (Gonzalēz-Gaudiano, 2007).The varied responses raise concerns about the worth of such a discourse to address environmental issues in the world. Some of the concerns are discussed in the sections which follow.

1.1 Context of the study

This section has two parts. The first is an overview of sustainable development and the second is a brief contextual description of sustainable development challenges in South Africa.

1.1.1 An overview of sustainable development

Sustainable development, as indicated in the introduction, and further interrogated in Chapter 2, has been suggested as a strategy and a possible solution in the present millennium as a response to problems and threats to the natural environment (e.g. loss of biodiversity) and to human activity

(e.g. limits to natural resources and disease). In 2005, the United Nations (UN) declared the period 2005 – 2014 as the Decade of Education for Sustainable Development (DESD) as a strategic response to environmental issues. The increased attention and focus on sustainable development, as a response to environmental issues has created a need for a critical review of ways in which the sustainable development discourse is being interpreted and applied in different contexts (Lotz-Sisitka, 2006). This is discussed in Chapter 2 as an example of a response to the discourse within a Southern African context. A brief contextual overview of the 'evolution' of sustainable development is useful in enabling a more detailed investigation of the sustainable development discourse. A more detailed history of sustainable development is discussed in Section 2.1.

The idea of sustainable development appeared as early as the 1980s in the World Conservation Strategy and then in the *Brundtland Report* in 1987, emanating from the World Commission on Environment and Development (Janse van Rensburg and du Toit, 2000; Rosenberg, 2004). The Constitution of the Republic of South Africa (Chapter 2, Section 24, 1996) and the international United Nations draft document on the Decade of Education for Sustainable Development (United Nations Education, Scientific and Cultural Organization, 2004) make reference to sustainable development within broad contexts. There is still no absolute agreement, however, on what is meant by sustainable development (see also Chapter 2), although there is expectation at national and international levels that stakeholders (both governmental and non-governmental) should use sustainable development as a framework for activities within their organizations.

Rosenberg (2004), in her critique of sustainable development, raises two valid points about economic realities. Firstly, development seems to be perceived as growth which, in reality, has excluded the needs of the majority of people and therefore there is little consideration of equity issues, has an economic bias, is resource intensive and results in more damage to the environment. Secondly, she believes that it is more useful if sustainable development focuses on the needs of the majority and on the capacity of earth to support life, and not only on economic growth benefiting a few. A similar view is that sustainable development is not about the sustaining of patterns of consumption and waste generated by the dominant economic societies (Bak, 1995). Development should not therefore only be equated with economic development. Instead sustainable development should also include concern for the natural environment and social conditions. Daly (2002) and Bozmoski, Lemos and Boyd (2008) for example mindful of ecological concerns, argue that economic growth is becoming "uneconomic" because of ecological limits.

The United Nations Education, Scientific and Cultural Organization (UNESCO, 2004) frames sustainable development around "three pillars" viz. society, environment and economy. In presenting sustainable development as having three pillars, a perception of three separate entities,

however, is created. Often a bias could ensue if one pillar becomes the focus, depending on the organization's focus and overall vision. These pillars should rather be viewed as integrated "principles" that should be a part of every decision of development (Rosenberg, 2004).

A number of concerns about sustainable development have been alluded to, some of which are expanded in Chapter 2. The concerns include the meaning of sustainable development, the foci (e.g. natural resources, human social activities, economic activities) of the discourse and how they relate to each other, whether all sectors have the same interpretation of sustainable development, should the discourse be prescriptive or provide a framework to address environmental issues and whether sustainable development is logical in conception and practical to implement. The reality is that organizations, including environmental centres in South Africa, are obligated to engage with sustainable development by virtue of South Africa's participation in the WSSD, and a signatory to the resolution of the summit in the form of the Johannesburg Plan of Implementation (Moosa, 2004). The obligation also extends to the international arena with the declaration of the United Nations Decade of Education for Sustainable Development, and with UNESCO (2004) including all stakeholders in the Decade. South Africa is a member country of the United Nations.

Sustainable development and discourses of sustainable development do not occur in a vacuum. In next section some of the sustainable development challenges facing South Africa are outlined.

1.1.2 Sustainable development challenges in South Africa

According to the State of the Environment Report (DEAT, 2006), and in the State of the Nation review (Southall, 2007) South Africa faces many environmental challenges. The strategy for sustainable development (within the context of the WSSD) is based on the idea that there are intertwined links of the political, social, and economic aspects of society with the environment (Fakir, 2002; DEAT, 2006, Southall, 2007). In the South African context, (which may be the situation in other countries as well) sustainable development challenges "thread across" the social, political, environmental or economic sectors of society (Bond, 2002).

- The average rainfall in South Africa is 450mm which is half the world average of 860mm/annum (DEAT, 2006). Since 1994, water schemes have been implemented for communities facing water scarcity, but at a cost-recovery rate as low as 4% (Dladla, 2002). This means that some communities are not paying for water. While a basic need is satisfied, the socio-economic affordability and attitudes of people is questionable with respect to maintaining the supply of water. Vandalism (i.e. damage to water pumps) has contributed to the failure of some projects (Dladla, 2002; Bond, 2002). Privatisation or commercialisation

of services e.g. the provision of electricity and the discontinuing of services for non-payment have also impacted on the poor and can be regarded as unsustainable policies (Bond, Dor, Himlin and Ruiters, 2002).

- In South Africa, although there is a connection between poor households and social networks, urban-rural dynamics are poorly understood (Fakir, 2002). The needs of people living in rural areas, is far greater than perceived. An example is water. Water is needed for consumption as well as for cultivation and stock-farming (Dladla, 2002). A supply of drinking water does not suffice for other forms of economic livelihood.
- Poverty has increased the pressure on environmental resources (Dladla, 2002; Bass, Mayers and Vermeulen, 2005; DEAT, 2006). People with limited financial resources increasingly make unsustainable use of woodlands for energy needs and as construction materials to build their houses or shelters.
- A key threat affecting people, more especially migrant workers, is the AIDS pandemic (Mara, 2002; Dladla, 2002; DEAT, 2006; Nattrass, 2007). The impact of the illness works against the improvement of the economic conditions especially of those already living in poverty. In fact pandemics like AIDS burden the individual development and the national economy (Mara, 2002).
- In South Africa, transport is responsible for 74% of the petroleum consumption. Over the last 6 years the number of vehicles has increased by 14%, contributing to the existing high ambient air pollution. An increase of 27% by 2007 and 44% in 2011 is expected if strategic control measures are not explored (DEAT, 2006).
- The present South African school curriculum includes attention to a healthy environment, human rights, social justice and environmental issues (Department of Education, 2002). While environment has been included in curriculum, the availability and affordability of resources to support learning in schools is a challenge. These shortcomings further contribute to less effective teaching and learning to address environmental issues and the development of environmental skills, values and knowledge in learners (Wagiet, 2002).
- Case studies show that although access to environmental justice stemmed as a perquisite for protecting and realising environmental rights, the main problem is a lack of legal aid services to vulnerable communities (DEAT, 2006). These are limited by state resources, poor quality services to vulnerable communities and high costs of private justice services which are unaffordable by the poor.

The following are further examples of sustainable development challenges (based on statistics and figures) as pointed in the State of the Environment Report (DEAT, 2006) in the context of the

Gauteng Province, South Africa. The researcher has highlighted challenges in the Gauteng Province as the environmental centre used as the case study in this research is based in Gauteng.

- Of the nine provinces of South Africa, Gauteng has the second largest population (19.2%) (DEAT, 2006). Gauteng, along with KZN and Western Cape has positive net migration. However, the largest number of the net migration (520 000) for the period 2001-2006 was expected in Gauteng. (Lomborg, 2004) has pointed out that to understand what is happening around us we need to focus on trends such as the impact of the movement of people from one area to the other. Food, water, shelter and energy provision are dependent on the environment. An increase in population places more stress on the land and on the provision of services (City Parks, 2002).
- In Gauteng, between 2001 and 2003 there was an estimated 30% of HIV/AIDS prevalence. With the increase of people in the advanced stages of the illness, loss of income has increased (Nattrass, 2007) and a change of livelihood strategies like the use of medicinal plants for symptomatic treatment have increased ecological pressure.
- Gauteng followed by the Western Cape, are the provinces that are the most urbanized and affluent and according to consumer patterns generate the largest amount of waste (DEAT, 2006). However, Gauteng generates an estimated 40% of the general waste which is double that of the Western Cape.

Having provided a brief overview to one of the central pillars of this research and challenges in South Africa attention now turns to sketch out and provide a more comprehensive frame of the focus, rationale and methods used in the research. The organizer in Figure 1.1 (on the next page) presents a broad overview of Chapter 1.

In the context of the study, the discourse of sustainable development is placed in both international and national contexts with supporting critiques of the discourse. The research focus provides an overview of the research and the research framework, including methodology.

The key issues that underpin the reasons for the research are discussed in the rationale for the study in Section 1.3. The discussion in the lead-in to the research questions provides a basis to understand the engagement of an environmental centre with the discourse of sustainable development. Based on the lead-in discussion, the research questions are stated followed by the aims of the study.

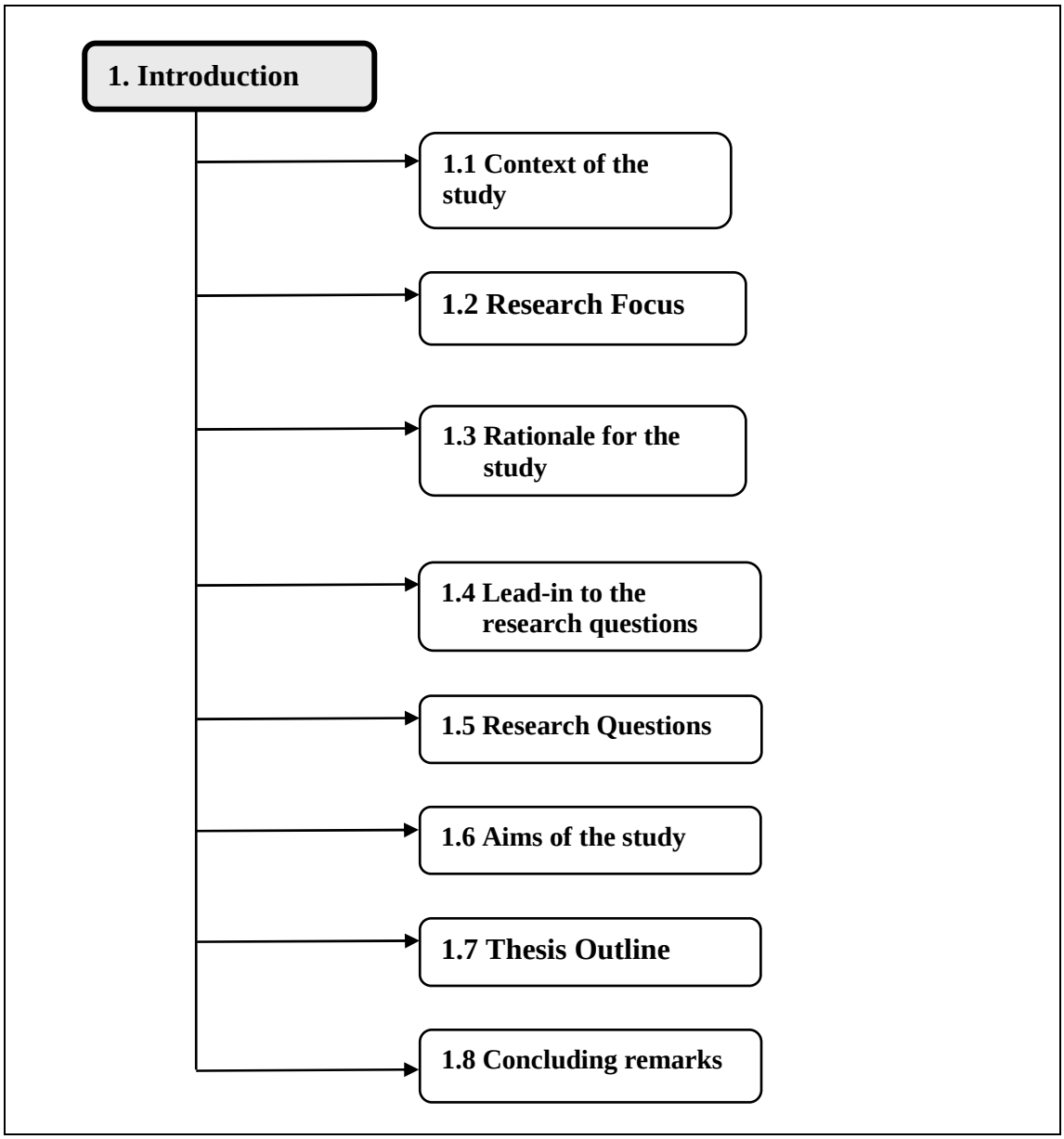


Figure 1.1 An overview of Chapter 1.

1.2 Research focus and framework: an overview

The researcher has visited or interacted with environmental centres both nationally and internationally. The researcher has had brief interaction as a visitor with the education manager at the Coombe Abbey Environmental Centre in the United Kingdom and has also visited or interacted with a few environmental centres in South Africa. These include Umgeni Valley Nature Reserve (KwaZulu-Natal), Tygerberg Nature Reserve (Western Cape), Blesbok Spruit (Gauteng) and Delta Environmental Centre (Gauteng). The environmental centres have different foci in their activities

which include nature conservation, educator training and development, the development of resource materials and sustainable development activities.

Delta Environmental Centre has been used in this research as a Southern African case study. The background of Delta Environmental Centre is discussed in Chapter 4. The researcher has had substantial interaction with Delta Environmental Centre. The researcher in his interaction with Delta Environmental Centre from 1998, as a representative of the Department of Education, has known the centre through the years to engage with the sustainable development discourse.

While the environmental centre engages with the discourse of sustainable development the influences of sources outside the environmental centre cannot be ignored as part of the "bigger picture" (refer to Figure 1.2 on the next page). The sources outside the environmental centre would include major events like the World Summit on Sustainable Development, the influence of the country's constitution and the UN Decade of Education for Sustainable Development (UNDESD).

In choosing to engage with the discourse, the environmental centre does not exist as an isolated entity but also provides, as part of its functions, programmes for others (e.g. educators and learners from educational institutions) and for people from other organizations. In this study, people for whom the programmes of the centre are designed are referred to as beneficiaries. Exploring the engagement with the discourse in the context of beneficiaries is also likely to contribute to a better understanding of how the discourse is shaped and taken to others outside the centre. The crux of the research is to explore what is actually taking place within the environmental centre by engaging with the discourse (shown by the complex interweaving of the background lines in the box titled "Focus of the study" in Figure 1.2).

It has been stated earlier (Lotz-Sisitka, 2006) that there is need for a critical review of ways in which sustainable development is being applied or engaged with in different contexts. It has also been mentioned earlier that the use of the concept of sustainable development became popular in 1987, however, the greater focus of the study will be from 2000.The reason for this cut off is the international focus of sustainable development turned to South Africa in 2002 (i.e. the WSSD). The two years prior to the summit can be taken as the build-up period to the first World Summit on Sustainable Development and the period after the summit as the influence of the summit.

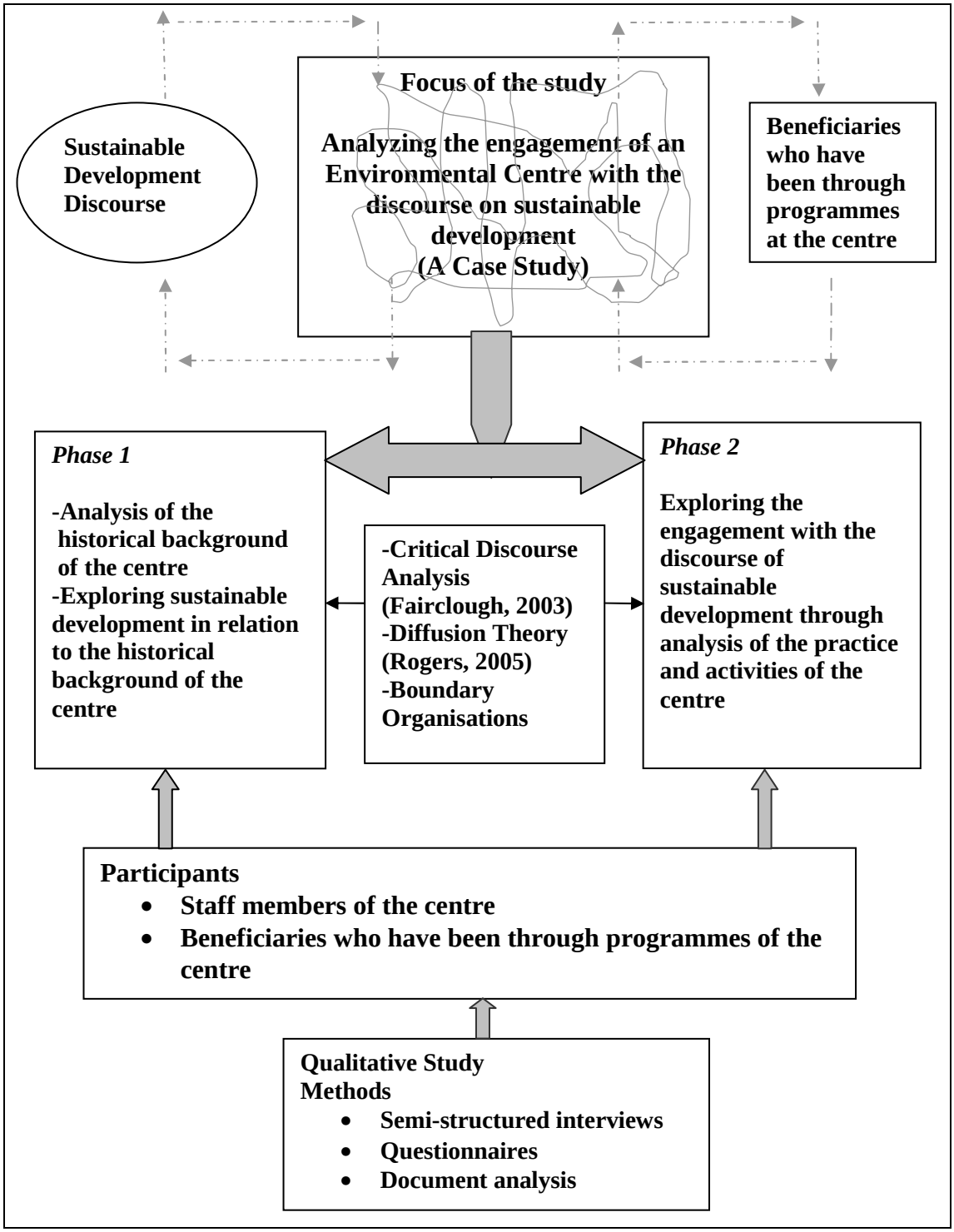


Figure 1.2 Research focus and framework.

Three theoretical frameworks viz. Critical Discourse Analysis, Diffusion Theory and Boundary Organizations are used to explore the activities of the environmental centre within the context of sustainable development. The three theoretical frameworks are discussed in detail in Chapter 3.

The participants in the study were the staff and the beneficiaries of the environmental centre. The study was qualitative in nature. Documents, staff of the environmental centre and programme beneficiaries of the centre were the appropriate sources for the valuable information required on the engagement with the discourse of sustainable development. Semi-structured interviews, staff and beneficiary questionnaires and document analysis were the key tools used to gather the information for analysis. In Chapter 4 a detailed discussion is provided on the design and approach to the study.

1.3 Rationale for the study

Although environmental organizations may be involved in the delivery of programmes within the context of the decade of sustainable development, organizations have to contend with their own dynamics. These dynamics include diversification of roles, staff expertise, and the influence of their historical backgrounds. Dietz (2002), for example alludes to the positioning of an organization in relation to participation. The important link of the environmental centre between two external systems i.e. the discourse of sustainable development and the beneficiaries is shown in Figure 1.2. Organizations which mediate the link between two external systems are described by Guston (2001) as “boundary organizations” (which is discussed in Section 3.3). However, of equal importance to this study is how the organization engages with the discourse within its own boundaries (independence) while mediating the link between the external systems.

The engagement with the sustainable development discourse is therefore not linear and needs to be explored to understand and contribute to the discourse which has become central to the present decade. The discourse of sustainable development extends beyond the event of the World Summit on Sustainable Development (WSSD). An outcome of the WSSD accepted by United Nations (including South Africa) was the commitment to implement sustainable development strategies in different ways, whatever form the implementation may assume. Using Critical Discourse Analysis a discourse can be analyzed through identifying the perspective or angle from which the discourse is represented in implementation (Fairclough, 2003). In this study it would imply analyzing the activities of the environmental centre in reference to sustainable development, as part of the commitment of South Africa to the outcomes of the WSSD.

The researcher’s attendance from the year 2000 at various forum meetings of environmental organizations, listening to presentations on sustainable development by different organizations and engaging with sustainable development education resource material, confirm the tensions articulated in the literature about the discourse of sustainable development (further developed in Chapter 2). This was an indication to the researcher that there is more to be explored, analyzed and understood within the sustainable development discourse. The declaration of the Decade of

Education for Sustainable Development (2005-2014), also prompted the researcher to focus on the discourse with a view to examining discussion and strategies for implementation. Exploring and analyzing the engagement of an environmental centre with the discourse of sustainable development has the potential to:

- contribute to a deeper understanding of the discourse
- contribute to expanding knowledge of the discourse
- flag key concerns for the environmental centre and other organizations to consider in their practices and activities
- contribute to a process to address environmental concerns both in South Africa and worldwide
- lead to issues for further research.

Before stating the focused research questions, lead-in questions are discussed. The lead-in questions provide depth and background to the more focused research questions.

1.4 Lead-in to research questions

A multiple response (Schmandt and Ward, 2000) to discourses is possible e.g. a greater emphasis on activities that support the discourse, physical changes within an organization that is a manifestation of tenets of the discourse, or maintaining *status quo* which would imply no consideration of a response. Keeping in mind that a multiple response is possible, the researcher developed questions as a framework to understand and unpack the meaning of the "engagement of an environmental centre with the discourse of sustainable development" in the context of this study. The questions also provide the build up to the more focused research questions.

- What are the challenges to sustainable development?
- How are frameworks or ideas that are considered to be "new", spread and adopted?
- What does sustainable development mean to an individual or to an environmental centre?
- What kind of thinking framework or views underpins the delivery of sustainable development programmes?
- What are the approaches and strategies to engage beneficiaries on sustainable development?
- What are the means used to influence the development of human capacity for sustainable development?

Engagement with the discourse of sustainable development can be explained with reference to critical discourse analysis which is presented in detail in Chapter 3. Engagement can be interpreted through analysing “ways of acting”, “ways of representing” and “ways of being”. Fairclough (2003) refers to critical discourse analysis with discourse having three manifestations in practice viz. genre (ways of acting), discourse (ways of representing) and styles (ways of being). Ways of acting is embedded in the activities within the practice of the organization. Ways of representing refer to the representations of own practice as well the practice that has a source outside of the own organization. Representation can also be described as a process of construction of practice (Fairclough, 2003), according to where the organization is positioned in relation to the discourse. In other words the practice i.e. what the organization is “doing” may not necessarily be fixed, but could be in a state of development, trying out or change.

In the context of the three manifestations of discourse in practice, as indicated in the previous paragraph, the researcher has developed lead-in questions to provide a background to explore and understand the engagement with the discourse of sustainable development within the context of this study. A discussion of each of the lead-in questions follows.

1.4.1 What are the challenges to sustainable development?

It has been pointed out earlier that sustainable development is not straightforward. The researcher brings to the attention of the reader that challenges to sustainable development include and go beyond just meaning and definition. The challenges and potential challenges to sustainable development are raised in the paragraphs that follow.

1.4.1.1 An environmental crisis may have two effects – it either leads to a breakthrough in new patterns of thinking and practice or through constant focusing on bad news, it leads to denial and eventually disempowerment and despondency (Sterling, 2007). One of the challenges is how to balance these two effects in sustainable development practice avoiding disempowerment or despondency.

1.4.1.2 The literature on sustainable development e.g. UNESCO (2004; 2005) identifies three key dimensions viz. environmental, social and economic. There seems to be a fragmented notion projected onto the whole understanding of the environment (Sterling, 2007) through a perception of the three dimensions as separate dimensions. The Earth Charter (2000), for example, gives more weight to the ecological dimensions (Gonzalēz-Gaudiano, 2007). A related challenge is to see evidence of examples of practice, within the context of sustainable development that address all of

environmental, social, and economic dimensions without privileging any one of them (Robottom, 2007).

1.4.1.3 There is a need to understand that there is more required than the thinking that environmental problems can be managed (Sterling, 2007). A kind of reflexive and systemic thinking with action to respond to environmental issues is needed and a realization that there is no single process to respond to environmental issues (Wals, 2007). The challenge is to what extent do organizations cross the parameters of their core functions and to what extent do the organizations provide the latitude for others to encroach on their parameters.

1.4.1.4 The absence of discourse and policy changes in practice raises the concern whether the time and expense invested in responding to sustainable development can be justified (Robottom, 2007). The success of the discourse would only be evident in what is achieved in practice. However, what are the categorical indicators to measure the extent of achievement in practice within the context of sustainable development? The effective use of time and resources could not be gauged without the authentic measure of practice.

1.4.1.5 Creating a sustainable world requires the involvement of stakeholders (even in disagreement) using autonomy, responsibility, learning and innovation to overcome inequities and imbalances that limit possibilities to participate (Wals, 2007). There is a need for stakeholders to work together to achieve a collective impact. The challenge is whether the working together is possible, given that stakeholders have their own agendas.

1.4.1.6 Attempts to communicate the discourse of sustainable development simply and clearly have resulted in more operational conceptions with little consensus (Gonzalēz-Gaudiano, 2007). Due to the criticisms and debates, sustainable development has become more difficult to put into practice. Debate without resolution is one of the major challenges.

1.4.2 How are frameworks or ideas that are considered to be “new” spread and adopted?

Sustainable development has been placed at the forefront of environmental responses particularly in the current decade. Therefore the sustainable development discourse could be thought of as a “new idea” or innovation, at least for the masses of people. We are in a generation where we belong to a culture which puts forward many ideas but also, in many ways resist their development (Walker and Henry, 1992). Innovation implies change and change means uncertainty about ends, focus, means or approach (Pearson, 1992). Change is a process, and should not be mistaken as an event (Hord, 1987). Since there are many debates around the discourse of sustainable development, questions

could be raised about the way it is spread by those that are exposed to it and the way it is embraced (adopted) by those who receive it.

A theoretical framework that is helpful in understanding the discourse of sustainable development within the context of this study has been offered by Rogers (1968; 2000) and Carlson (1971). These authors present frameworks to understand the process of innovations in general and the issues that impact on innovations. An innovation is actually an idea that is perceived as something new by an individual and it is the newness of the idea that determines a reaction through expression in knowledge, attitude or a decision to use it (Rogers, 1968; Rogers and Shoemaker, 1971). Organization's existing practices are based on norms. The existing norms can either pose a challenge (or be a barrier) or support the implementation of sustainable development. Diffusion Theory which encompasses innovations is discussed in greater detail in Chapter 3.

1.4.3 What are the foci of sustainable development programmes?

Different authors may view the environment and the sustainable development discourse from different perspectives. Classic views of the environment focus on the natural or biophysical environment while the more recent views e.g. O'Donnoghue (1995) and Schmandt (2000) focus on the interrelationships within human activities, and between human activities and the natural or biophysical environment. Martin (1993) is of the view that there is a need to consider all aspects of the human-made and natural environments when addressing environmental concerns.

The United Nations draft International Implementation Scheme (UNESCO, 2004) focuses on three broad dimensions viz. socio-cultural, environmental and economic but does not categorically emphasize the interrelationships amongst them. In the present context, the environment would encompass the biophysical, the political, the economic, and the social environment - not in isolation - but in significant interrelationships (as explained in the framework provided by O'Donnoghue (1995). The concerns are: What are the foci of sustainable development in the present decade? and, How does the importance of the foci impact on the delivery of programmes?

1.4.4 What does sustainable development mean to an individual or to an environmental centre?

The literature e.g. Rosenberg (2004) and Lotz-Sisitka (2004) indicates that the discourse of sustainable development is not straightforward but open to interpretation and debate (see also Chapter 2). There is a view that the sustainable development discourse can be easily manipulated and becomes difficult to apply in practice (Rosenberg, 2004). The lack of clarity of the notion of

sustainable development amongst policy-makers does not help to get a clear conceptual understanding of what exactly should be conveyed to beneficiaries (Lotz-Sisitka, 2004).

Hopkins and McKeown (2002) are of the belief that we should not be too worried if we do not have a clear definition of concepts, as many valuable concepts in the human world (like democracy) may be hard to define but have multiple expressions in cultures and activities all over the world. The view of Hopkins and McKeown (2002) presents a challenge in that it would be naïve to assume that education for sustainable development will result in multiple expressions with a common vision in all societies. The danger with multiple expressions is that dominant cultural expressions of a few may monopolize the vision of sustainable development at the expense of the majority.

Sustainable development is an important idea but has become a cliché with limitations (Jickling, 1999). There are also concerns that many documents are based on an unproblematic view of sustainable development (Fien and Trainer, 1993). In the light of the lack of clarification of the concept and vision it becomes important to find out what an environmental centre is doing: Is the centre replacing, renaming or reframing or reconstructing current practices and strategies used in programmes for sustainable development?

1.4.5 What kind of thinking framework or views underpins the delivery of environmental programmes?

An understanding of the thinking that underpins the delivery of sustainable development programmes is critical to this study to track practice and find out how the discourse impacts on delivery. Three discrete forms of environmental education namely education *about*, education *through / in* and education *for* the environment have been identified (Lotz, 1996). There are criticisms of all three forms. It is valuable to review them in the light of the United Nations Declaration being focused on education *for* sustainable development.

About the environment: This thinking focuses on the knowledge aspect of environment. The prime task is perceived as the distribution of validated knowledge, where empiricist theories have lead to the belief that true knowledge is guarded in a “bank’ of knowledge by scholars and scientists and it takes years of schooling to access the knowledge (Gough, 1987). The real issue is whether having knowledge really leads to action or a change in behaviour, as expected of sustainable development. According to Fien and Fien (1996) educational research informs us that knowledge alone will not necessarily lead to appropriate action.

In the environment: The *in* environment approach focuses on experiences in the environment. Episodes of beneficiaries having direct experiences through contact with the environment in the field or outdoors offers a reality to the beneficiaries (Job, 1996). Generally the outlook of field centres is for learners to come to enjoy the landscape and experience the ecosystem (Job, 1996; Scott, 2007). This is a valuable but limited exercise. Appropriate experiences are necessary but need to be reinforced and spread across to other contexts rather than be confined to a nature reserve or an environmental centre.

For the environment: Education *for* the environment has an agenda for values education, social change (Job, 1996) and transformation through action based exploration and involvement in resolving environmental issues (Lotz, 1996). However, Gough (1987) is of the view that *for* the environment seems to be patronizing and divides the approach into environment and education. Although there are criticisms of the *for* approach, the process of education requires more attention than its content (Lowe, 1998). For a strategy to accomplish transformation or even to result in the adoption of expected behaviour, it should include communication, skill development and application (Andrews, Stevens and Wise, 2002; Clover, 1996). An assessment of the future needs strongly points to a process approach rather than a content oriented approach (Lowe, 1998).

Shongwe (1996) has claimed in a case study based on environmental programmes offered by Delta Environmental Centre that much of the approach was still based on knowledge and experience (*in* and *about* the environment respectively). According to Shongwe (1996) the environmental centre however, claimed to have adopted the *for* the environment approach. The finding of Shongwe (1996) raises caution within the context of sustainable development: whether the claim of a framework of thinking adopted by an organization means that it is actually being implemented in the delivery of programmes.

1.4.6 What are the approaches and strategies to engage beneficiaries on sustainable development?

There may be different reasons for the rationale underpinning approaches and strategies. Three particular assumptions, namely rational explanations, re-education for new norms and legislation enforcement (Lewin and Stuart, 1991) can be used to understand approaches to sustainable development.

The first assumption (rational explanations) is that people will adopt innovations based on rational explanations. The second assumption is that changing the existing norms of the beneficiaries would imply an incorporation of the new norms. The reality is that sustainable development is still open to

debate. A gap exists as to what is going to provide the basis for rational explanation or for beneficiaries to be re-educated to incorporate new norms to adopt sustainable development.

The third assumption is that legislation will enforce change. Forcing people to adopt sustainable development is one-sided and may be considered contradictory in democracies like South Africa. Cullinan (2004) is of the belief that humans' negative impact on the environment signifies that systems of governing (laws), are in fact, failing. Laws do not necessarily contribute to sustainability. However, adopting a power dominant strategy to influence beneficiaries with a particular vision is likely to make sustainable development a blueprint.

The position of beneficiaries relative to an innovation (the innovation in this study being the discourse of sustainable development) may take the centre of focus (i.e. beneficiary-to-core) or become secondary to the innovation (core-to-beneficiary) or could be a combination of both beneficiary-to-core and core-to-beneficiary.

The beneficiary-to-core position (Havelock, 1971; Whitehead, 1980) is where beneficiary needs form the base on which the innovation is initiated. Although the approach is beneficiary centred there may be difficulty with addressing the diverse needs of all. For example, in diverse communities (like in South Africa) there are different needs and the challenge in a beneficiary centred approach is whose needs are to be given priority.

The core-to-beneficiary position is where the driving force of the innovation is not the beneficiary. A package is designed based on expert research then prepared for mass diffusion among the beneficiaries. A *top-down* pattern (Rogan, 2000) is a characteristic of the approach. A criticism of this position is that all the beneficiaries are taken for granted, when in reality the contexts of the beneficiaries may differ. Beneficiaries are also unlikely to take ownership of the package. In South Africa past and present generations face many problems of inequality. The diversity of communities and differences between generations means that strategies may need to be adapted to suit different communities.

1.4.7 What are the means used to influence the development of human capacity for sustainable development?

Environmental centres in engaging with beneficiaries on the discourse will use some means of communication e.g. workshops. An analysis of the rationale that underpins the communication, where the beneficiary is positioned in the communication process and an analysis of the communication channels (i.e. the means by which the messages get from the source to the receiver)

is important in this study. In developing messages it is important to keep in mind the design from the perspective of the target audience recognizing personal characteristics and contextual factors (Mileti and Peek, 2002). The means of communication that will be considered in this study are workshop programmes and resource materials. The environmental centre in this research uses workshop programmes and resources materials as the most common form of communication. Workshops: Workshops are commonly used by organizations to introduce new ideas, reinforce existing ideas or to develop specific skills in beneficiaries. It is problematic to assume that social change will be the end result from what is thought to be well-communicated messages during occasional courses (Taylor, 1997). The choice of the means (e.g. once-off workshops) may impact on the outcomes.

Resource materials: Resource materials are often used by organizations during workshops or as communication outside the workshop context. Resource materials used by organizations may be developed by the organization or by sources outside the organization or may involve a combination of both strategies. The development of resource materials should involve the wider engagement of people around environmental concerns (Taylor, 1997). Of concern is the design of these resources in bringing the scientific knowledge, skills and values in the context of sustainable development to the end-user who is the beneficiary. Is it the intention of the materials used by the environmental centre to entrench a pattern of behaviour for sustainable development or is the intention to encourage the engagement in an enquiry process towards a pattern of behaviour?

In the discussion in the lead-in questions some of the challenges to and concerns about approaches to sustainable development were raised. The challenges and concerns focused on the foci of sustainable development programmes, the influence of existing norms, approaches and positioning of the beneficiaries and the frameworks that underpin sustainable development. Based on the key discussions, the researcher developed more focused research questions to explore and understand in greater analytical depth the discourse and the engagement with the discourse of sustainable development.

1.5 Research questions

The research question and sub-questions were developed keeping in mind the concerns raised in the literature. The key research question is followed by sub-questions that categorize the key research question.

Key research question:

How does an environmental centre in a South African context engage with the discourse of sustainable development?

This key research question is the major focus of the study. The sub-questions that follow provide specific foci that will contribute to the major research question.

Sub questions:

1. What are the views and understanding of staff and beneficiaries of the environmental centre of the sustainable development discourse as a way to address environmental concerns?

2. How does the discourse of sustainable development feature in the practice (how things are done) and in activities (i.e. ways of engaging with the discourse, actual programme design and delivery) of the environmental centre?

3. How do the sustainable development activities and programmes of the environmental centre as the way of addressing environmental concerns impact on the beneficiaries of the centre?

1.6 Aims of the study

The following aims of the study underpinned the development of the key research question and the sub-questions:

1.6.1 To develop a broad framework for the environmental centre in the case study (and organizations with similar interests) that can be used in a reflexive way to engage with sustainable development.

1.6.2 To explore, analyze and understand the discourse of sustainable development with reference to views, debates and key agreements (in particular the current United Nations Decade of Education for Sustainable Development).

1.6.3 To understand the impact of the discourse of sustainable development on the beneficiaries of the environmental centre.

1.6.4 To explore the engagement of an environmental centre with the discourse of sustainable development by researching activities within their organizational framework. Specific activities would involve response to the discourse on an intellectual level and the approach and strategies used in programme design and delivery.

1.6.5 To explore and understand the antecedents (norms) of an environmental centre that impact on the engagement with the discourse of sustainable development.

It is hoped that the contributions of the research will help to better inform and/or review the engagement with the discourse of sustainable development in environmental centres within current trends and debates of the discourse. In the next section an outline of the thesis is presented.

1.7 Thesis Outline

A brief overview of the chapters that follow is provided. Chapters 2 to 4 provide the framework for the study. Chapters 5 to 8 focuses on the information gathered, analysis and discussion of the data.

Chapter 2 – Sustainable Development: A dynamic journey?

To get an in-depth understanding of how an environmental centre has engaged with the discourse of sustainable development it is necessary to have a holistic perspective of the sustainable development discourse. In Chapter 2 the history, views, debates and examples of responses to sustainable development are presented and discussed.

Chapter 3 – Exploring Sustainable Development: Analytical Frameworks

Critical Discourse Analysis, Diffusion Theory and Boundary Organisations have been used as the broad frameworks to analyze and understand how an environmental centre has engaged with the discourse of sustainable development. In Chapter 3 the three frameworks are discussed with reference to the discourse of sustainable development.

Chapter 4 – Research Design and Approach

The research design and approach are discussed in Chapter 4. Justification for the choice of research paradigm, the choice of the case study, the development and use of the instruments are presented in this chapter. A description of the participants is also provided. As in any research, issues of ethics

and trustworthiness are raised and proactive strategies to maintain ethics and trustworthiness are discussed.

Chapter 5 – Engagement with Sustainable Development: Analysis and discussion of key documents

In Chapter 5 an analysis and discussion of the results of two key sets of documents are presented in the context of the discourse of sustainable development. One of the sets of documents is the *EnviroTeach* publication that has been a regular publication of the Delta Environmental Centre. The *EnviroTeach* publication has evolved from the nineties into the new millennium. The other set of documents are the Annual Reports of Delta Environmental Centre. The Annual Reports contain information necessary to understand the activities of the centre.

Chapter 6 – Sustainable Development: Interpretation and practice - Staff perspective

The participants (staff of the environmental centre) have provided valuable information which has been used to explore the engagement of the centre with the discourse of sustainable development. The two sub-questions related to *the views and understanding of staff of sustainable development, and the practice and activities of the environmental centre* have been used as the points of departure to gather information from the participants. In Chapter 6, an analysis and discussion of staff participant responses (to different aspects of the engagement with the discourse) in the interview and questionnaire is presented.

Chapter 7 – Sustainable Development: Beneficiary response

The participants (beneficiaries) of the environmental centre have provided valuable information which has been used to explore the engagement of the centre with the discourse of sustainable development. The two sub-questions related to *the views and understanding of beneficiaries of sustainable development; and the impact of the discourse on beneficiaries of the environmental centre* have been used as the points of departure to gather information from the participants. In Chapter 7, an analysis and discussion of beneficiaries as participant respondents (to different aspects of the engagement with the discourse) in the interview and questionnaire is presented.

Chapter 8 – Engagement with Sustainable Development: Multiple expressions

In Chapter 8 a discussion of the findings of the research, a framework with suggested criteria for environmental centres to engage with the discourse of sustainable development for consideration and areas for further research are presented.

1.8 Concluding Remarks

The discourse of sustainable development, despite concerns that have been flagged in this chapter, is considered to have some value to address the environmental issues currently experienced both nationally and internationally. The World Summit on Sustainable Development held in 2002, although largely a political gathering has shown that sustainable development is considered as an option to address environmental issues. Environmental Centres amongst other organizations have been recognized by UNESCO as having a role to engage and contribute to realizing sustainable development as a way of addressing environmental issues.

The researcher, having visited or interacted with different environmental organizations identified the need to explore and make a contribution to understanding the discourse of sustainable development. The case study approach of using one environmental centre was thought to be appropriate to analyse the issues around the discourse of sustainable development in great depth.

The researcher does acknowledge that given the conceptual uncertainty and lack of guidelines for practice, differences amongst different environmental centres are likely. The in-depth analysis of the engagement of one centre, however, is also valuable as point of departure to later make comparisons with other environmental centres. The intention of this study is to provide in-depth information from a rigorous research process for the organization in the case study (and others), to reflect on its engagement with the discourse of sustainable development and to also look critically at the path ahead. Another contribution of the study is to identify new and emerging issues that could provide the basis for further research in the context of the discourse of sustainable development.

Discussion in this introductory chapter (section 1.4) is an indication that there are different aspects to the engagement with the discourse of sustainable development. Engagement with the discourse in this study covers aspects that include challenges, views and understanding of the discourse, how the approaches and strategies that underpin the way discourse is communicated as well as changes that might have taken place. Change would include change in thinking as well as change to the physical environment. Given the range of aspects related to engagement with the discourse of sustainable

development, the researcher found it appropriate to use a combination of theoretical frameworks in an integrated way (Figure 1.2) rather than using a single one.

While it is acknowledged that there is an array of practice, especially in education for sustainable development, there is a lack of systematic documentation and analyses of these practices and initiatives (Lotz-Sisitka, 2006). A documented understanding of the engagement of an environmental centre with the discourse of sustainable development will unfold over the remaining chapters of this research report.

In the next chapter (Chapter 2) the history, different views and examples of responses to the discourse of sustainable development are discussed.

Chapter 2

Sustainable Development: A dynamic journey?

While we haggle over the meaning of sustainability, the Earth's resources continue to decline more rapidly and the average quality of life for human beings and most other life forms continue to decrease.

Monica Graaf (Mindshift, June/July 2007, p9)

Introduction

The discourse of sustainable development has raised attention, if not intense debate, within almost every sector (i.e. political, social and environmental) of both the national and international community. Sustainable development is a highly contested concept because it can, on the one hand, be interpreted as an ideology as well as, on the other, serve as a framework to critique ideology (Hattingh, 2002). To the environmentalist, sustainable development may mean development without damage to fauna and flora while economists may think of it as continuous financial gain and there are those who also may think of the concept as increasing living standards without exhausting resources (Falconer, 2002). Despite the different views, vagueness, ambiguity and contestation of the conceptualisation of the discourse it is the very 'discourse' that is healthy and necessary for initiating responses to present-day interconnected problems (Ashe *et al.*, 2007). In Chapter 2 some of these different views on the discourse of sustainable development are explored.

An increasingly popular use of discourse is in the more specific theoretical context of the ideas or philosophies propagated by critics and philosophers of a particular focus (van Dijk, 1997; Chouliaraki and Fairclough, 1999; Edley, 2001) e.g. sustainable development. While language use may be of concern in the context of engaging with ideas or philosophies discourse analysts also focus more specifically on the essential components of *who* and *why*. In the sections which follow there is discussion of some of the different frameworks that underpin sustainable development, the conceptions of sustainable development and a focus on the essential components of contestation i.e. *who* and *why* respectively.

Over the past two decades the discourse of sustainable development has been associated with debate on how the discourse should be conceptualised (Treurnicht, 2000; Lotz-Sisitka, 2006). Although, the discourse is wide, the meaning of sustainable development remains unclear (Jickling, 1994; McDonald, 1996; Judson, 2007). While it is in the nature of discourses to provide for divergence in conceptualisation, the issue of consensus in meaning becomes important when discourses like sustainable development are used to frame strategies to address both environmental and human

conditions e.g. National Sustainable Development Strategy for South Africa. The difficulty in reaching consensus on the discourse of sustainable development has been intensified further through the emergence of other conceptual responses including sustainability (Janse van Rensburg and du Toit, 2000), each on their own covering a particular set of concepts and implications for use. Some of these related notions of, for example, sustainable development are discussed later in this chapter.

In the literature, those who have a keen interest in seeking strategies for environmental concerns (for example Fien and Tilbury, 2002; Wals, 2007) can use sustainable development and sustainability as related concepts in framing their discussions. The common point for the use of related conceptions can be identified on the basis of the interrelationship between the dimensions of, the environment, the social (including the political) and the economic, and the need to find ways to address environmental issues. In this research, concepts related to sustainable development are also used interchangeably where appropriate.

Education has been recognized as having a major role in trying to implement the discourse of sustainable development in 'reality' (see for example, Hopkins and McKeown, 2002; Lotz-Sisitka, 2006, Ashe *et al.*, 2007; Sterling, 2007). Education for sustainable development has, alongside the discourse of sustainable development, thus also become an area of discussion and debate. Jickling (1994), for example, argues that it is inappropriate to plan for education for sustainable development without clear notions of the central concepts of sustainable development and education. One of the goals of the Decade of Education for Sustainable Development (DESD) is to integrate principles, values and practices of sustainable development into all aspects of education and learning (UNESCO, 2005). Lotz-Sisitka (2006) is, however, of the belief that the goals of the DESD are propositional as it is an assumption that all principles of sustainable development can be integrated into education and learning with certainty, even if the discourse becomes more convergent. Throughout this thesis, discussion on sustainable development and Education for Sustainable Development (ESD) will thus be linked, given the educational focus of this work. With this as a brief introductory background, Figure 2.1 (on the next page) provides an overview of Chapter 2.

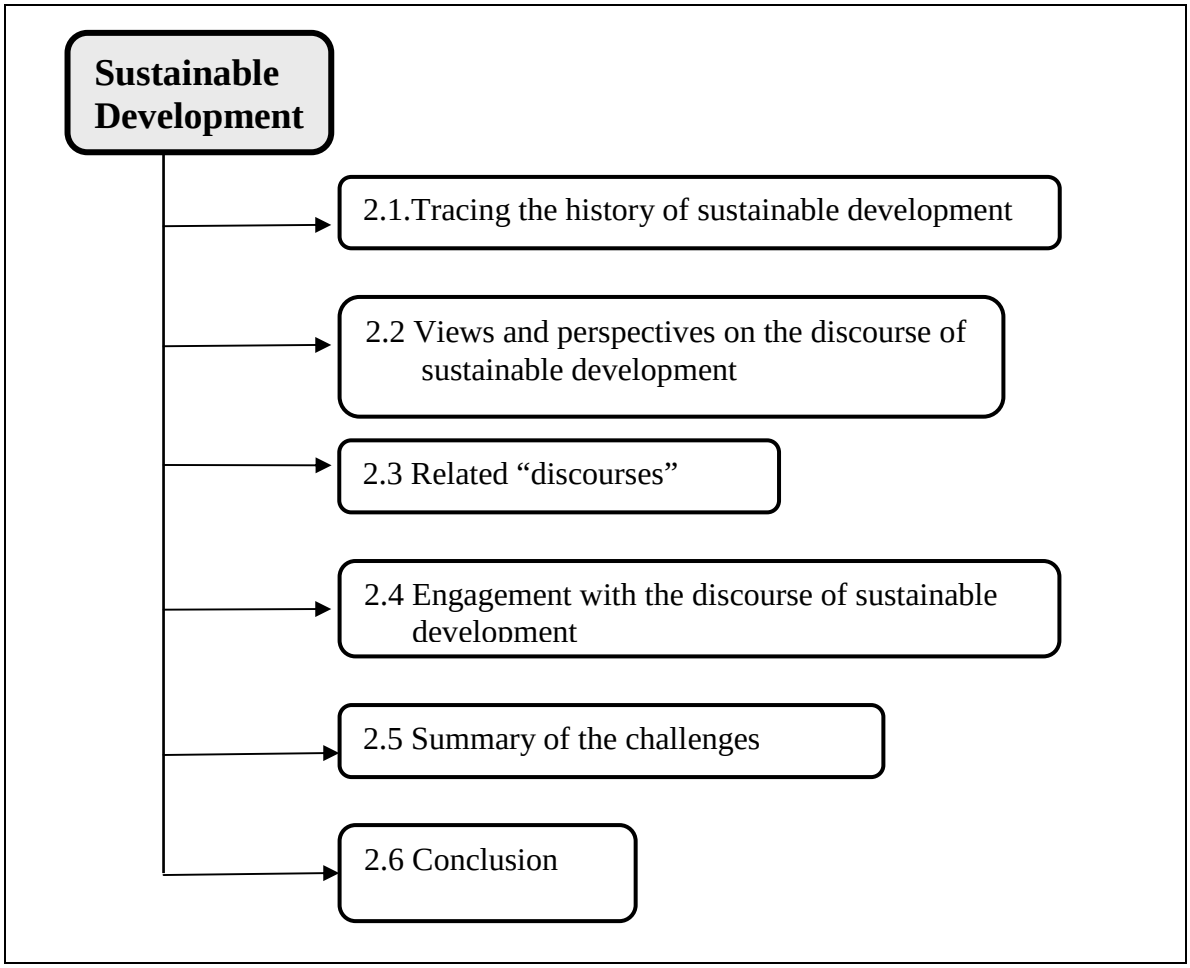


Figure 2.1 An overview of Chapter 2.

A brief history of sustainable development is discussed in section 2.1 to provide some understanding of how the discourse came to be dominant in the new millennium. Discussions on the history of sustainable development and the discourse of sustainable development, some of the criticisms of the discourse, examples of other conceptions of the discourse and further examples of engagement with discourse of sustainable development will follow in the remainder of the chapter. Justification for the choice of examples to discuss the engagement with discourse is also given in section 2.6.

2.1 Tracing the history of sustainable development

Sustainable development as a concept, has had an interesting evolution and was frequently a focus in the 1980s in general but became a key concept in the *Brundtland Report* in 1987 (Jickling, 1994). A history of sustainable development is discussed below, including the period from the 1960s where some principles or thoughts may have been implied but not explicitly documented in international agreements as in the later years (e.g. *Agenda 21* of 1992). The history presented does not in any way

imply that everyone agrees on the meaning of sustainable development or with sustainable development as a strategy to address environmental issues.

There have been a number of different responses, events, laws, agreements, reports and publications worldwide that directly or indirectly focused on sustainable development. The history that follows, however, makes reference to some of the key and relevant events (refer to Figure 2.2 below).

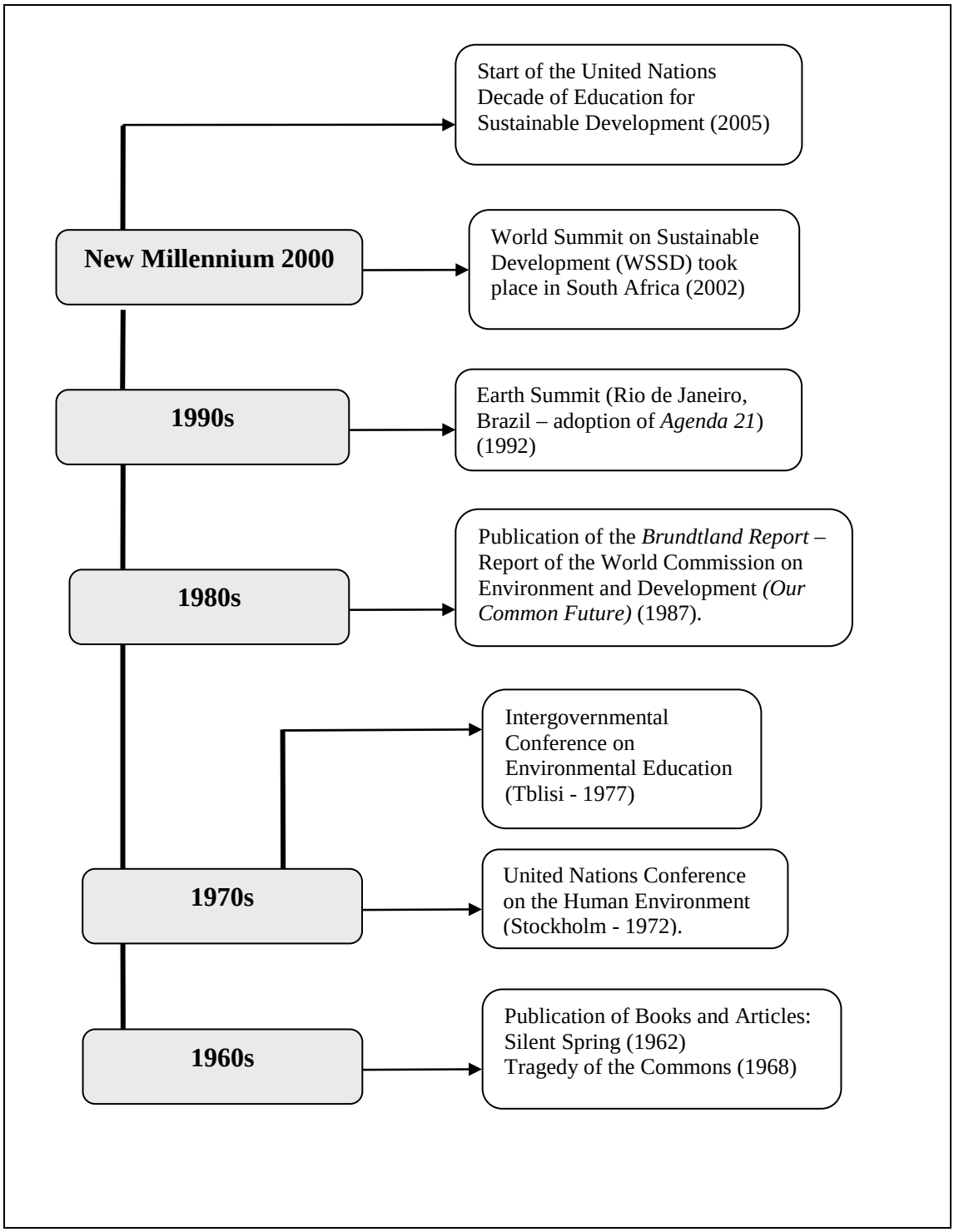


Figure 2.2 An overview of the history of sustainable development: Some of the key events

A detailed account of some of the events, year by year, has been presented (see for example, Global Environmental Outlook publication (United Nations Environmental Programme, 2002). To discuss each of the events, their contexts and content in the timeline of events as outlined in the Global Environmental Outlook publication would require another thesis. Some key emerging themes from the events are outlined below and emerge in the history that follows:

- Conservation
- Education and awareness
- Sustainable development
- Human related issues e.g. poverty and diseases

The above were also themes that were identified in the *EnviroTeach* publication and in the Annual Reports of the environmental centre in this research (refer to Chapter 5).

2.1.1 Decade of the 1960s

In the 1960s, sustainable development was not yet a key environmental concern. Elements of what was considered unsustainable in the practice of society (e.g. the unwise use of agricultural land) were related to poor practice and behaviour. Foresight by those interested in environmental issues like Carson (1962) and Hardin (1968) was used to focus on the pressures exerted on the natural environment, mainly through human activity.

The publication of the famous *Silent Spring* (Carson, 1962) as well as *The Tragedy of the Commons* (Hardin, 1968) raised (public) awareness of environmental issues and limits to ecological existence given certain environmental decisions. At the same time environmental disasters including the oil spill along the coast of France and long range air pollution in Western Europe (United Nations Environment Programme, 2002) were also drawing attention to environmental issues.

2.1.2 Decade of the 1970s

In the decade of the 1970s, two key events outlined below, allude to principles of sustainable development and the beginning of a more holistic approach to environmental concerns.

-*United Nations Conference on the Human Environment (Stockholm) (June 1972).*

This was the first meeting of the world nations focusing on environmental concerns. At the conference the United Nations Environment Programme (UNEP) (UNEP, 2002) was established. In

the context of the environment, although the actual words *sustainable development* did not appear, it was implied in principles such as natural resources must be safeguarded, the Earth's capacity to produce renewable resources must be maintained, pollution must not exceed the environment's capacity to clean itself and development is needed to improve the environment.

One of the hopes of the conference was that there would be development and progress, taking into account the environment, subsequently many nations established ministries of environment based on plans of action decided at the conference (McDonald, 1996). The context for the conference in Stockholm was largely a political gathering attended by 113 nations (Adam, 1990). As will be seen, the many events discussed hereafter (eventually leading to the World Summit on Sustainable Development in 2002) were similar large gatherings focused on government participation., The United Nations Conference on the Human Environment (Stockholm), it seems, set the momentum for the sustainable development discourse to gain support within a more political context, with some observing and noting contestation (e.g. van Rensburg, 2000;, Jickling, 2002; Robottom, 2007; and Judson, 2007).

-Intergovernmental Conference on Environmental Education (Tbilisi – Russia) (1977)

The intergovernmental conference in Tbilisi involved the United Nations member states and international non-governmental organizations (NGOs). The context of the conference was environmental education. The conference culminated in the declaration of twelve principles commonly referred to as the Tbilisi Principles of Environmental Education (Irwin and Lotz-Sisitka, 2005). The Tbilisi Principles provided a framework for the international, regional and local practice of environmental education (Irwin and Lotz-Sisitka, 2005). An outcome of the conference was support for an action approach (*for* the environment).

The set of twelve principles which emanated from the conference has embedded in it some of the core ideas of sustainable development promoted in the present decade. A good example of one of the core ideas is the three dimensional approach to environmental issues (i.e. the economic, social and environmental dimensions). The Tbilisi Principles also endorsed that the environment should be considered in its totality (natural and built, technological, social, economic, political and moral) and that a holistic interdisciplinary approach should be used in education. According to Hopkins and McKeown (2002), although so much of emphasis was placed on education, as with Education for Sustainable Development which came almost two decades later on, the thrust of the Tbilisi Principles of Environmental Education came from an international political gathering rather than from an education movement.

2.1.3 Decade of the 1980s

The two key references of the 1980s that follow show some of the ongoing momentum of the discourse of sustainable development that probably led to the popularization of the discourse in the new millennium.

-The World Conservation Strategy: Focuses on biodiversity processes in conservation (1980)

The *World Conservation Strategy* recognized that addressing environmental problems required long-term effort with the integration of environmental and development aims (UNEP, 2002). The World Conservation Strategy also aimed at government policy-makers, provided a focused approach and was not a document for discussion (Adams, 1992). It was envisaged that nations would take initiatives to put into place strategies to address issues like poverty and land degradation. The key focus of the conservation strategy was environmental education and public awareness. During this time sustainable development was starting to be implicitly defined (Adams, 1992; Jickling, 1994; Janse van Rensburg and du Toit, 2000; Pronk, 2005). There are different views on the World Conservation Strategy. Redclift (1984), on the one hand, is of the opinion that the strategy did not give much attention to social and political changes. Caldwell (1984), on the other hand, believed the strategy to be a comprehensive plan for political change while Adams (1992) alludes to the point that the strategy was a repackaged representation of environmentalism. The strategy, as viewed by others (e.g. Hattingh, 2002) is viewed as an integration of anthropocentric (human needs focus) and a community of life. As can be seen by this brief example, as early as the 1980s, strategies such as these linked to discourses of sustainable development were being questioned, debated and articulated, and viewed differently by different communities.

-Publication of the Brundtland Report – Report of the World Commission on Environment and Development (Our Common Future) (1987).

The *Brundtland Report* presented some of the facts of the negative impacts of world development on resource use and the environment, and emphasized an urgent need for increased action to respond to the negative impacts (Redclift, 1989; Adams, 1992; McDonald, 1996). The report provided one of the first definitions of sustainable development (UNEP, 2002; Treurnicht, 2002) as stated later in Section 2.2.1. Inherently based on the ecologic domain, the report drew attention to the importance of other crucially linked domains to sustainable development for example, the socio-political (which included the economic domain). An important conclusion of the commission was that existing decision-making approaches at that time (1980s), both nationally and internationally, were unable to cope with the demands of sustainable development (UNEP, 2002). The latter

statement could be interpreted as hinting for improved understanding and possible changes in governance and decision-making practice that would be needed to address the complex environmental problems facing humanity.

The paradigms of those in power (e.g. government) are almost always different to those outside of the power (Pronk, 2005). With sustainable development becoming much more focused in the 1980s, mainly through governmental and other agencies, the discourse of sustainable development became more centre stage but also attracted more agents and players each articulating their own perspectives and agendas on sustainable development (e.g. Jickling, 1994; Robottom, 2007).

2.1.4 Decade of the 1990s

Various events in the 1990s provide evidence that the momentum and mainstreaming of sustainable development was accelerating to the point where the 'world' was discussing the discourse as a possible key strategy to address environmental concerns, through politics and education. The *Earth Summit* is thus considered as a key event of the 1990s for its focus on the environment and on education.

-Earth Summit (Rio de Janeiro, Brazil – adoption of Agenda 21) (1992):

The Earth Summit more commonly referred to as the *Rio Summit* was considered by the United Nations as one of the biggest meetings of leaders of states (United Nations, 1993). A number of agreements were signed including *Agenda 21*. *Agenda 21,* a document of over 500 pages (over 38 chapters), in essence translated principles of sustainable development into programs and projects of action which included advocacy, applied science and diplomacy (McDonald, 1996; UNESCO, 2003).

Agenda 21 can be considered a blueprint for the 21st century. In Chapter 36, for example, it is recognized that education and public participation in education are important for sustainable development (Janse van Rensburg and du Toit, 2000; Hopkins and McKeown, 2002; Corcoran and Osano, 2007). The frequent use of the terms "education" and "awareness" in *Agenda 21* clearly showed the central positioning of education to focus on the goals of sustainable development (Irwin and Lotz-Sisitka, 2005; Loubser, 2005; Tilbury and Cooke, 2005). It is this kind of influence of international documents, conferences and agreements, however, that makes strategies to address environmental concerns, appear as a blueprint rather than a tool and input for further discourse, dialogue and interaction to broaden thinking. The issue both then and now in the present decade,

remains the criticism of the sustainable development discourse, which arguably within a political context then begins to provide a definition, and focus around which further discourse emerges.

2.1.5 Present Decade of 2000

In the present decade, the discourse of sustainable development is included in almost every document and event that relates to environmental concerns. Two key events of the present decade are discussed in the context of this research. The first is the World Summit on Sustainable Development and the second is the United Nations Decade of Education for Sustainable Development as both are underpinned by the discourse of sustainable development.

-World Summit on Sustainable Development (WSSD) in South Africa (2002)

The initiatives of sustainable development in the nineties seemed to be slower in implementation but rapid in conceptual development and debate (UNESCO, 2003). In response to the slow implementation of sustainable development and with the advent of new complexities like HIV/AIDS, growing poverty, world leaders and stakeholders came together at the World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa, 2002.(Bigg, 2005).

A more comprehensive framework for sustainable development was endorsed at the World Summit on Sustainable Development. The framework included the following points (UNESCO, 2003; Moosa, 2004, p234):

- that there are three pillars of mutual reinforcement central to sustainable development viz. economic, social and environmental;
- that sustainable development is addressing complex interrelationships of issues like poverty, consumption of resources, environmental degradation, violation of human rights, population growth and health,
- that sustainable development programmes need the support of all stakeholders, not only government,
- that follow up on the summit goals will provide a yardstick to measure the extent of success or failure of progress on sustainable development.

While the above points advocate an inclusive approach to various environmental issues, concerns about the WSSD has been raised amongst critics. One of the concerns was the place where the meeting and interactions were held. Sandton is an up-market suburb in Johannesburg where the summit was convened. Bond (2002) raises the point that a rich suburb as a site for a summit, that is

focusing on poverty and equity, is a contradiction. The event could have taken place in an area that needed improvement in both environmental and human conditions rather than in an area that served to boost the national economy. Two other concerns of the WSSD can be identified. The first, is that while it may be perceived as progressive for governments to negotiate ways of addressing sustainable development, there is still a major difficulty in understanding the actual challenges that exist and are required to be understood and eventually implemented at grass roots (Rosenberg, 2004; Bigg, 2005). The second concern is how one measures success of such summits. A pro-government representative, for example, is likely to view the coming together of governments possibly as major 'show' of success of the WSSD (Bigg, 2005). Others may possibly be likely to be more cautious about equating representivity with action.

An implementation agenda was endorsed by the participating nations in the WSSD, although it was acknowledged at the summit that sustainable development was conceptually complex. The Johannesburg Plan of Implementation (JPOI) was a result of the WSSD. The JPOI encompasses economic, social and environmental foci of sustainable development (Department of Environmental Affairs and Tourism, 2005). While there are questions about the implementation of sustainable development and policy frameworks in the context of the JPOI, there is no doubt about the relevance and debate on the discourse (Hanley and Atkinson, 2003). As is shown in this research, implementation agendas (e.g. including *in situ efforts*), using an environmental centre as a recognized stakeholder engaging with the sustainable development agenda, are not simple undertakings.

The United Nations Decade of Education for Sustainable Development (2005)

The key focus at present is the *United Nations Decade of Education for Sustainable Development (UNDESD).* On March 1st, 2005, in New York the United Nations launched the *Decade of Education for Sustainable Development* i.e. the period 2005 to 2014 (McKeown, 2005; Lotz-Sisitka, 2006). There is need to point out the connection between the UNDESD and the WSSD as Education for Sustainable Development and sustainable development are linked in the discussions in this thesis. At the WSSD, education was proposed as a way of addressing global objectives of sustainable development and endorsed as the United Nations Decade of Education for Sustainable Development (Lotz-Sisitka, 2006). With Education for Sustainable Development having been formalized at a political forum, and with different views on the discourse of education and learning such as social constructivism (Janse van Rensburg and du Toit, 2000; Price, 2005; Chikunda, 2007), social learning (Hart, 2007) and free-choice learning (Heimlich and Storksdieck, 2007), Education for Sustainable Development in the context of the UNDESD has also become a focus of wide

debate, discussion and an evolving discourse of its own. The UNDESD is discussed in more detail later in this chapter.

2.2 Views and perspectives on sustainable development

As is shown above, the discourse of sustainable development has been underpinned by different frameworks. Almost two decades have gone by and there is still wide discussion about the sustainable development discourse (Wals, 2007; Hajer, 1997). There are different views and arguments about the conception of sustainable development for which there are a number of responses including, open support, support with reservation or open criticism.

2.2.1 Philosophical underpinnings and frameworks of the sustainable development discourse

The frameworks that underpin the sustainable development discourse discussed in this sub-section are ideas of development and economic growth, world-views, environmental ethics and environmental justice. The sustainable development discourse does not necessarily replace all previous ideas of development but instead provides a basis for thought, questions and answers which could also be radical (Treurnicht, 2000). The different frameworks and perceptions presented in the discussion which follow have also been used as the basis for arguments in the synthesis of the findings of this research on the engagement of the environmental centre with the discourse of sustainable development. While philosophical underpinnings of the discourse of sustainable development have been presented separately, there are links, for example ethical issues and ecological concerns, that can cut across these aspects.

2.2.1.1 Ideas of development and economic growth

In the context of sustainable development, ideas of development are embedded in different aspects of life *viz.*, economy, socio-political and environmental. In the ambit of socio-political power and economics, development is open to manipulation and can become a tool for marginalization Swanepoel (2000) and Rosenberg (2004). A closer examination of the previous statement in the context follows.

A common interpretation of development is that development is about improving living conditions and the needs of people (Bartelmus, 1994; Redclift, 1994; Haines, 2000). In the 1990s the economic growth model was revitalized (Redclift and Sage, 1994). This is, however, a simplistic interpretation of development which ignores the role and power of economics and of politics.

Development, when likened to the creation of economic growth, implies that natural resources are transformed into “goods” for human use (Redclift and Sage, 1994). In this context, the interpretation of nature was that it is a form of capital. There is a move towards an enlargement of the view of nature as capital (Ekins and Max-Neef, 1992; Redclift and Sage, 1994; de Wit, 2004). The problem is that by using common economic terminology like ‘capital’ to value nature, nature then is interpreted as a commodity. Whether development is viewed as sustainable development or pure economic growth, clearly there are problems it poses for finite ecological systems. It is for this reason that the economic growth model as sustainable development is often questioned (Bartelmus, 1994; Rosenberg, 2004; Judson, 2007). Judson (2007), for example, believes that sustainable development in reality cannot exist because ‘sustainable’ and ‘development’ oppose rather than support each other. Rosenberg (2004) further points out that sustainable development is not about economic sustainability but rather what kind of economy is likely sustain people and the planet. Notwithstanding such differences, more careful analysis of the points of Rosenberg (2004) and Judson (2007) show that the economic dimension remains relevant to the discourse of sustainable development.

An argument for careful interrogation of the discourse of sustainable development, and endorsed by some politicians, is that it offers an accounting of environmental processes perspective (Bond and Hallowes, 2002). Responsible growth is needed to satisfy human needs, as near-term decisions may have long-term environmental impacts (Treurnicht, 2000).

The view of sustainable development as an accounting process, however, is not a simple one. Hattingh (2002), for example, has pointed out that the desire for capital gain is more evident rather than raising questions of human purpose on earth. Even with responsibility of accounting of environmental processes i.e. the economic sectors’ efforts to examine the ability to consume and accumulate beyond earth’s limits (Bond and Hallowes, 2002), accounting of environmental processes does not respond to social issues of sustainable development. Despite economic growth in parts of the world, there is still persistence of large-scale poverty, disease and unemployment (Rosenburg, 2004). The owners of ‘strong’ capital benefit while those with ‘weak’ capital (where the real need for development is) do not experience the benefits (Haines, 2000).

2.2.1.2 World-views and sustainable development

There are also several world views of sustainable development that reflect certain departure points and paradigms that frame the design of a certain discourse on sustainable development e.g. ecological, economic, social etc. Different world views are discussed in the paragraphs that follow.

World views such as the expansionist world and ecological world further highlight other areas of debate and divergence in the discourse of sustainable development (Cairns, Jr, 2003; Jepson, Jr. 2004). An expansionist world view, according to some, is homocentric with foci that incorporate human objectives of economic benefits, satisfaction of individual and community needs and wants (Harrison, 2000; Hattingh, 2002; Cairns, Jr, 2003) while in the ecological world view, includes a focus that is centered on degradation of the environment, use and the sustaining of natural resources (Cairns, Jr, 2003). McDonald (1996) is of the view, for example, that ecological sustainability may be a necessary condition but it is insufficient unless the socio-political domain is internalized within the ecologic domain.

This brings one to the role of science (see for example Burns and Weaver, 2008), which is often looked on as providing possible solutions for sustainable practice, but how effective are these solutions – quick-fix or long-term solutions? The major question is: What are the "other" effects of these possible scientific solutions? (see for example Burns and Weaver, 2008).

Finding one, simple and comprehensive assessment of sustainable development is further frustrated because environmental issues vary across social groups, because of amongst other factors, social and institutional value differences (Stirling, 1998; Berkhout, Leach and Scoones, 2003). While there is a belief that science is important for seeking solutions there are also ethical concerns which relate to the goals of the solutions (Cairns, Jr., 2003). Hanley and Atkinson (2003) allude to the point that the use of a scientific approach to measure sustainable development progress has its limitations because of the different conceptualisation of sustainable development. A concern within the ecological world view, for example, and with ecological modernization, for example, is how humans assess ecological and other risks that arise along certain development pathways and how one can respond in time to risks that are perhaps not yet known (e.g. Beck, 2004; Hajer, 1997).

Discourses can also be of a discursive nature and therefore different positions, as outlined above, on an issue are not surprising (Edley, 2001, Horton-Salway, 2001). In the context of world-views and sustainable development, reductionist westernized world-views are criticized by some particularly with reference to the nature of and the root causes of environmental problems (e.g. neoliberalism) faced in different parts of the world (Treurnicht, 2000; Pieterse, 2001; Bond, 2002).

2.2.1.3 Ethics and sustainable development

Other areas of conceptualisation that add to the mix of perceptions and framing of sustainable development discourse are those related to ethics. Environmental ethics is associated with the responsibilities of humans in their interaction with the environment (Hattingh, 2004). According to

Cairn, Jr (2003), humankind needs sustainability ethical consensus to address current unsustainable practice and to provide guidelines for sustainable practice (Cairns, Jr., 2003). However, Hattingh (1999; 2004) has raised questions about environmental ethics and how the different views and ethical perceptions can make it difficult to reach consensus. Hattingh (2004, p80), for example, puts across three perspectives as a point of departure for ethical discussion viz: instrumental value, intrinsic value and radical transformation. The perspectives of Hattingh (2004, p80) are further elucidated in the paragraphs which follow.

(i) Instrumental value: According to this perspective humans have intrinsic value (for humankind itself) while everything has value as long as it meets the needs of humans. This view is anthropocentric and does not consider the "critical" natural capital that can limit human activities or the vulnerability of human impact on nature (Alrøe and Kristensen, 2000). Brown (1981) and Hattingh (2002) argue that with vulnerability and transition of nature, the materialism of humankind over the long-term will not survive as it will not compensate for the loss of nature.

(ii) Intrinsic value: This perspective acknowledges that there is need to value nature beyond "human-use-value". Using the argument of Cairns, Jr (2003) intrinsic value is ethically defensible if the assumption is that humankind and natural systems are co-evolving in a way that is beneficial to both.

(iii) Radical transformation: This perspective encompasses variations which include a focus on root causes of environmental problems with proposals for radical transformation in behavior, mindsets, social structures, organizations and in decision making processes. Brown (1981) argues that circumstances change and therefore certain values need to change, and in the case of the sustainable development, there may be need to change certain values (e.g. over-emphasis on materialism).

The ethical perspectives presented above show that ethical consensus within the discourse of sustainable development may be more a utopian vision than achievable in reality. However, Brown (1981) and Hattingh (2002; 2004) are of the view that even given the wide value positions on environmental ethics, there is growing need for pragmatic environmental ethics to guide human activity. The way in which people value nature in cultures affects their own way to manage the environment (Redclift and Sage, 1994). The value of engaging in environmental ethics agendas lies more in the debates from different perspectives than arriving at a solutions, and as well as how problems and solutions are formulated (Hattingh, 2002).

A criticism of environmental ethics that can be raised within the sustainable development discourse is that there is potential for a perception of ethical monism (Hattingh, 1999). The roots of this

perception could lie in the political dimension of society where the sustainable development discourse has been widely supported and advocated (for example the World Summit on Sustainable Development). While Hattingh (2002; 2004) supports the ethical agenda of transformation, he cautions that interpretations of sustainable development are loaded with different perspectives. He is, however, of the opinion that radical questioning of human motives is important, if not, sustainable development will pass over as another ideological discourse while risks and environmental problems continue to grow.

2.2.1.4 Environmental justice and sustainable development

Another conceptualisation that adds additional complexity to the mix of perceptions and framing of sustainable development discourse is that related to equity and justice. Environmental justice can be defined as the right of all human beings to share equally in the benefits bestowed by earth (Adamson, Evans, Stein, 2002). McDonald (2002), however, extends the anthropocentric view to environmental protection. Environmental justice then, serves the dual purpose of trying to address the injustice of the past (human and environment related) and at the same time provides insights that may assist in preventing repetition of injustices in the present and in the future (Winstanley, 2004).

The call and expression for environmental justice is articulated in different ways that include activism, protest, education and using the rule of the law. The last form of expression, however, has implications within the South African context in respect to its democratic constitution. Firstly, entrenched in the Bill of Rights there is a section on the environment that calls for human rights and ecologically sustainable development. Cullinan (2004) is of the opinion that although there is provision for ecological sustainable development in the constitution, the reality is that there is a governance crisis. In fact Cullinan (2004) seems to advocate radical transformation in supporting a complete rethink of legal and political systems to make progress with the sustainable development agenda. An issue of concern is how the provision in the constitution translates into practice where there are other policies that may currently have an advantage e.g. the Water Services Act refers to the regulation of basic water supply rather than a basic need, and, based on this act, water supply can be shut-off on the basis of consumer non-payment (Bond, 2002).

Environmental justice, within the discourse of sustainable development, is thus not as straightforward (Bond, 2002) as it may appear. A factor that poses an additional challenge in navigating through discourses on environmental justice and sustainable development (South Africa being a relevant example) is the acknowledgement of traditional leaders and practices. The recognition of traditional practice impacts on the discourse in two ways. Mutwa (2004), for example, alludes to traditional practice of punishment such as performing the same action that the

human subject inflicted for example on an animal or by burning down of huts and torture for the damage done to nature. While the traditional practice supports environmental protection and the use of resources it also contradictory to constitutional human rights to torture humans as advocated in response to those who violate the laws of nature. This point links environmental justice to the worldview perspectives that underpin the discourse of sustainable development. It is the interconnectedness of the philosophical underpinnings moreover that adds to complexity of the sustainable development discourse.

2.2.1.5 Vulnerability and sustainable development

Finally, vulnerability to changes (either external or internal), can also undermine sustainable development efforts. Vulnerability is associated with economic, social and political changes influenced by socio-economic processes such as globalization, migration and urbanization and includes health issues as well as environmental issues like droughts and floods (Bond, 2002; DEAT, 2006). Vulnerability can be driven by a number of factors including biophysical and socioeconomic. According to Bond (2002) and Beck (2004), for example, modernization systematically resulted in economic and social inequalities. For example, Bhaduri and Barbier (2008) have pointed out that population growth and economic development together with rising scarcity of water has led to increases in the cost of water in many parts of the world. The increased costs of water mean that the situation of the poor and the unemployed becomes worse rather than better. Similarly, DEAT (2006) and Nattrass (2007) concur that HIV/AIDS and unemployment also puts pressure on the lower social rungs of society. Pronk (2005) points out that, economic inequalities are more manageable because redistribution of the economy is likely and the upliftment of one group does not necessarily mean a loss to the other. Vulnerable communities usually lack the capacity to protect themselves against either external or internal stresses (Bond, 2002; Clarke, 2002; DEAT, 2006), and sustainable development becomes much less of reality particularly when vulnerable communities are located near hazards of high pollution, contaminated water and biodiversity loss.

The different views on the discourse of sustainable development, some of which have been outlined above, all show why the concept or term is open to discussion despite being endorsed within the political arena at the World Summit on Sustainable Development as if there was agreement on its meaning and articulation. While Treurnicht (2000) is of the opinion that the discourse of sustainable development has been refined, ten Kate (2007), Judson (2007) and (Robottom, 2007) allude to the point that sustainable development is still fundamentally debatable on the basis of perception, interests and conceptualisation. In the next section conceptions and definitions of sustainable development are discussed.

2.2.2 Conceptions of sustainable development

The desire for development, as a result of the progressive consumption needs for the growing number of humans increasingly conflicts with the ability and sustainable capacity of the environment to provide the services for human dependency (Harrison, 2000). The discourse of sustainable development, as the historical synopsis presented in 2.1 and discussions in 2.2.1 have shown, has become one of the defining discourses in relation to the conflicts between human consumption and the ability of earth to continue to provide. Conceptions and definitions of the discourse are further explored in the rest of this section.

The UNESCO draft implementation scheme on ESD (UNESCO, 2004, p7) makes reference to the definition of sustainable development as stated in the World Commission on Sustainable Development (also known as the *Brundtland Report*) as:

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

The definition provided in the *Brundtland Report* of 1987 raised more questions than just a suggesting a response (Jepson, Jr., 2004). Imprecision in the conceptualisation of sustainable development makes it too inadequate and porous (Jickling, 1994; Judson, 2007) to be applied with confidence. Needs may have different interpretations to different echelons of society; how far into the future should generations be considered and how valid is sustainable development for the poorer sectors of society (Gonzalēz-Gaudiano, 2007). It is also an assumption in the *Brundtland Report* definition that supposedly appropriate actions in the long run will actually contribute to sustainable development and not cause greater degradation (Jickling, 1994). There seems to be no direction to what happens when human needs and environmental providence conflict with each other and this could justify the need for developing an agenda for environmental ethics (Hattingh, 2004).
From a local perspective, the South African White Paper (Department of Environmental Affairs and Tourism, 1999, p166) refers to environmental sustainability as "*the ability of an activity to continue indefinitely, at current and projected levels, whilst maintaining or substituting for social, cultural and natural resources required to meet present and future needs"*.

The definitions contained in both the *Brundtland Report* and *The White Paper* (South Africa) seem to be broad, raising the question again: What does sustainable development mean and what is expected of organizations. The *Brundtland Report* seems to be based on achieving outcomes (Jickling, 1999). The concern is that when the sustainable development agenda is presented in the

form of achieving outcomes, the agenda becomes underpinned by exclusivity. On the basis of exclusivity, sustainable development or sustainability is not viewed as a process and excludes evolving ideas or innovations that may be valuable to addressing environmental change and issues.

Two quotations on sustainable development from the works of other authors are presented to show variation, similarities and inconsistencies in the conception of the discourse. The first has a strong focus on values.

Sustainable development to me is a conceptual starting point for representing the multiple values associated with maintaining a qualitative standard of living for current and future generations (Ashe, 2007, p3).

Interrogation of the definition shows how difficult it is to come at one meaning or interpretation of sustainable development. It seems that the definition presented above has an anthropocentric focus (Jepson, Jr., 2004; Hattingh, 2002). "Standard of living" is open to interpretation. This could refer to material standards with a lesser focus on values that relate to the environment. The focus on values in the conception of sustainable development in the above quotation adds to the complexity of the discourse. However, an ethical agenda of transformation is proposed in the quotation. Values can be considered key to the evolution of a sustainable lifestyle not only to influence behaviour but to determine the priorities of society and its ability to survive (Brown, 1981). In the context of values, the discourse of sustainable development should challenge thinking and action with the regard to the self and one's purpose on earth (Hattingh, 2002). One of the problems with the conception of sustainable development, much like in the above quotation, is that quite often the important role of values in introspection, in questioning culture and character is too easily dismissed in dominant centres of society (Brown, 1981; Hattingh, 2004). Society is becoming aware about environmental issues but not necessarily alarmed (Cairns, Jr, 2003):

As noted, for environmentalists the term 'sustainable development' may be understood in terms of conserving resources or balancing the needs of present generations with future generations. For economists it supports the idea of the earth as resource for exploitation and continued economic growth (Judson, 2007, p5).

The second quotation (above), for example, focuses on the conservation of resources and raises caution of a biased understanding of the word "development". Sustainable development can be considered an oxymoron because there is incongruence between "sustainable" and "development" (Judson, 2007). The issue is that there is increased exploitation of earth's resources to meet the development needs of humans. Human activity is putting such tremendous pressure on the Earth

that its ability to sustain future generations can no longer be taken for granted (Millennium Ecosystem Assessment, 2005). It is possible to take decisions and action to live sustainable lives but of concern is that is sustainable development possible while maintaining the current high level of energy and material consumption? What makes the definitions of sustainable development (like the one presented above) open to interpretation, is that there is no limit on generations, on the scope of and substance of human needs over time (Bartelmus, 1994; Johnson, 2007). Therefore sustaining the Earth's resources and exploiting the Earth's resources at the same time seems illogical.

The issue of sudden versus slow onset changes further frustrates simple analysis. Environmental change can be considered a "chronic" process (Gregory and Miller, 1998), also influenced by natural disasters. The idea that environmental change is continuous or "chronic" creates further doubt about the discourse of sustainable development: Can the environment (earth) actually be sustained by humankind?

Patel and Combrink (1995) and Davis (1998) suggest that to translate sustainable development into practice would require planned strategies. However, there are problems in planning for sustainable living including incorporating all the dimensions of environment, economy and social in a balanced way (Jepson, Jr, 2003) and that subjective values and beliefs can be used to frame different environmental issues (Harrison, 2000). The comments presented in the context of planning are significant in this study to find out whether the environmental centre intentionally plans for sustainable development and to what extent do the values and principles of the centre influence how the discourse is translated into practice.

In recognising the need for strategies to address environmental problems, the emergence and popularization of sustainable development seems to divide those with interest into two 'camps' based on their views. In one are those who openly support sustainable development with a tendency to downplay the inherent contradictions and doubts such as some governments, in adopting sustainable development as a strategy at the WSSD. In the other, there are those who openly raise the inherent contradictions and doubts (Jickling, 1999; Harrison, 2000; Judson, 2007). One of the aims of exploring the engagement of an environmental centre with the discourse of sustainable development is to therefore get a sense of how these two views and a range of a range of others are approached, accommodated and/or managed in practice.

In spite of the complexities in the definition, sustainable development should be interpreted as a process in a direction of improved accountability about the quality of the environment (Gonzalēz-Gaudiano, 2007). The attention given to the discourse of sustainable development has highlighted

limitations of natural resources, the overlapping of separate disciplines, and has renewed debate on the policies that guide development (Brown, 1981; Harrison, 2000; Gonzalēz -Gaudiano, 2007).

2.2.3. Who engages with the discourse of sustainable development?

By way of a brief summary, the literature review presented here shows that people from a variety of fields engage with the discourse of sustainable development in a variety of ways (e.g. Lomborg (2004) - an environmentalist, Bond (2002) - a researcher and campaigner for environmental justice, Clarke (2002) - an environmental journalist, Dladla- (2002) a representative of an environmental development agency and Wals (2007) - who works in the fields of education, social science and environmental education). Governments also engage with the discourse of sustainable development from various policy perspectives and in their efforts for implementation e.g. National Sustainable Development Strategies (International Institute for Sustainable Development, 2004).

The points above show the complexity of the discourse of sustainable development. The diverse contestations all show the complexity of the discourse of sustainable development. Power, economic dominance on the quantity of development without consideration for the quality of development and existing socio-economic inequities further heighten complexity.
The big question that emerges is: what and whose interest does sustainable development eventually serve, and can "ecological modernization" contribute to quantity and quality increase simultaneously? The response to the first part of the question is not straight forward. The WSSD is a good example of the complex response. With the focus on approaches to poverty eradication the interest of society seems to be priority in the WSSD. However, the coming together of governments in the WSSD to negotiate global interests could restrain global capitalism or support global capitalism in the interest of government (Bigg, 2005). An appropriate response to the second part of the question is that of Bond (2002) who notes that the goals of sustainable development in reality can be so contradictory that reconciling quality and quantity sometimes becomes impossible

2.2.4 Sustainable Development: Blueprint or process approach?

Having navigated through a complex set of notions and ideas attention now turns to making some sense of such discourse when used for implementation and action, in the case of this thesis for education. There is need to elucidate the two approaches viz. blueprint and process that seem to oppose each other within the context of the discourse. Both approaches to the discourse of sustainable development are frequently used throughout this thesis to understand the engagement with the discourse.

2.2.4.1 Sustainable development: a blueprint?

Blueprint in the context of this thesis is used to refer to approaches that come across in a deterministic way with coherent and cohesive guiding principles which intend to achieve preset goals non-negotiable way (Jickling, 1999). It is not usual to find the *Brundtland Report* definition of sustainable development in policy documents or frameworks. A good example of this stance is in the National Sustainable Development Strategy for South Africa (Department of Environmental Affairs and Tourism, 2005). It is clearly claimed in the document in section 2.1 “our definition of sustainable development” and not as “our working definition”. The purpose of this stance in a national document seems to be to impose an imperative of belief or action, which is not open to discussion.

The blueprint approach could be viewed as problematic especially in the context of policy related to sustainable development. Logically a problem must be defined before a solution can be explored or implemented (Harrison, 2000). While there are divergent views on sustainable development, claiming ownership of a definition for policy frameworks reflects particular value judgments which may not necessarily match the needs of society in implementation strategies. An approach to sustainable development different from the blueprint approach is the process approach, discussed in the next section.

2.2.4.2 Sustainable Development: a process approach?

According to Hattingh (2002) and Fien and Tilbury (2002) a transformational agenda has always been associated with sustainable development. Transformation refers to a process. The intention of the transformation agenda is to challenge dominant patterns in society (Brown 1981; Hattingh, 2002). The process approach is more than a challenge to patterns of social organization, production and societal governance. Tailor-made solutions are not available in the kind of conflicts between human needs and the ability of the environment to provide for those needs. Flexibility and openness rather than imposition is more effective to enhance willingness to transform (Treurnicht, 2000).

An approach to sustainable development supported in the literature is the ‘learning process approach’ (,Janse van Rensburg; Scott and Gough, 2003). Scott and Gough (2003, p41) bring attention to three criteria for the sustainable development learning process *viz*:

- a sharing across disciplines to the sustainable development debate,
- the engagement of disciplinary specialists and other stakeholders with each others' insights in non-dominant ways and ,
- different kinds of learning interventions need to be considered as people and institutions come together with different value dispositions.

2.2.5 Education for Sustainable Development (ESD)

It has been recognized that economic trends are not sustainable as a response to environmental issues, instead education and training have been proposed as a tool to achieve a sustainable society (Hopkins and McKeown, 2002, Gough 2006). The first endorsement of sustainable development in the United Nations General Assembly in 1987 led to increased discussions with thoughts of education for sustainable development being captured in Chapter 36 of *Agenda 21,* as indicated at the outset of this chapter (Ashe *et al*., 2007). The efforts and work of individuals and organizations which begun in the 1990s, in the field of education and sustainable development, eventually contributed to the United Nations Decade of Education for Sustainable Development (McKeown, 2005).

The declaration of the United Nation's Decade of Education for Sustainable Development (UNDESD) has raised many concerns e.g. whether ESD is just another slogan, is there any worth in ESD or is ESD any different from environmental education? These concerns or questions are discussed in the sections which follow.

2.2.5.1 Slogan: "Education for Sustainable Development"

"Education for sustainable development" has become a slogan that it is likely to support different interpretations (Robottom, 2007). It could support ecologic sustainable development, social sustainable development or it could be biased to the more popular view of economic sustainable development. Gough (2006) points out that there should be an approach to ESD to equally balance the social, ecologic and economic interpretations in an interrelated approach focusing on both personal and social change. An intention of this study is to explore the impact of the environmental centre programmes and their focus on the beneficiaries i.e. in their personal and professional lifestyles.

Education for sustainable development is a hybrid "concept" in that it brings together the roots of environmental education with the objectives of the United Nation Education Scientific and Cultural

Organization (Lotz-Sisitka, 2006). The international conceptualisation of Education for Sustainable Development proposes an education to enable all people (irrespective of age) to understand the complexities and interrelationships of environmental issues like poverty, indiscriminate consumption of resources and environmental degradation (Chikunda, 2007). With a general approach to discussions in documents of UNESCO (e.g. UNESCO, 2004; 2005) what exactly does the approach to sustainable development entail?

2.2.5.2 Worth of education for sustainable development

Although Tilbury (2004) points out that education and capacity building have been progressively identified as important to shift societies towards sustainable development, a concern, however, is whether ESD is being used as a promotional tool for an ideology (Jickling, 1999). In accepting ESD two assumptions are made. Firstly, that sustainable development is uncontested, and secondly, that education is a prescriptive discipline. Assuming that education is a prescriptive discipline, however, goes against the dynamics of change. Lotz-Sisitka (2002) has alluded to the point that there are changes in society and within education itself.

In South Africa significant changes have taken place within education system post 1994. The major change in the formal school context was from a syllabus and predominantly knowledge focused curriculum to a skills, knowledge and values integrated curriculum called the National Curriculum Statement (Aiello, 2001). The kind of learner that is envisaged in the new curriculum is one who will act in the interest of society, be a life-long learner, multi-skilled and an active citizen who will critically participate in society (Department of Education, 2002). With knowledge transfer approaches to learning being challenged, open-process learning has been found to be more meaningful and relevant (Taylor and Russo, 2002). An open-process framework that recognizes prior learning and that plans for engaged learning (finding information, exploring, investigating and taking action) is central to process learning (Taylor and Russo, 2002). This is opposite to the “blue-print” approach to sustainable development.

In the previous point the discussion on the discourse was framed within the formal school curriculum. Learning can also be a free-choice individual ontological process guided by different factors (Heimlich and Storksdieck, 2007). The characteristics of the free-choice learning include: that learners have their own agendas, their own motivations, have the ability to construct their own meaning, learning is continual and learning occurs across experiences (Heimlich and Storksdieck, 2007, p70). The point is that even if education for sustainable development in the formal curriculum was underpinned by a “blueprint”, there are likely to be clashes with experiences outside the formal context. Treurnicht (2000), and O’Donoghue and Neluvhani (2002) are of the belief that people

within a local geographical context are usually the experts in the local information. Therefore Education for Sustainable Development should not take for granted the audience, but needs to take into account the nature of the audience. The worth of a "blueprint approach" is questionable in the context of the discourse.

According to UNESCO (2004) Education for Sustainable Development needs to provide a scientific understanding of sustainability together with values for lifestyle changes that will promote transition to sustainable development. An important consideration then, is how the realm of science (knowledge, skills and values) is brought across to the participants given that a "blueprint" approach is not the most appropriate for sustainable development or for education for sustainable development. For lifestyle change, education needs more attention than a content focus (Davis, 1998). Knowledge and information is only part of what is needed for change in behaviour for sustainability. Therefore ESD is not only about knowledge but includes skills to plan, initiate and manage change in society (Tilbury, 2004). The key point is that ESD should be more than knowledge transfer. Scott and Gough (2003) point out that a qualitative tradition of learning views science as an iterative and reflexive process rather than a positivist, self-evident end. Opportunities for action within the education context, complementary with knowledge, might be more effective for behaviour change. According to Robottom (2007), ESD should focus on environmental issues with provision of opportunities for learners to engage and be part of the environmental resolutions. A focus in this research, to explore the approach to the communication of science in the context of the discourse of sustainable development, for example, is the focus on how knowledge is transmitted.

2.2.5.3 Education for sustainable development and/or environmental education

Having given some background both to education and sustainable development discourses attention now turns to examine the links, if any between the two. In the draft implementation scheme of the United Nations on the DESD (2004) a claim is made that sustainable development should not be equated with environmental education. The claim is based on the premise that environmental education is an established discipline based on the conservation, preservation and stewardship of the natural environment. Lotz-Sisitka (2004) and Tema (1999), however, allude to the history of environmental education, the development of environmental education in a constructive manner and its role in contributing to the sustainable development vision. Tema (1999) believes that there is a need to re-orient environmental education to sustainable development while Lotz-Sisitka (2004) states that it is difficult to leave out environmental education processes from ESD.

In the revised document on the implementation scheme for the DESD, in 2005, a more conciliatory approach is adopted by UNESCO. The categorical claim that sustainable development should not be equated with environmental education has been removed. However, it is acknowledged that expertise from the field of environmental education is necessary for capacity building, strategic planning and in the development of resources within the context of Education for Sustainable Development (UNESCO, 2005). This could be interpreted as a strategic political move not to isolate or antagonize those in the environmental education field against the DESD but engage them constructively in synergy for the success of the DESD.

In an international participatory study (50 registered participants from 25 countries), in the Netherlands debated ESD with four perspectives on the relationship between environmental education and ESD emerging (Hesselink, van Kempen and Wals, 2000). These relationships are represented in Figure 2.3. The situation still prevails that there is no national or international consensus on the relationship between Education for Sustainable Development (ESD) and Environmental Education (EE) as shown in Figure 2.3. A similar question was posed to participants in this research study in the environmental centre: What is your view about environmental education and education for sustainable development? The responses and analysis to the question are discussed in Chapters 6 and 7.

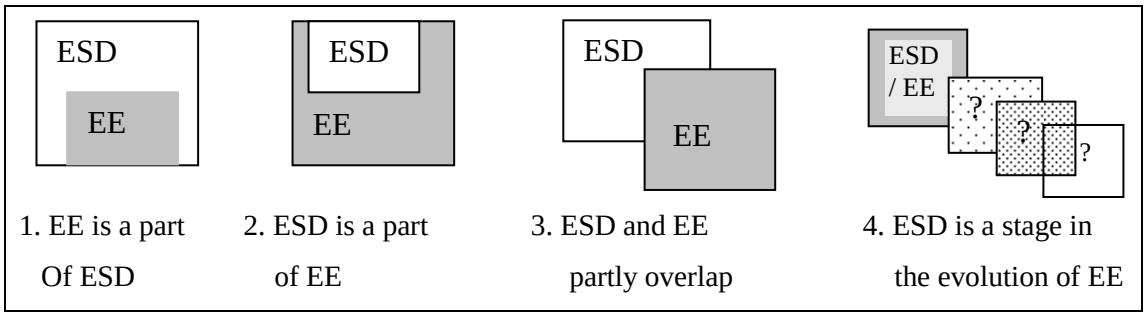


Figure 2.3 Relationship between Education for Sustainable Development (ESD) and environmental education (EE) adapted from Hesselink *et al*.(2000)

A reorientation of education, which is one of the thrusts of ESD (UNESCO, 2005), should not necessarily mean an abandoning of what exists, but a taking of what is required and adding on what is appropriate for sustainable development. Of importance to this study is that in the engagement with the discourse, how does the environmental centre deal with environmental education and ESD – is there some drastic change or a transition or integration in the context of the sustainable development discourse or is there no significant change?

Attention is drawn to the point of the downplaying of the second "E*"* in environmental education (EE) (Ward, 2003). In other words, Ward (2003) is saying that it is just as important to consider

education processes as a strategy to address the issues relating to the environment. Caution must be raised for there is a danger of the same happening in the implementation of Education for Sustainable Development. Education processes and dynamics may end up being downplayed while the issues of the environment become the focus.

According to Lotz-Sisitka (2004), environmental educators should critically engage with the vision of sustainable development rather than accept the vision as narrative .A focus on sustainable development as a goal of education limits learning opportunities especially if the goal is representative only of dominant ideologies favouring western world-views (Jickling, 1999; Stevenson, 2002; Lotz-Sisitka, 2004). Presently, in South Africa the constitution acknowledges and recognizes local and indigenous culture which implies that cultural world views are treated as important as western world views. Jickling (1999), Rosenberg (2004) and Lotz-Sisitka (2004) allude to concerns about Education for Sustainable Development that could see it being influenced by dominant western world views which could become manipulative. In other words, a western world view could mean Education for Sustainable Development being implemented in a way that would suit a western context, without the consideration of other cultural contexts of people. Janse van Rensburg and du Toit (2000) have pointed out that it is also important for learners to develop their own insights and around their local cultural contexts.

2.2.5.4 Education for Sustainable Development: Hegemony or leadership?

Organisations such as environmental centres engaging with discourse of sustainable development are likely to be faced with the aforementioned issues (like the definition of sustainable development) raised by various authors. The way in which the United Nations document on the implementation scheme for the DESD (2005) has been structured and the proposals it makes, however, gives the perception of a hegemonic approach. The principle of hegemony forms the basis of a “schooling paradigm” (Callewaert, 1999). Schooling or hegemony in the context of education for sustainable development would imply getting beneficiaries to believe and accept only one view of the discourse as the end.

Lotz-Sisitka (2004) highlights a concept called “governmentality” which can be likened to the schooling paradigm as a form of control and determinism. The concept of governmentality can also be used to examine power relations in documents for example policy structure and implementation (Ketlhoilwe, 2007). In this study, document analysis of the environmental centre has been a major focus, as well as numerous documents of governments have been alluded to for example UNDESD (UNESCO, 2005) and the NSSD (Department of Environmental Affairs and Tourism, 2007).

Governmentality serves to help in identifying where the power strategies are used and how they are used (Darier, 1999).

Nemerowicz and Rosi (1997) allude to socially responsible leadership which is leadership inclusive of a diverse people united by the search to define and act on common goals in the interest of the environment. Socially responsible leadership is different to "governmentality". Korten (1990) is of the belief that those who assist people in development should recognize that they support the peoples' agenda and not the other way around. As pointed out earlier both Jickling (1999) and Stevenson (2002) have indicated that it is going to be a challenge to find the common good which is going to satisfy the diversity, especially where cultural practices are diverse and dominant.

Governmentality and socially responsible leadership are important considerations when analyzing an organization's engagement with the discourse of sustainable development. On the one hand in an approach of governmentality a traditional impenetrable boundary exists between the organization and its beneficiaries, while on the other hand in socially responsible leadership approach there is a working together of the organization and the beneficiaries to explore solutions. However, the concern is how exactly within the context of education for sustainable development is power used by an organization. Is the power located within a schooling paradigm or within a context of socially responsible leadership? Popkewitz and Brennan (1998) believe that there is a need to question and identify the origin of power because education is intricately connected to other fields
With reference to the community-based environmental education model of Andrews, Stevens and Wise (2002) an important focus that could be raised as a concern within the context of this study: do the education activities at the environmental centre focus on building individual knowledge and skills or do they also focus on building an infrastructure for change that is sustainable, equitable and empowering for society?

Is it not then that a counter-hegemonic approach is more suited for sustainable development? Comprehensive education for sustainability must address all interactions and interpretations if it is to address the causes of unsustainability and challenge the predominance of technological modes of sustainability (Huckle, 1993). There should be a critical framework for analysis of alternative positions on sustainability to identify and challenge assumptions, to question the influence of context and the social interest and to adopt a reflexive skepticism to all ideas and actions (Fien and Trainer, 1993; Janse van Rensburg, 2000). Within the context of sustainable development there is need to become reflexive i.e. to consider the local context, question and challenge ideas and actions, examine alternates and replace them with new ones if need be.

2.2.5.5 Values and Education for Sustainable Development

A claim is made in the UNDESD document (2005) that the Decade of Education for Sustainable Development is fundamentally about values and principles. Hattingh (2002) and Corcoran (2003) believe that there is urgent need for humankind to follow peaceful path, questioning the purpose of human existence and this can be achieved through education by focusing on values across the diversity (of cultures, faiths etc.) of humankind.

The values we live by will influence how we relate to other people as much as to the environment and will be a key factor in achieving a sustainable future (James, 2001). The question remains, however, on whose values is sustainable development going to be based and how is an agreement on common universal values reached? Would common universal human values necessarily make education for sustainable development neutral? Values become an issue of contention especially if they are framed to the exclusion of the majority and without the participation of the majority in a democratic context like South Africa. The relationships between our social arrangements and consciousness would not be a problem if relationships were not complex (Popkewitz, 1997). Given the diversity of cultures relationships are more likely to be complex. It therefore remains necessary to identify the origin of power – the actors who control it and in whose benefit existing arrangements work (Popkewitz, 1999).

Brown (1981) and Caulkin (2007) are of the belief that there is moral obligation attached to environmental issues. Therefore debates, realities of environmental issues and social ideologies (like anthropocentrism and consumerism), within the context of education for Sustainable Development as a moral obligation, need to be introduced to the present and future generations. Those responsible for education (like educators and decision makers in the field of education) would have to eventually carry the moral blame for environmental destruction for not introducing debates on sustainable development to the present and future generations who might be naïve to destructive elements in modern lifestyles (Caulkins, 2007).

2.2.5.6 Challenges to Education for Sustainable Development

In the first document to describe education for sustainable development i.e. in Chapter 36 of *Agenda 21*, four key thrusts were identified (Ashe *et al.*, 2007) viz. the improvement of basic education; the reorientation of existing education for sustainable development; the facilitation of the development of public awareness and understanding, and the provision of training for all sectors of society.

In noting the four thrusts of ESD, and that ESD should be located within a local context there are certain challenges that could be faced in all parts of the world. It is prudent that we all give close attention to the potential challenges to sustainability (Bell, 1998). Firstly, around the world there are almost eight hundred million illiterate adults whose primary hope to escape poverty is a basic education (McKeown, 2005). There is a naïve assumption that economic, environmental and societal factors would be balanced and improved in all parts of the world if countries are able to provide the basic education with the urgency required for sustainable development. Secondly, in many parts of the world (like in South Africa), a diversity of cultures is to be found. Sustainable development, however, competes with entrenched values (The International Institute for Sustainable Development, 2004). The diversity of cultures (with embedded traditions and differing views) in a local context, and in addition political dissent and disagreement provides a great challenge to finding the resources and viable solutions for ESD to satisfy the diversity. Thus, a "one-size fits all" approach would contradict the diversity in society.

It is believed that change and not business-as-usual will provide the means to achieve the sustainable development option (Department of Environmental Affairs and Tourism, 2005). This change within the context of ESD would require a complete reorganization of existing curricula with principles and paradigms that underpin sustainable development (UNESCO/BREDA, 2006). Experience with transition in the South African education system has shown that change can be a resource intensive process as well, both in terms of finance and other physical and educational resources. With extensive external debt, economic and politically instability, in many countries the resource intensive change required for ESD is more than likely to seem far-fetched.

2.3 "Related", hybrid or alternate Discourses

It is not surprising that with diverse views and criticism, many within the political and academic international community have started to use related concepts of sustainable development such as sustainability or sustainable living (Fien and Tilbury, 2002 ;Gonzalēz-Gaudiano, 2007). In the section that follows the use of related terms is briefly explored. The word "development", with its seeming reference to economic growth, has been omitted. However, sustainability and sustainable living both include the concern for the environment and seem to share the same vision. In some papers sustainable development, sustainability and sustainable living (and environmental education) have been used interchangeably with author acknowledgement that they may not have the same meaning for all (Chikunda, 2007; Lotz-Sisitka, 2007). However, Hopkins and McKeown (2002) believe that the "naming" is not of the concern but rather practice and action are of greater

importance. Two commonly used related concepts to sustainable development viz. nd sustainable living and sustainability are discussed in the sections which follow.

2.3.1 Sustainable living

Sustainable living requires dialogue to shape and reshape changing situations more than trying to reach consensus about what sustainability is and might be (Wals and Heyman, 2004; Wals, 2007). Sustainable living involves developing values, being aware and is influenced by a world view of biophysical, socio-political and financial considerations to make sustainable lifestyle choices (*EnviroTeach*, Vol.14, 2005). The focus is on thinking and transformation without confusion on the economic connotation of development (e.g. reflecting on social and environmental lifestyle choices as well and taking action to change lifestyle choices).

Wals and Heyman (2004) suggest that dialogue is essential in a sustainable living approach. In the previous section in this chapter, diversity (of culture, values and political views) was raised as one of the key challenges to sustainable development. Dialogue has faced extensive challenge even in efforts to bring about peace in cultural clashes and in war torn countries. The critical grey area is: Does replacing sustainable development with sustainable living contribute to a change in reality or is it a theoretical narrowing of the possible misconception of development in a material sense?

2.3.2 Sustainability

The constant reference to sustainability may be interpreted as a way to obscure the contradictions attached to the noun “development” and connotation to economic growth (Gonzalēz-Gaudiano, 2007; Redclift, 1989). It seems more a “re-badging” (Robottom, 2007) of sustainable development than actual change of the vision to address the potential environmental limits that have been anticipated for human activities and the destruction that human activities is causing and has already caused. In the context of Robottom’s notion of “re-badging” it is an assumption that sustainability takes care of the confusion caused by the word “development” if in reality change in thinking, attitude or action does not take place. The replacement of concept with another for interpretive convenience can be described as a superficial linguistic substitute without an actual change of the broader vision and approach to environmental concerns. In Australia, for example, the term sustainability is widely used probably because it seems more relevant to a relatively “developed” country (Tilbury and Cooke, 2005). The omission of development raises the concern that environmental issues are likely to become a focus without due consideration to the other dimensions of economics and social needs.

A recent web-search by Ashe *et al*.(2007) of working definitions of sustainability resulted in no less than thirty commonly and widely used definitions. This shows the different interpretations of sustainability. Two of the definitions of sustainability sourced by Ashe *et al*. (2007, p1) are:

1. *meeting the needs of the present without compromising the ability of future generations to meet their own needs*
2. *development that takes account of the environmental consequences of economic activity and is based on the use of resources that can be replaced or renewed and therefore not depleted*

These two definitions of sustainability show differences in focus. The definitions, however, also show similarities with conceptions of sustainable development such as the anthropological focus of needs, generations and resource use. The first definition has a categorical generational concern (present and future). The second explicitly considers development in an economic sense with a focus on resources. A deduction from the previous points in this paragraph is that even with a related conceptualisation like sustainability divergence of views still exists.

Two conceptions of sustainability are offered by Vanderheiden (2008). One is the notion of carrying capacity and the other the notion of an ecological footprint. In the notion of carrying capacity focus is on the limits of the environment. A carrying capacity notion is limited in that there is encompassing focus while the more discrete issues related to humankind are likely to be downplayed. Cairns, Jr (2003) has pointed out that there is need for an interpretation of co-evolvement of both humankind and the environment in sustainability issues.

The notion of the ecological footprint it seems has a greater impact for implementation in the context of sustainability. The ecological footprint is a measure of the individual and collective demands of ecological resources. The ecological footprint suggests a process approach i.e. to think about practice and action, is inclusive of the rich and poor and is more applicable to encompassing and discrete issues (Vanderheiden, 2008). While the ecological footprint encourages a process approach, the limitation is that it has to be properly understood. The measure is also dependent on the integrity of the individual who engages with measuring the footprint. The major criticism of the ecological footprint is that it does not completely support the transformational agenda. Action or response to the outcome of measurement is what is required to wholly support the transformation agenda.

In spite of the many definitions of sustainable development, sustainability and sustainable living, three tenets suggested by Jacobs (1993) are common to all of three conceptions: (i) consideration of environmental issues interdependently with other issues like social and economic, (ii) a need for

commitment for social equity of environmental benefits and costs geographically and across generations, and (iii) a broader view of development beyond "growth" to include qualitative improvement of daily life. This provides reason for commonality of focus and why sustainable development, sustainability and sustainable living have been used interchangeably by many authors.

2.4 Engagement with Sustainable Development Discourse

There are examples of the ways in which different countries have engaged with sustainable development. In this section some examples are provided to illustrate convergence and divergence of the use of sustainable development. In some parts of the world governmental strategies have been developed or are in the process of being developed (International Institute for Sustainable Development, 2004) e.g. in South Africa a National Framework for Sustainable Development has been developed. In other parts of the world there has been attempt to roll out strategies for sustainable development and also within the context of education for sustainable development. The Japanese Government has established a special fund for ESD, in Sri Lanka action plans which consider ESD have been drafted, an international workshop on Engineering Education for Sustainable Development was held in China in November 2006 and in 2006 Latin America released a draft document for a regional strategy on building Education for Sustainable Development (UNESCO, 2007).

2.4.1 International responses: Australia and The European Union

The researcher acknowledges that examples of engagement with the discourse of sustainable development in an international context are many. Specific examples were selected to keep focus of the engagement within a context (in keeping with the case study approach in this research) rather than to provide an eclectic mix of examples. The selection of the examples was based on the potential to provide greater insight into the purpose of the study (section 1.4) and the research question. The examples were used to bring out a range of issues in the engagement with the discourse of sustainable development e.g. policy influence, educational issues, different approaches and challenges. A brief overview of the approach in each international response is presented followed by a synthesis of the challenges experienced.

2.4.1.1 Australia

In Australia there were a number of national initiatives to engage with sustainable development, more especially within the context of ESD. Tilbury (2004) reported that there were responses in

different sectors like in formal education, communities and in industry. Some of the responses based on the reporting by Tilbury (2004) in the different sectors are discussed in the paragraphs which follow.

Formal education: It was found that the formal education sector was most resistant to change towards sustainability, with recent slow change. No categorical reasons for resistance in formal education were cited by Tilbury (2004). However, research has shown that curriculum challenges to formal education are expected when there is need to reconceptualise or for reorientation (O' Donoghue, 1991; Lotz-Sisitka, 2002). In the Australian context, one needs to keep in mind that firstly, each state and territory manages its own formal policies. Secondly, that formal education is so highly structured that change sometimes means a reorientation that could involve financial resources, the development of new educational resources and capacity building amongst educators. However, the government was considering the inclusion of Education for Sustainable Development within the formal curriculum as a national curriculum statement.

The major and significant response seems to be the *Sustainable Schools Program* (Tilbury, 2004). The programme aligns resource management activities (like the use of water and energy) and biodiversity issues within the formal curriculum with deliberate and active engagement of the school (staff and learners). However, Gough (2006) alludes to the point that it is difficult for DESD activities to be achieved in schools where the responsibility for DESD activities, in certain states lie with environment departments and not with the department of Education, like in parts of Australia.

Community responses: Community programmes on sustainable development have been reported as being diverse with due consideration that community organizations have their own organizational policies and may also have competing interests (Tilbury, 2004). The foci of community programs included capacity building, action programmes and decision-making. The point to be noted is that communities are diverse and it is naïve to believe that a single approach or solution is going to be the panacea for the world's environmental issues.

Industry: In Australia it has been reported that businesses irrespective of size are experiencing difficulties with the sustainable development agenda (Tilbury, 2004). There is no real evidence of transformational change. Industry tends to quantify the development programmes in their sustainability reports with little consideration of impact on sustainability issues. Halle and Borregaard (2005) have raised the point that the harmony between development and environment policies is not always consistent. Two key concerns within industry are firstly, that there is no substantial evaluation (if it is ever carried out) and secondly, there is not enough knowledge to guide the industry and business sectors (Tilbury, 2004). The key point is that to track the progress

made or be critical of strategies for sustainable development, some kind of reflection or evaluation is necessary within an organization. Evaluation of practice in the context of sustainable development is also a focus of this research.

The Australian experience, as highlighted by Tilbury (2004), is significant in that it shows that a multiple approach to engagement with sustainable development in the context of ESD is possible. Of greater significance is that even with a multiple approach to sustainable development, challenges are eminent and that sustainable development may in reality be achieved over a period of time, if ever.

Two studies done in Western Australia, one, on the professional learning for teachers reported by Scott (2007) over a three year period from 2004, and the other a reflection on learning sustainability by Wooltorton in 2004/2005 have valuable contributions to show the value of different approaches within the context of ESD.. Discussion of both studies follow.

It is believed generally that education is the key to promoting public awareness and to motivating behaviour changes within households, communities and ultimately a nation toward a sustainable future (Scott, 2007). A few pertinent points arose from Scott's (2007) evaluation on a professional learning course organized by the Department of Environment and Conservation where educators were taken on the course over a weekend. The course was entitled *Be a Nature Conservation Officer for a Weekend.* It was reported that educators were exposed to a lot more of the biodiversity in their natural local environment than before the course. The approach also shows that nature conservation is part of the sustainable development discourse and should not be excluded.
An action research study (within a classroom context), done by Wooltorton (2007) involved a reflection on how a reorientation of approach to learning promotes learning towards a sustainable future. Business-as-usual is not going to contribute to a sustainable future, some reorientation to education is necessary. This comment is in line with Chapter 36 of *Agenda 21* that a reorientation of existing education is needed for sustainable development.

According to Wooltorton (2007), in 2004 the business-as-usual approach with a group of twelve year old learners was used. The learners excelled academically, but showed little awareness or change in behaviour about the environmental limits of earth. The learners were locked into the modern consumerist lifestyle (e.g. not caring about how they used energy). In 2005, Wooltorton used an approach embedded within the cultural discourse of sustainability to reorient the learners towards a culture of sustainable living. The cultural discourse emphasized interdependence and interrelationships and the need to make lifestyle changes in an experiential and participatory way. Brown (1981) and Hattingh (2002) have pointed out that there is need for sustainable development

to be underpinned by a transformational agenda. The reorientation of the approach from business-as-usual to a cultural discourse contributed to the learners willingly and enthusiastically displaying more environmental responsibility (e.g. the discriminate use of electrical energy in the form of lights and heaters in the classroom). The school in which the study was conducted took a decision at the end of 2005 to reorient the whole school towards sustainability.

The study by Wooltorton (2007) makes two succinct contributions to reorient approaches to education for sustainable development. One, information on its own about sustainable issues is not going to bring about change but rather a cultural reorientation is imperative, i.e. to get people to reconnect to their real life practice, to question their practice and dependence on indiscriminate consumerism, and to participate in taking action to address environmental issues. The second contribution of the study by Wooltorton is that there is a greater possibility that people would amend their habits if there is total dedication to reorient an organization's entire culture towards sustainability. The point is that an organization's mission and vision for sustainability should be more than just a written commitment. Commitment must become visible in the practice of the organization, in all aspects.

2.4.1.2 The European Union

The European Union strategy for sustainable development encompasses a coordinated focus of economic, social and environmental impact in decision-making (European Commission, 2002). Issues targeted in response to the World Summit on Sustainable Development included climate change, transport, public health, and natural resource management.

Action commitments in the European Union manifest, as in Australia, in various forms. Examples are changes in policy (at the highest level with sustainable development as the core concern); supporting of private sector responses; use of the "triple bottom line stance" - economic, social and environmental approach for organizational reporting; wide stakeholder consultation, making contributions to global sustainable development; leading by example and regular reporting on progress. More recently (UNESCO, 2007), a commitment was made by the leaders of the 27 member states of the European Union to reduce gas emissions. The commitment is based on a programme of measures on climate protection and clean energy with binding targets to reduce greenhouse gas emissions and to increase renewable energy sources by 2020.

In the United Kingdom, in response to ESD, there has been government commitment to a manifesto to promote learning outside the classroom but also within the immediate environment (UNSECO,

2007). This response reinforces the findings of the study done by Scott (2007) in Australia that the natural environment can provide a medium to inspire ESD.

2.4.1.3 Synthesis of the challenges: antecedents

Antecedents are described as that which exist within a context that supports or provides a challenge to something new or that is considered as new (Rogers, 2000). Responses and strategies in both Australia and the European Union have shown that there are implicit and explicit challenges when engaging with sustainable development and education for sustainable development. The challenges can be summarized as follows: resistance to change especially where fundamental organizational change is required; conflicts in interdependence; competition between organizational interests; inadequate resource support; inadequate understanding of what exactly is to be done; inadequate evaluation of progress; a tendency within organizations to measure against quantity downplaying quality of action; decentralisation of control and responsibility especially within government departments. These challenges will used to better understand the engagement with discourse of sustainable development within the context of the antecendents in the case study in this research.

2.4.2 Responses in Southern Africa

In the context of the Southern African Region responses within different contexts are provided as examples of engagement with the discourse. The first response, used as an example of a local response is a competition in one of the provinces (Gauteng) in South Africa. The competition was selected for two reasons. One was that it provides a context to discuss different approaches to participation and two is that it is an example of an effort in the context of the discourse that is still being implemented from inception in 2002. The second response is a consultation study conducted in Southern Africa in 2005/2006 within the context of Education for Sustainable Development. This example was selected to highlight different issues on Education for Sustainable Development within a South African context and contributions of consultative participatory process and research to the discourse of sustainable development. The third, is the National Strategy for Sustainable Development (NSSD) which is a National Governmental response. The third example was selected for its appropriateness to discuss government and policy framework and related issues on sustainable development.

2.4.2.1 Local response – Provincial Competition (South Africa)

In South Africa, within a local context, a competition environmentally branded as Bontle-Ke-Botho (English meaning – *being beautiful is being human*) was organized by the Gauteng Department of Agriculture, Culture and Environment (GDACE). This was a provincial strategy initiated in 2002 as a build up to and as a response to the World Summit on Sustainable Development and has since been sustained. The Johannesburg Plan of Implementation, an outcome of the World Summit on Sustainable Development committed all participating countries to targets and time-frames to implement sustainable development (Moosa, 2004) The Bontle-Ke-Botho competition is a response to meeting the sustainable development targets and commitments of *Agenda 21*, and the Johannesburg Plan of Implementation (GDACE, 2006). Scott and Gough (2003) have raised concern about social marketing (e.g. competitions) as a tool for sustainable development. The concern is that social marketing is effective, but for whom? Social marketing has the effect of doing little things within a particular focus, which is not what is expected in the conceptualisation of sustainable development. .

The competition approach was adopted to encourage and increase participation while at the same time engaging stakeholders in meaningful sustainable action. Tilbury and Cooke (2005) have identified that participation can take place through manipulative, passive, consultation, material incentives, functional, interactive or self-mobilisation approaches. The Bontle-Ke-Botho competition in South Africa seems to have used a combination of the consultation, material incentives, functional and interactive approaches of participation. Participation (Tilbury and Cooke, 2005) in the context of the competition approach to sustainable development is discussed in the paragraphs which follow.

Participation drive by material incentives: In being rolled out as competition, participation was motivated on the basis of material incentives for achievements in sustainable projects and activities. The winners were rewarded through prize-money. The fundamental concern about this form of participation is whether behaviour change had taken place and would continue even when the material incentive is no longer there.

Functional participation: The competition had predetermined functions and objectives based on sustainable development. The objectives of the competition emanated from *Agenda 21* and had three foci viz. environmental protection, job creation and poverty alleviation. These three foci were also high on the agenda of the World Summit on Sustainable Development. A criticism would be whether sustainable development was being used at some level as a blueprint for action and participation. Jickling (1999) questions whether the sustainable development discourse is a stepping

stone in the processes of thinking or whether it is a directive to ways of reorganizing shortcomings in practices and lifestyles. One of the limitations of using the sustainable development agenda as a directive is that within the transformation agenda sustainable development could become a narrative for participation rather than a tool for thinking through the processes of participation and action as well.

Interactive participation: The long-term intention of the competition was to encourage a change in behaviour that would contribute to local decision-making and action to sustain environmental practice. Through projects based on themes like energy, water, sustainable agriculture and greening, participants were encouraged to use systematic interdisciplinary methodologies to sustain their efforts. A precondition for sustaining projects would be intrinsic commitment. The 2006 report (GDACE, 2006) on the competition has shown that while some efforts were not sustained others were kept going at various levels. The key issue is: To what level was the participation contributing to sustainable development beyond sustaining of specific projects?

Self-mobilisation: The Bontle-Ke-Botho competition had motivated many stakeholders (both to stakeholders to whom the competition was open and to those who were not included - like community based organizations) to take independent initiatives for sustainable development practice especially in areas of greening the environment. The question is whether the self-mobilised participation is needed to drive sustainable development practice more than external motivation or material incentives. The question is raised in the context of understanding the engagement of Delta Environmental Centre with the discourse of sustainable development.

2.4.2.2 A Consultation study (Southern Africa)

In a Southern African context (Southern African Developing Countries - SADC) a variety of viewpoints and activities on sustainable development from an education perspective have been elicited through a consultation process over the 2005/2006 period. The consultation process involved about six hundred participants in total (government, civil society and private organizations) using different strategies like workshops and questionnaires (Lotz-Sisitka, 2006).

The present international discourse of interest to the United Nations relates to sustainable development from an education perspective with a focus on quality basic education (Lotz-Sisitka, 2006). Two basic thrusts of the consultation study were the interpretation of the Education for Sustainable Development discourse and the practice of Education for Sustainable Development.

The findings of the consultation revealed a number of gaps in using education as an approach for sustainable development. Some of the key findings (Lotz-Sisitka, 2006, p16) in relation to the gaps have been summarized:

- There is inadequate debate about sustainable development (especially within a Southern African context). A shift in thinking of sustainable development from the initial focus of sustaining resources to sustaining "development" has not provided sufficient framework to guide practice.
- There is need for critical review of the way sustainable development is interpreted and implemented in a variety of situations.
- There were responses to sustainable development issues (like land degradation, loss of biodiversity, deforestation, malnutrition, HIV/AIDS, unemployment and poverty). However, the responses focused on different issues in different places with varying intensity. The main issue was that the responses to sustainable development were not really centrally coordinated to have the expected collective high impact.
- Partnerships were recognized as pivotal to sustainability practice within southern Africa and there was an increasing sectoral participation (like the water and energy sectors). It was found that there was still a need to strengthen support for partner and sectoral participation.
- There is little guidance on how to involve people in practical sustainable development action.
- There was consensus that participatory, learner-centred and activity-centred approaches were used by those attempting Education for Sustainable Development. There was very little or a lack of comprehensive evaluative and empirical analysis of the value and effectiveness of the approaches.
- Scientific and environmental knowledge provided by scientific institutions was accepted as an "end". An area of concern was the role and practices of indigenous culture and knowledge and the need for more research and input.
- More attention needs to be given for appropriate and adequate resources to support teaching and learning within contexts of sustainable development practice.

A significant critique is that there is an array of practice especially in Education for Sustainable Development but there is a lack of systematic documentation of these practices and initiatives (Lotz-Sisitka, 2006). Tilbury (2004) reported a similar situation in Australia in the context of evaluation where there was a lack of documented evidence or evaluation was not done at all. The consultation study has shown that research is required to provide baseline information on practice and that there is need to document such current practice (Lotz-Sisitka, 2006).

2.4.2.3 The National Sustainable Development Strategy (NSSD)

The need for sustainable development was endorsed at the World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa, 2002. Through the agreement of the Johannesburg Plan of Implementation (JPOI) governments had committed to the establishment of National Strategies for Sustainable Development. In South Africa, five years after the commitment made at the WSSD and after almost two years into the Decade of Education for Sustainable Development, a National Sustainable Development Strategy (NSSD) was released in June 2007. The release was made under the banner of the Department of Environmental Affairs and Tourism. To date there is no separate national strategy for ESD.

It is interesting, however, to note that in some sectors of society there were proactive efforts in South Africa within the context of sustainable development. In June 2005, the DESD was launched at a conference in the Western Cape Region, with the Department of Environmental Affairs and Development Planning playing a coordinating role to ensure the inclusion of ESD in future developments (Calder, 2005). This however, is a common point with Australia that the lead in ESD seems to be taken by the environment department and not the education department (Gough, 2006; Tilbury, 2004). The conference which was inclusive of environmental educators and advocates of sustainable development engaged in discussions to map the way for sustainable development strategies without omitting education. The launch of the DESD inspired 21 schools from varying socio-economic backgrounds to participate in the first Youth Environmental Symposium in the City of Cape Town to mainly share ideas on and to discuss present sustainable development projects. The Cape Province Region is an example of participation through self-mobilization. There have probably been many more initiatives of self – mobilization in the absence of an official National Sustainable Development Strategy in other parts of country which may not have been documented.

It is not the intention to discuss the entire National Sustainable Development Strategy (NSSD) (a document of 97 pages) released in June 2007, as much of the strategy relates to issues of governance but to raise pertinent points related to this study.

It is stated in the NSSD that South Africa is influenced by the definition of sustainable development presented by the *Brundtland Report* of 1987. South Africa has gone a step further by formalising the definition of sustainable development in law.

The definition of sustainable development in the National Environmental Management Act (No. 107 of 1998) is as follows:

Sustainable development means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations. (NSSD, 2007, p 20).

Two key concerns arise from the definition of sustainable development in the NSSD. One is the approach. The definition of sustainable definition entrenched in law makes it a blueprint for action. In the NSSD document it is further claimed that:

The National Framework for Sustainable Development is not, and cannot be, all things to everyone, i.e. it is not the sum of all wishes and aspirations that span the economic, social and environmental spheres…. A critical component of implementation must be the development of a set of high-level indicators to measure progress. (NSSD, 2007, p 23)

The setting of indicators could be interpreted as an end to be reached and supports the notion of a blueprint. What may initially be perceived as high level indicators could become flawed with the influence of uncertain changes like diseases and natural disasters or through impact of not significantly addressing political unrest. The literature has shown that directives or closed notions (Jickling 1994; Scott and Gough, 2003) may limit the possibility of innovative ideas for sustainable development.

The second comment is on the definition itself. While the definition is clear on bringing in all three dimensions of sustainable development together, as a stand alone definition the focus on development could be still biased to the economic domain.

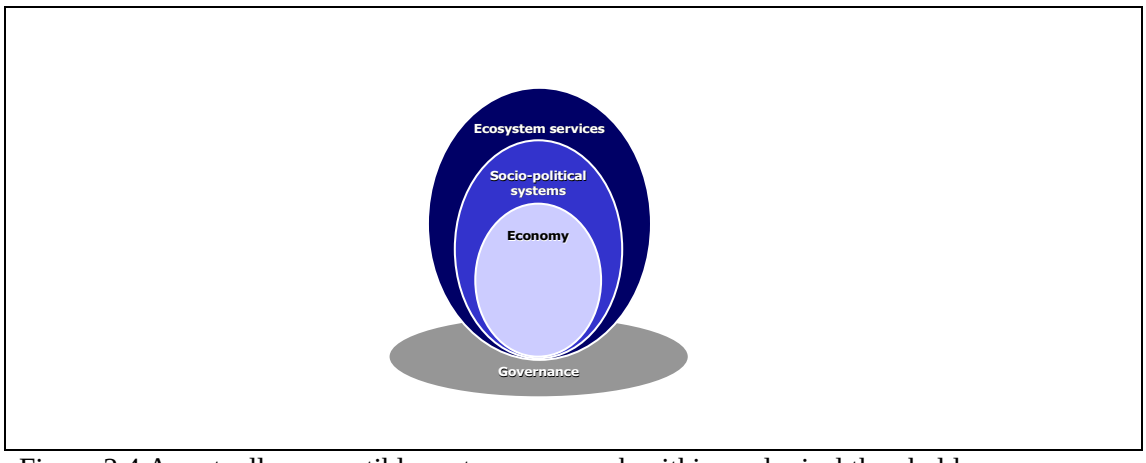


Figure 2.4 A mutually compatible systems approach within ecological thresholds (NSSD, 2007, p 21)

Figure 2.4 shows the NSSD conceptualisation of development within ecological limits. The NSSD document (2007) thus categorically refers to a mutually compatible systems approach within the

context of non-negotiable ecological thresholds. The approach in theory then clarifies the notion that sustainable development interpreted in a South African context is not only embedded in its economy, but also in the social domain within constraints of the ecological limits. However, Bass and Dalal-Clayton (2005) point out that sustainable development is not the mere neat conceptualisation of the complex interrelationships between the economic, social and environmental but the accompaniment of significant behavioural and institutional change. This study with a focus on the engagement with the sustainable development discourse was aimed at exploring how conceptualisations of the environment and sustainable development were used in institutional and social change.

It was a deliberate decision not to conduct an intense review of other environmental centres in South Africa. Firstly, the approach to this research does not take a comparative approach. Secondly, the key aim of the research was to do an in-depth exploratory study. Reviewing literature on other environmental centres may have "clouded" the exploratory approach taken in the specific case study. The "clouding" would have emerged through the inevitable or unintended flagging of benchmarks of what other environmental centres were doing. However, an intensive review on other environmental centres would be more appropriate for researchers doing comparative studies, as well for further study on the engagement with the discourse of sustainable development.

2.5 A summary of key challenges to sustainable development strategies

The examples of responses discussed in section 2.4 have shown that the challenges to sustainable development are not superficial and are not going to be easily overcome. The example of Wooltorton (2007) in Western Australia is encouraging in that a reorientation in approach to teaching and learning is important to ESD. While this might be true, the questions that remain are: What is the commitment of educators? A study done in South Africa during curriculum changes concluded that norms of educator practice had not changed in certain aspects to that expected in the new curriculum (Pillay, 2003). Amongst the barriers for effective education that were identified was the low socio-economic context of the schools. It seems that behaviour change is more likely to be motivated and maintained when there are supporting resources.

South Africa has adopted the approach of making sustainable development integral to law (Cullinan, 2004). A question is: Is the legal rationale for sustainable development convincing enough for sustainable development? Other than for sustainable development, there are a plethora of laws that govern the social and economic sectors of society. In South Africa (which may be the case in other parts of the world), some transgression of the laws (fraud, violence or traffic violations) by human action is reported almost daily in the media. How effective then is a law on sustainable

development (considering the concerns about the clarity of the discourse) going to be to bring about fundamental change in human behaviour for a sustainable future?

One of the biggest challenges for sustainable development is thus to try and match decision-making to implementation. In a study, involving 19 countries worldwide (including South Africa), it was found that most national strategies for sustainable development were confined to the periphery of government decision-making (International Institute for Sustainable Development, 2004). Perhaps one of the biggest challenges is to measure progress in the context of sustainable development. In the same study by the IISD, it was found that of the 19 participating countries, seven systematically developed quantifiable and measurable targets for sustainable development (International institute for Sustainable Development, 2004). Two difficulties relating to the development of quantifiable and measurable targets can be identified. One is developing the quantifiable targets and the second is what is actually being measured. The IISD found that quantifiable and measurable targets relating to objectives of sustainable development in many of the countries were process related, pertaining to the implementation of particular policy initiatives and programs rather than revealing the state of the environment.

The inclusion of the three dimensions of sustainable development (social, economic and environmental), even in law or definition, does not guarantee a translation in practice. Based on research in 19 countries, a fair conclusion was reached that the inclusion of the three dimensions in sustainable development strategies does not make it an integrated strategy and that a pragmatic understanding of the linkages is still very much in early stages of understanding and practice (International institute for Sustainable Development, 2004). The question, however, is: Just how willing and what sincere efforts are going to be made by the majority of the economic sector to take cuts in profits to ensure environmental sustainability of earth?

2.6 Concluding remarks

It is evident from the brief navigation through the history of sustainable development shown here that sustainable development has indeed been become a progressively dominant environmental discourse. This dominance does not in any way, as pointed out by Redclift (1989) show the extent to which notions of sustainable development converge or diverge. Events like the WSSD and the declaration of the UNDESD have maintained the dominance of sustainable development even though the literature shows that there are concerns about the discourse. To date, while the definition of sustainable development in the *Brundtland Report* is popular, there are diverse interpretations. Alternate concepts have also been initiated to overcome the misinterpretation of sustainable development as having an economic development focus. However, there is a tendency to use the

alternate concepts such as sustainability and sustainable living interchangeably (as is the case in the chapters to follow).

Education for Sustainable Development has also been identified by the United Nations as a key strategy for sustainable development. It is has become acceptable to constantly refer to the discourse of sustainable development when discussing ESD and vice versa. There are, however, criticisms of ESD. Among them is that ESD could be another slogan, and that ESD is another "badge" for environmental education referred to as "rebadging" by Robottom (2007). The literature has shown that there is belief that environmental education and education for sustainable development have a common vision. Irwin (1990) has alluded to the point that, over the years, the focus of environmental education has moved from conservation to a socio-ecological focus.

Stakeholders and partners are acknowledged as being key to addressing sustainable development and the challenges that face sustainable development. Educational value, impact, cultural value, knowledge and information exchange, and innovation are amongst the contributing value of stakeholders and partnerships to sustainable development (Lotz-Sisitka, 2006). Included in these stakeholders are environmental centres.

There has been engagement with the discourse of sustainable development at international, national and local levels. The engagement took the form of different responses e.g. policy frameworks, competition and symposiums. The discussions in this chapter on the responses from the different countries have also shown that sustainable development has met with challenges that include the effectiveness of using the law to bring about change in behaviour, the commitment of stakeholders to proposed changes in education and the difficulty of measuring progress in implementing sustainable development.

Keeping in mind the following: arguments about sustainable development, the responses from both hemispheres and the Southern African response to sustainable development, the need to research and document practice on the engagement of environmental centres as stakeholders is justifiable. The justification is based on the contributions that the study would make to the literature from both a theoretical perspective and the potential to contribute to encourage similar environmental stakeholders to take a reflexive stance to their practice.

Critical Discourse Analysis, Diffusion Theory and Boundary Organizations have been used as the frameworks to explore and understand how an environmental centre has engaged with the discourse of sustainable development. The theory of Critical Discourse Analysis, Diffusion Theory and of Boundary Organizations are discussed in the next chapter (Chapter 3).

Chapter 3

Exploring Sustainable Development: Theoretical Frameworks

Certainly sustainability does not refer only to the environmental dimension, but it is also true that the proposal of sustainable development can be better understood as a product of the discussions about environmental problems, although different streams of thought in the concept of sustainable development are closely knit.

(Gonzalēz-Gaudiano, 2007, p98)

Introduction

The arguments and views in the literature review in the previous chapter have explicitly shown that to describe sustainable development as complex has actually become an understatement. With the sustainable development discourse being linked to different disciplines and dimensions such as education, environment, economic and the social context (as alluded to chapter two), it became necessary to use three theoretical frameworks to explore the complex discourse of sustainable development more carefully (Figure 3.1).

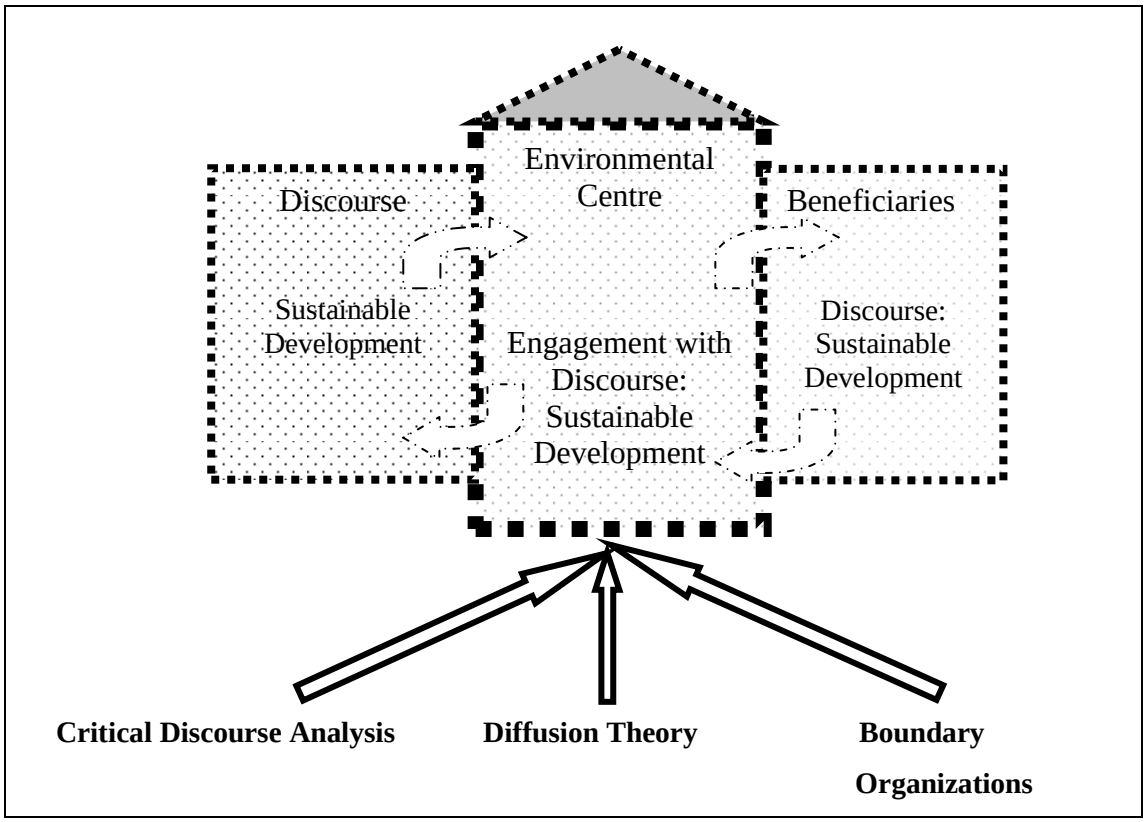


Figure 3.1 Theoretical frameworks to understand the engagement with the discourse

The three theoretical frameworks that were used to explore the engagement with the discourse of sustainable development are: Critical Discourse Analysis (CDA), Diffusion Theory, and Boundary

Organizations. The frameworks enrich and provide a holistic understanding of how an environmental centre is responding to the discourse of sustainable development.

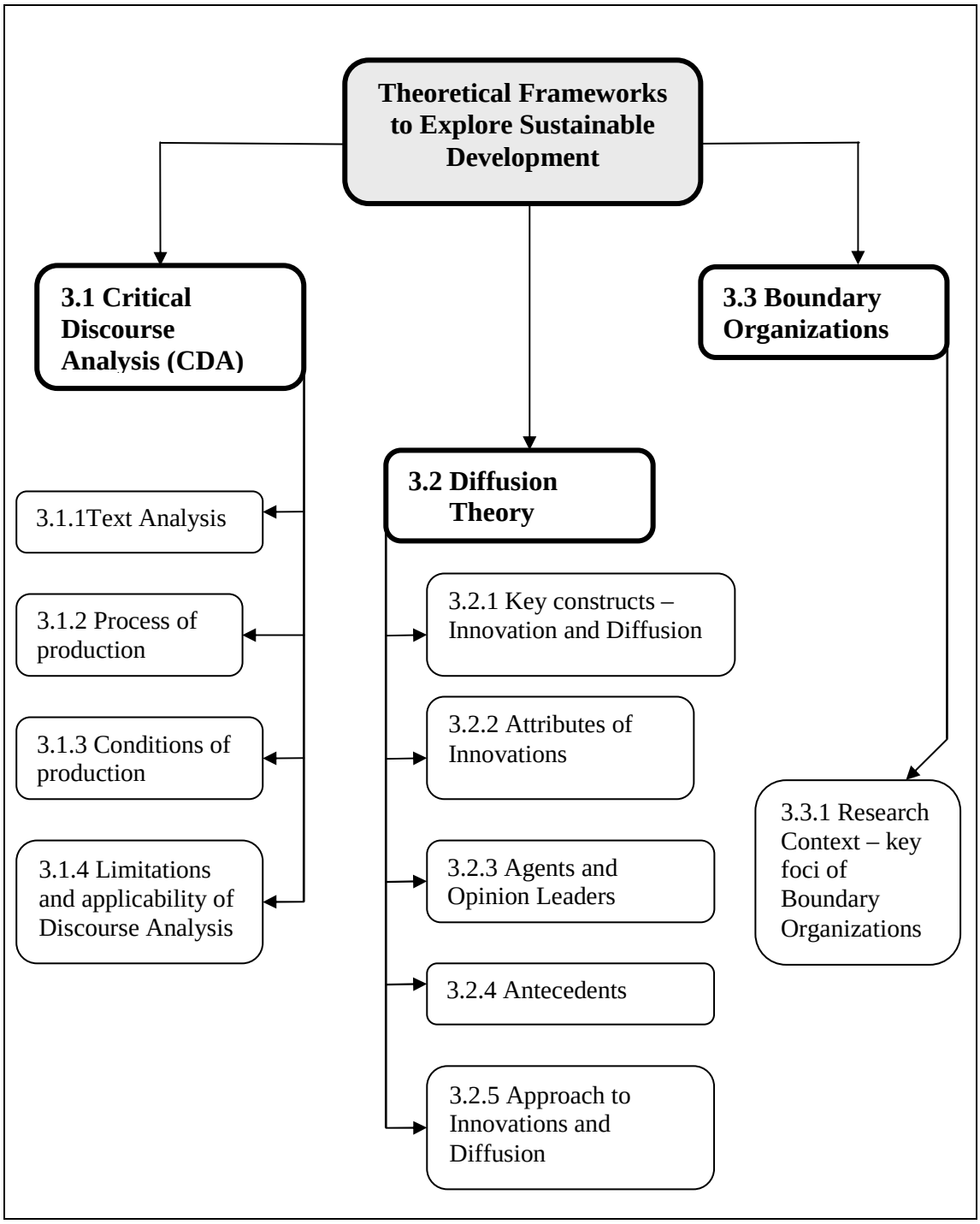


Figure 3.2 An overview of Chapter 3

The organizer in Figure 3.2 represents the key areas of foci for discussion in Chapter 3. In this chapter the theoretical frameworks have been categorically presented and justified. In the results and discussion chapters (Chapters 5, 6 and 7) the theoretical frameworks have not necessarily been separated although their basic tenets have been recognized (refer to Figure 3.3) but used in an

integrated way to explore the engagement of the environmental centre with the discourse of sustainable development.

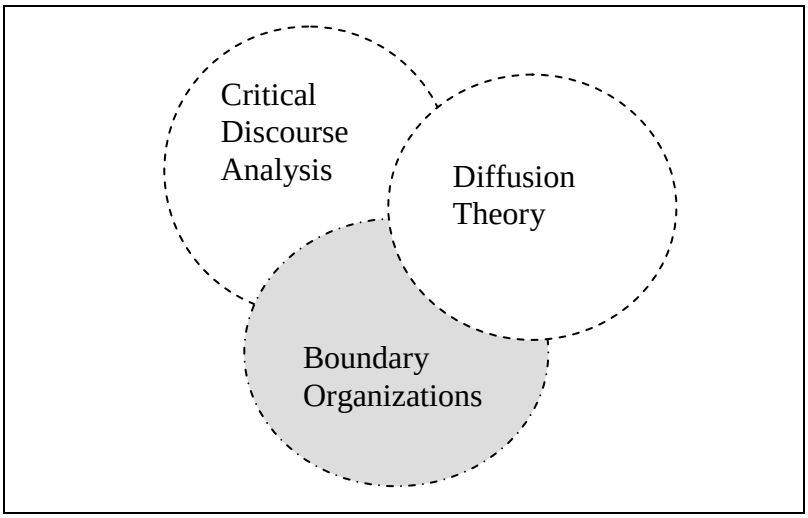


Figure 3.3 The use of the Critical Discourse Analysis, Diffusion Theory, Boundary Organizations (independently and integrally)

Boundary Organizations have been used less extensively in the analysis than Critical Discourse Analysis and the Diffusion Theory and therefore has been shaded in Figure 3.3. However, the theory of Boundary Organizations is a useful framework to analyse the data as the environmental centre also functions as a boundary organization. Boundary Organizations is discussed further in Section 3.3. A discussion of each of the theoretical frameworks follows.

3.1 Critical Discourse Analysis (CDA)

Discourse is used to refer to patterns of meaning which order the different symbolic systems that humans use to communicate with and make sense to each other (Parker, 1999). The concept *discourse* is not restricted to language but may also be used to refer to ideas and ideologies (van Dijk, 1997). A discourse represents some aspect of life in the world from a particular perspective with the likely intention of structuring the world differently (Fairclough, 2003). According to Parker (1999), van Dijk (1997) and Fairclough (2003) discourse may sometimes be used in a broader sense to refer to a whole domain.

Sustainable development is an example where a discourse is used in a broad sense to refer to a whole symbolic domain or idea. Discussions in Chapter 2 showed how the discourse of sustainable development attempts to structure the world differently (especially by linking the social, economic and environment dimensions). In this study on the engagement of an environmental centre with the discourse, however, the researcher used discourse analysis in a way where the use of the language

(discourse as an abstract noun) is integrated with the greater focus on the discourse (count noun) of the whole domain of sustainable development. In this study the whole domain of sustainable development as a philosophy, way of thinking and as a proposed strategy to address environmental issues is the main focus of discussion.

In Critical Discourse Analysis (CDA), social processes are viewed more as being constituted and sustained by pervasiveness of particular versions of reality (referred to as the discourse) than by individuals (Locke, 2004). Critical Discourse Analysis offers a way of understanding social processes linking between analysis of texts, interactions and other social activities (Fairclough, 2001). It is referred to as critical in that it is an approach to discourse analysis that intends to bring out both obvious and non-obvious influence of power relations and dominant ideas within particular contexts. Critical Discourse Analysis has the potential to expose discourses or ideas of reality to scrutiny and to contestation (Locke, 2004). Critical Discourse Analysis can be used in combination with other approaches to research changes or influences in contemporary life (Fairclough, 2001).

The key element of Critical Discourse Analysis is the use and meaning of language within a social space. The point of departure for analysis however, does not necessarily have to focus on the language used, it could be the main issue that is of concern (Fairclough, 2001) which in this study is sustainable development as a strategy to address the world's growing environmental concerns. Critical Discourse Analysis seeks inquiry about changes that are taking place or have taken place within issues in a "trans-disciplinary" way (Fairclough, 2001). Trans-disciplinary implies cutting across many disciplines like linguistic analysis, semiotic analysis, research and theory of social processes and change (Fairclough and Chouliaraki, 1999). In exploring the discourse of sustainable development Critical Discourse Analysis has been used in a transdisciplinary way in conjunction with other frameworks, theories and fields (refer to Figure 3.3) outside of linguistics viz. the Diffusion Theory, theory of boundary organizations, education and environment.

Semiotic analysis forms a grounded aspect of Critical Discourse Analysis. Semiosis, besides meaning making through language, includes written texts and visual images as signifiers. Language was not the key facet in this research on sustainable development as it was not a linguistic study. The greater focus was on how the discourse as a whole domain was used in written texts, including the visual images as the key signifiers.

The dimensions for Critical Discourse Analysis as proposed by Fairclough (1995) formed the basis for analyzing the documents (refer to Figure 3.4). Although the framework is specific to a linguistic field, it has been adapted to understand the engagement of the environmental centre with discourse of sustainable development. Chouliaraki and Fairclough (1999) point out that Critical Discourse

Analysis is evolving as it is being applied to new areas of social research. They indicate that the framework of Critical Discourse Analysis is complex, but analysts may choose what to focus on, according to the purpose of analysis.

A more comprehensive framework for Critical Discourse Analysis is provided by Janks (1997). The broad framework of analysis provided by Janks (1997) with the guiding questions and Locke (2004), have been modified to suit the purpose of this study. The three dimensions for critical discourse analysis viz. text analysis, process of production and conditions of production are represented in Figure 3.4. However, the dimensions are not mutually exclusive (Locke, 2004). The fluidity and interconnections between the dimensions provide the basis for the analyst to find interesting patterns that need to be described and discussed (Erster, 2003).

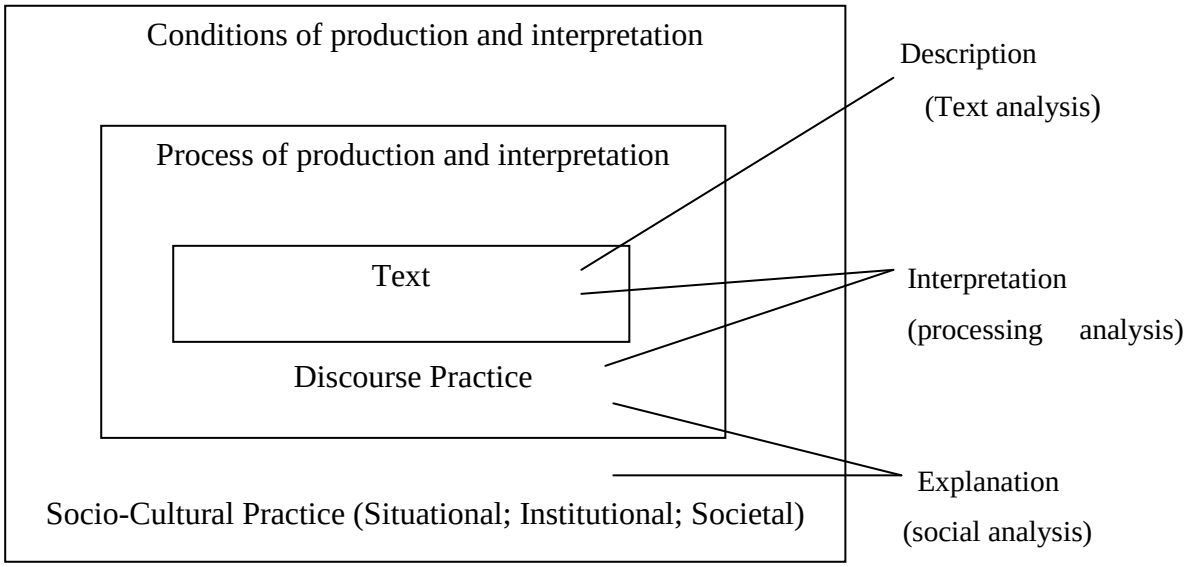


Figure 3.4 Fairclough's dimensions for Critical Discourse Analysis (Locke, 2004, p42)

While the dimensions are not mutually exclusive, there is some basic focus within each dimension. Texts refer to the description of the concrete representation of the discourse; process of production refers to ways of thinking and being in the world; and conditions of production focuses on the way the text has been influenced during compilation, and on the influences during dissemination and reception by society (Locke, 2004). A set of guiding questions (using the comprehensive guidelines of Janks) were developed as a framework for analysis in this study. The questions are presented before each focus of analysis and discussion in Chapter 5. Each of the dimensions of Critical Discourse Analysis is discussed in the sections that follow.

3.1.1 Text analysis

Discourse in the form of texts may be represented by a phrase (or sentence), a paragraph or book (Cook, 1989). In different texts, depending on the type, more than one mode (multimode) could used. Visual images could accompany the linguistic mode (Fei, 2004).

Text analysis basically refers to the use of verbal signs, visual signs and the textual hybridity (Fairclough, 2001). Text analysis can involve both visual and linguistic components (Fei, 2004) and an attempt must be made to understand both components (Kress, Leite-García and Leeuwen, 1997). Text analysis applies a double logic of not only what connects the text to form its core network but includes the contradictions, tensions and gaps within its core (Fairclough, 2001). Text analysis within the context of sustainable development is important to understand the contradictions, contestations or points of concurrence of a particular idea.

Verbal signs refer to the message or meaning that the text conveys to the reader. Visual signs refer to aspects like pictures, layout or changes in print (e.g. things that need to catch the eye of the reader being printed in capital letters or darkened). Since visual signs communicate particular messages (Erster, 2003), an analysis of visual signs like the use of flow diagrams, models or pictures used in texts within the context of the discourse, is to be used to contribute to a better understanding of perspectives on sustainable development.

Critical Discourse Analysis provides a way (using the dimensions of text analysis linked to processes and conditions of production) to identify and interpret what may be obvious as well as what is not obvious or hidden (Erster, 2003). According to Janks (1997) during the analysis of the text it is not possible to read meaning directly from the verbal and visual signs. Textual analysis has its limitations if not related to the conditions of production and reception of the text. It is important to know whose interests are taken as priority in the text. Textual hybridity refers to the interests that are being served by the text, which may be of more than one group.

3.1.2 Process of production (Discourse practice)

In analyzing the process of production and reception, both the situational context and the intertextual context need to be taken into account (Fairclough, 2001). The situational context basically focuses on when and where the text was produced. The situational context also takes into account what contextual factors may have influenced the production of the text at that particular time. An example is the publication of the *EnviroTeach* resource (refer to the analysis in Chapter 5) which was coordinated by the environmental centre from 1999 onwards to present. During the past

nine years (1999 – 2008) there were changes in the National Education Curriculum in South Africa. The change in the context of curriculum is an example of situational changes that influence the process of production.

Although texts may have a focus, within the focus there may be explicit or implicit links to other references or sources. The ways in which texts are referenced in relation to other texts by virtue of their foci is called *intertextuality* (Locke, 2004). In other words, intertextuality is the presence of other elements of other texts or "voices" which are not the author's own (Fairclough, 2003). Intertextual contexts refer the reader to the other obvious places to look for data or find additional data (Janks, 1997). In the context of sustainable development (as shown in the document analysis of the *EnviroTeach* publication in Chapter 5), other documents from the National Ministry or agreements from *Agenda 21* are constantly quoted in reference to the discourse. The other documents that are referenced or located within the discourse like *Agenda 21* are intertextual references.

3.1.3 Conditions of production (Socio-cultural practice)

The conditions of production and reception mean that one needs to look for the stability of signs or instability of signs that underpin a discourse. Of significance as well, is the impact of signs on the reader or audience: Do they reinforce what existed or does it seek to bring about a transformation?

Change seems to be a constant factor, whether in worldviews, education or politics. During change or transformation, signs can become unstable (Janks, 1997). In other words, there could be shifts in terminology (as signifiers). It is only when the sign becomes unstable that workings of dominant perspectives become evident. Usually, discourses become accepted as a natural everyday way of life until there is a change to offer a new perspective (Janks, 1997). Those who support sustainable development view it as a discourse with a new perspective that offers a potential strategy to address the world's environmental threats. Practice includes both practice *per se* as well as representations of practice (Fairclough, 2001). With the emergence of new discourses or the influence of a discourse becoming dominant, the socio-cultural conditions at the time of text production and reception are likely to gradually change. In reviewing the literature in the context of CDA mainly with reference to Fairclough, (2003), Locke (2004) and Janks (1997) the researcher has compiled a focused summary of the three dimensions represented in Table 3.1 on the next page.

Table 3.1 Foci of the dimensions of Critical Discourse Analysis (CDA)

Dimensions of CDA	Foci	Key questions
1. Text Analysis	-The text and the way it influences the reader - The text and the way in which it positions the reader	-What is the key discourse? -Are there related discourses? -Whose interests does the discourse represent? -How is the reader positioned? -Are there any contradictions that may not be so obvious?
2. Process of production (Discourse practice)	-The way the text has been produced -The relationship of the text with other texts -The way it is received and Used	-Who is the addresser and addressee? -What is the relationship between the addresser and addressee? -What is situational context? -What are the inter-textual references? -What is the discourse type?
3. Conditions of production (Socio-cultural practice)	-The situation that initiated production of texts within the context of the discourse -Socio-cultural practices that have relevance to the discourse (within an institution or in society)	-What is the socio-historical context? -What are the power relations that shape the discourse? -Are there any assumptions that underpin the text? -How is the discourse positioned to maintain or change practice?

While the dimensions (texts, process of production and conditions of production) have been categorically separated there are inevitable links between them. Findings in one category could lead to further concerns that may arise in other dimensions. The point is that in Critical Discourse Analysis the point of entry could be any one of the three dimensions (Janks, 1997) and not necessarily in the order presented for this study.

3.1.4 Limitations and application of Discourse Analysis

A limitation of Critical Discourse Analysis lies in the way the "critical" component is approached. Mere descriptions of meanings of semiotic signifiers (like texts) could become a simple narration. Texts have social influence and have the potential of causal outcomes like change in behaviour (Fairclough, 2003). Therefore interpretation needs to accompany narration with the identification of both connections and gaps in the semiotic signifier. In the context of sustainable development it is insufficient to merely explain definitions but it is important to understand the limitations and to explore the controversies around the definition.

Discourse analysis is exposed to similar arguments of applicability raised by positivist researchers of qualitative research. Many argue and challenge the applicability of discourse analysis. Discourses are perceived as diverse representations of issues of life (Fairclough, 2001) consequently raising questions about the neutrality of interpretation and description of discourses by analysts (Taylor, 2001). Taylor (2001) is of the belief that there are many possible applications of discourse analysis beyond description and interpretation. These applications are relevant to the aims of this research within the context of exploring the engagement of an environmental centre with the discourse of sustainable development. The applications of discourse analysis based on the arguments of Taylor are discussed in the following paragraphs:

(i) Discourse analysis provides a framework to understand and construct alternate versions of issues considering perspectives which have not been previously been explored. In the context of the environmental centre, exploring how sustainable development is approached provides the space to open up interpretation beyond the facts and assumptions presented in the literature.

(ii) Critical Discourse Analysis is a real and practical activity with significant outcomes and is not confined to abstract interpretation. Being a real, practical and critical activity, discourse analysis seeks to inform future strategies and practices. That which comes out of the research has the potential to serve as a point of departure for reflexive practice for the environmental centre. The environmental centre may choose to change certain of its practices, adapt or retain status quo after deliberation.

(iii) Closely linked to the previous point (ii), is empowerment. Critical Discourse Analysis through raising awareness and focusing on what is being done, gives recognition (a "voice") to those who are downplayed as peripheral stakeholders (the beneficiaries of programmes may be considered as an example). The caution is that the position of the stakeholder and not that of the analyst needs to be projected.

(iv) Discourse analysis has the potential to make recommendations for interventions to facilitate change or for consideration by others (or institutions) in similar contexts. Recommendations emanating from discourse analysis provides a framework (within the context of sustainable development) for others, institutions or organizations to take cognisance of key factors that have an impact on their practice or that may have an impact if they choose to engage with the discourse.

(v) Discourse analysis, like any other research, can be used to support a position taken on an issue. Alternately, the position can be one that challenges the issue. One of the tenets of Critical Discourse Analysis is to expose, question and challenge practice. Critical Discourse Analysis may expose both arguments that support or challenge issues, providing a reader with the opportunity to make individual decisions on the issue. The researcher has provided an opportunity for the reader to make individual decisions by providing large amounts of raw data (in Chapters 5, 6 and 7) and by exposing arguments for and against sustainable development throughout the report.

(vi) Critical Discourse Analysis, while providing descriptions, different perspectives on interpretation and unraveling the "grey" areas in the process, opens the space for further analysis, identifies new challenges and contributes to increasing the parameters for new knowledge or enriches existing knowledge. In the concluding chapter the researcher has made recommendations on issues emanating from the analysis that require further research.

Having discussed Critical Discourse Analysis as one the main theoretical frameworks for analysis in this study, attention now shifts to discussions on the other main theoretical framework i.e. Diffusion Theory.

3.2 Diffusion Theory

Diffusion Theory has been used in many fields. Examples of fields in which Diffusion Theory is being used are: health (Rogers, 2000) and community development (Andrews, Stevens and Wise, 2002). The literature shows that complex mathematical computations can be used to understand the spread of diffusions. However, the Diffusion Theory allows the flexibility to be applied in a qualitative study through rich descriptions and analyses to understand why diffusion of innovation takes place in a particular way.

Since the sustainable development discourse is gaining momentum across the globe and locally, the Diffusion Theory is appropriate to understand the nature of the momentum with respect to how the discourse is conveyed and received by beneficiaries and what factors promote or constrain the momentum of diffusion. In a scientific context, diffusion is usually interpreted as a passive process

which describes the movement of particles or molecules from an area of high concentration to an area of low concentration (van Rensburg, *et al*., 1999). In a social context diffusion refers to a more complex process which focuses on the "spread" of ideas and where there is potential for transition through networking and influence (Rogers, *et al*., 2005). It should be noted that within the context of the discourse the researcher interprets diffusion as both a passive and active process. Diffusion can be interpreted as a passive process where there is transmission of an idea without concern whether there is acceptance or resistance to the idea in theory or practice. Diffusion can be interpreted as an active process in a context where institutions, individuals or texts deliberate and engage in criticism on the idea.

3.2.1 Key Constructs – Innovation and Diffusion

The Diffusion Theory is based on two key constructs viz. innovation and diffusion. Innovation is understood as ideas or practices perceived as new by an individual or organization (Rogers, 2000). An innovation is something that is planned for (Bishop, 1986) rather than incidental. Diffusion on the other hand is used to refer to the process or the communication channels through which the innovation or idea is passed on or spread over time (Rogers, 2000). An innovation may be known for some time but a favourable or unfavourable attitude towards it may not have developed, or the innovation may have been neither adopted nor rejected.

Innovations start with a central idea. In this context the central idea is sustainable development. There are two sides to innovations. Innovations can have a major impact to meet a window period of urgency that exists i.e. there is an urgent need to find a strategy or solution to an existing concern or problem. Sustainable development has been identified as an urgent strategy to approach environmental problems. Innovations however, can also provoke greater resistance from those who oppose them (Chambers, 1997) as evident in the criticisms against sustainable development.

The idea or innovation is spread to others through a process that is referred to as the "diffusion process" (Rogers, 1968; Rogers, 2005). Although the work of Rogers on the diffusion of innovations can be traced back to the late sixties, it is still being used in the present decade. Andrews, Stevens and Wise (2002) make reference to the work of Rogers to emphasize the diffusion of innovations through communication in a social system. There are difficulties in innovations which if not adequately addressed could result in the failure of the innovation. The work of Rogers provides a useful framework to understand the engagement of an environmental centre with the discourse of sustainable development and how it is spread to the beneficiaries of the centre.

Innovations are likely to be successful, adapted or eventually reach their demise. The figure below shows the life cycle of an innovation (using the discourse of sustainable development). An adaptation on the process of innovations and on the life cycle of innovations based on the work of Bishop (1986) and (Carlson, 1971) is presented in Figure 3.5

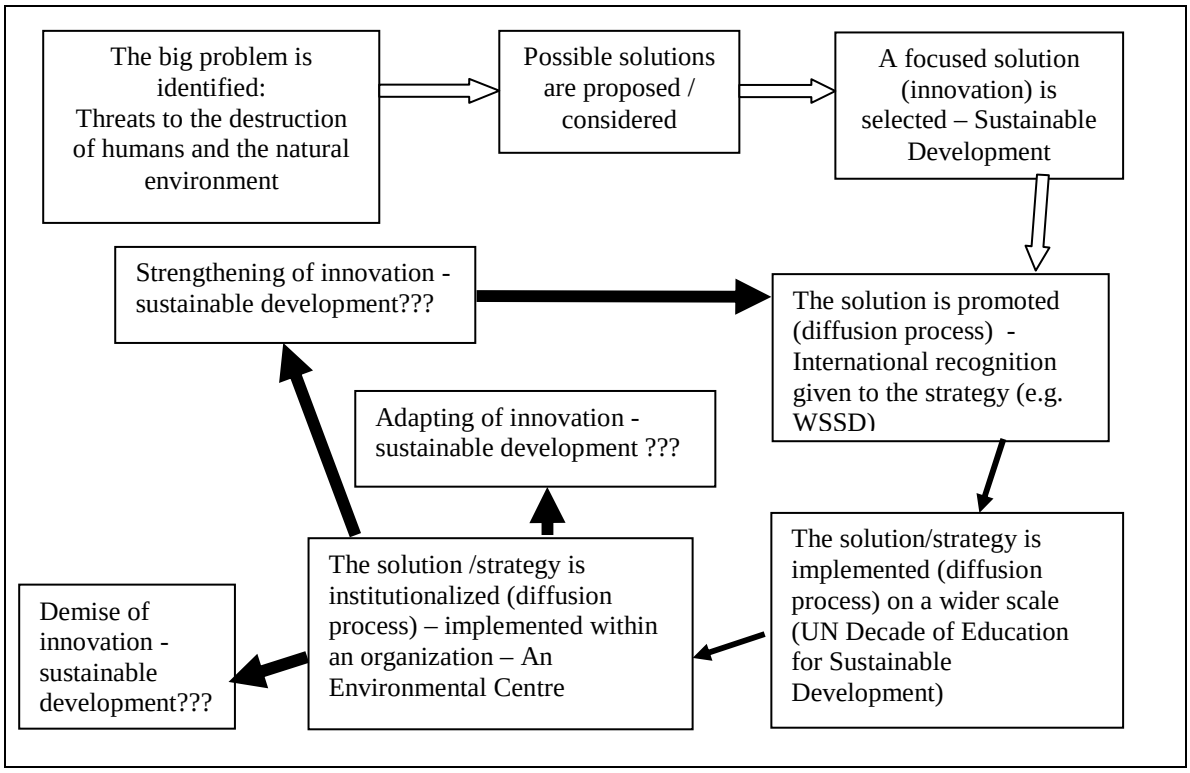


Figure 3.5 The process and life-cycle of an innovation

There are attributes of innovations which usually determine whether the idea or innovation is readily accepted or whether it is viewed with caution (Rogers, 2000). The attributes of an innovation are discussed in the next section.

3.2.2 Attributes of innovations

Rogers (2000) identified five attributes of innovations. Each of the attributes is discussed within the context of the discourse of sustainable development.

3.2.2.1 Relative advantage

Relative advantage is the comparison made between the new ideas over the existing ideas and the extent to which the new idea is perceived as more appropriate or better than what exists. In this respect environmental education may considered as the dominant discourse over the preceding decades with sustainable development taking to the fore in the present decade. The World Summit

on Sustainable Development (which took place in 2002) and the UN Declaration of the Decade of Education for Sustainable Development (2005 – 2014) are evidence of the focus on the discourse of sustainable development (as a "new idea") in the present decade.

3.2.2.2 Compatibility

Compatibility refers to the extent to which the innovation is congruent with existing values and needs of individuals or organizations (Rogers, 2000). Organizations usually have their own set of values and agendas but are also faced with practical and ideological challenges that could originate from within or outside the organization (Miller, Dingwall and Murphy, 2006). In exploring the discourse one of the foci is to understand how different or similar the values that underpin sustainable development are in comparison to existing values or agendas of the environmental centre.

3.2.2.3 Complexity

Innovations may not always be easy to understand, let alone implement. The perception of the extent to which the innovation is difficult, can be challenged or contested is referred to as complexity. Beck (2004) points out that industrialization there is also a connection between development of productive forces then and the systemic nature of the destruction to the natural foundations of life. Examples to show the complexity of sustainable development have been discussed in Chapter 2. Issues of vulnerability of the poor, the predominance of material gains of organizations over the environment, the influence of discursive discourses within the context of sustainable development form part of the attribute of complexity in the diffusion of innovations. Nations and Governments have come up with plans and strategies of implementation while academics and educationists are still debating or refuting the discourse. Gonzalēz-Gaudiano (2004) alludes to the point that academics contribute to the complexity of discourses through 'high-status' defence or support of arguments.

3.2.2.4 Trialability

Innovations are not always adopted with absolute conviction and confidence. Sometimes they are first tried out. The extent to which an innovation may be tried out is referred to as trialability. Following from the previous attribute of complexity, it is expected that organizations may approach innovations with caution. The approach may be to first try and then show full support. It is also possible that not all organizations may follow this trend.

3.2.2.5 Observability

Innovations, when implemented, yield some kind of result. The result may be a positive change. On the contrary, there could be negative impact (like the lack of popularity with competitors or those who oppose the innovation) or the status quo may prevail. The results may be visible to people within the organization or to others outside the organization. The extent to which the results are noticeable is referred to as observability. One of the appropriate ways to understand the engagement with the discourse (innovation), as in this study focusing on sustainable development is to analyse what has been translated into observable practice or what is represented in practice. Foci that were identified for observability were planning, physical changes, materials and resources, the execution of programmes and the impact on beneficiaries.

Diffusion of innovations can be used to describe natural or directed transition amongst human agents and non-human agents (like changes in the print media) (Rogers *et al,* 2005). In exploring the engagement of an environmental centre with the discourse of sustainable development, the tenets of the Diffusion Theory were used to describe the impact on human agents (staff and beneficiaries) as well as on non-human agents (like publications – e.g. *EnviroTeach* and within the physical environment of the organization e.g. installing energy-saving devices).

3.2.3 Agents and Opinion leaders

Agents responsible for the process of diffusion of innovations determine whether the innovation will succeed or not. The agents include the central group where the idea was initiated, groups that exist within a legal framework of governance, non-governmental organizations, media and a range of community organizations and structures. In this study the agent is the environmental centre. The communication channels used by the agents in the diffusion of innovations include the formal and non-formal, the official and unofficial. The successes and failures of innovations depend on factors which include perceptions, inequalities within systems, availability of resources and the competency of the implementers.

The intention of many diffusion activities is to reach a critical mass and to then decrease efforts (Rogers, 2000). One of the lessons learnt from a study done on HIV prevention programs in the United States, for example, was that the credibility of the change agent with the beneficiary is of significance (Rogers, 2000). One of the sub-questions of this research is to explore the impact of the environmental centre programmes on the beneficiaries.

A change agent can play the role of an opinion leader. “Opinion leader” is a construct integral to the diffusion of innovation. Opinion leaders are the role models who can be determinants of the spread of innovations and the sustaining of the innovation (Valente and Davis, 1999). The literature refers to opinion leaders in the capacity of individuals. In this study the environmental centre is likened to the role of an opinion leader within the discourse of sustainable development.

Opinion leaders can select themselves to be leaders (Valente and Davis, 1999). Opinion leaders are important in this study as they encompass how the leader (or organization in the role of a leader) interacts with others who are potential adopters (e.g. how the environmental centre engages with beneficiaries). Opinion leaders may appreciate the acknowledgement of their roles but this does not exclude them from being resistant to the innovation (Valente and Davis, 1999).

3.2.4 Antecedents

There are antecedents (norms or factors) that are present in a situation prior to the introduction of the innovation (Rogers, 1968). Antecedents can be described as any existing condition that may have a bearing on the outcomes or goals of the innovation (Rogers, 1968). Antecedents that are present prior to the innovation being adopted may promote or restrict the engagement with the innovation. Antecedents (norms) can present barriers to the diffusion and adoption of an innovation.

One of the aims of this study was to determine and understand existing norms that impacted on programmes of sustainable development and the challenges these antecedents (norms) may have presented to change or practice. Researching the historical background of the environmental centre assisted in identifying the antecedents (norms). In Chapter 4 using mainly documents, a history of the environmental centre has been described to understand the antecedents.

3.2.5 Approach to innovation and diffusion

A crucial concern is how to get across sustainable development literacy from positions of high literacy to positions where the literacy is low or non-existent (Cairns, Jr., 2003). Different approaches or strategies may be used to implement an innovation or to convey to beneficiaries. The approach or strategy refers to a deliberate attempt to achieve the desired impact (Bishop, 1986). In exploring the engagement with the discourse of sustainable development the intention of this study was to identify the overt (obvious) strategies as well covert (not so obvious) strategies.

The following four models/strategies proposed by Bishop (1986) were identified to understand the strategies or approaches to sustainable development. These strategies are the social interaction/ diffusion model, participative problem solving model, power-coercive strategy and mixed strategy.

3.2.5.1 Social Interaction / Diffusion Model

The basic tenet under this model is the use of informal means to bring across the value of the innovation. This could be done through changes in the physical environment, through the use of success stories of their own and of others, through training, and through materials. However, these informal means can be more structured for greater impact (Bishop, 1986).

3.2.5.2 Participative problem solving model

The basic tenet in this model is that the beneficiary is the central focus. The beneficiary identifies the need and participates in actually designing and implementing solutions. The organisation (which in this case is the environmental centre) plays a supportive role. The participative model is a bottom-up approach. Challenges to using a bottom-up approach include ethnic conflicts in communities, inequity in environmental literacy and educational opportunities, differing commitments between self and community development, the gap between age generations, and the lack of internal motivation to act beyond legislation (Cairns, Jr., 2003).

3.2.5.3 Power-coercive strategy

The basic tenet of this strategy is to use legal policies (like the constitution, government legislation and agreements - national or international) to get the beneficiaries to implement the innovation. This is a top-down approach. Challenges to using a top-down approach include finding appropriate solutions that apply over large spatial areas, being cautious about not working counter to viable bottom-up strategies, being perceptive to micro-issues that do not distract the holistic view of the top-down strategy (Cairns, Jr., 2003) and finding a way where the beneficiaries do not view the approach as enforcement causing distraction from the real environmental issue. Given that the United Nations has declared the Decade of Education for Sustainable Development (2005 -2014) and that South Africa is a signatory to *Local Agenda 21,* it would be useful to explore how the strategy was used (if it was used) by the environmental centre in engaging with the discourse of sustainable development.

3.2.5.4 Mixed strategy

At the outset it must be acknowledged that in reality the previous three strategies may not necessarily be used as isolated models (Bishop, 1986). The strategies may be combined e.g. in the use of materials or publications to convince beneficiaries of the value of the innovation (which is the discourse of sustainable development in this study).

Critical Discourse Analysis and the Diffusion Theory were the two key theoretical frames used for analysis. Finally attention turns to the third theoretical framework which was used to a lesser extent, but remains nevertheless useful to understand the engagement of an environmental centre with the discourse of sustainable development. The decision to use Boundary organizations to a lesser extent was intentional in that much was covered by the other theoretical frameworks. Boundary organizations, however, was useful to focus on the aspect of the position of the environmental centre between the discourse and the beneficiaries.

3.3 Boundary Organizations

A theoretical concept called “a boundary organization” (Guston, 2001) was also used to explore the engagement of the environmental centre with the discourse of sustainable development and wider outcomes of such interactions. In essence, boundary organizations engage in and connect activities that are useful to the related external systems (e.g. science and the community), involving participants from the related external systems that either system would not be able to accomplish very easily, if not at all. A boundary organization is able to maintain and project its authority by facing either system (Guston, 2001). It is found that boundary organizations of different interests and forms are increasing in number and value (Waterton, 2005).

Miller (2001) extends the understanding of boundary organizations to accommodate new types of organizations that are emerging. The conventional understanding of separate systems is replaced by hybrid management. Hybrids are explained as social constructs which embrace science and politics together, making the practical separation impossible (Miller, 2001). Hybrid management refers to how two systems which influence each other integrally are in reality approached by the organization. The sustainable development discourse is, however, more complex in that it not only includes science and politics but also education. In the context of this study exploring how the environmental centre manages the hybrid nature of the discourse would give a better understanding of the engagement with the discourse.

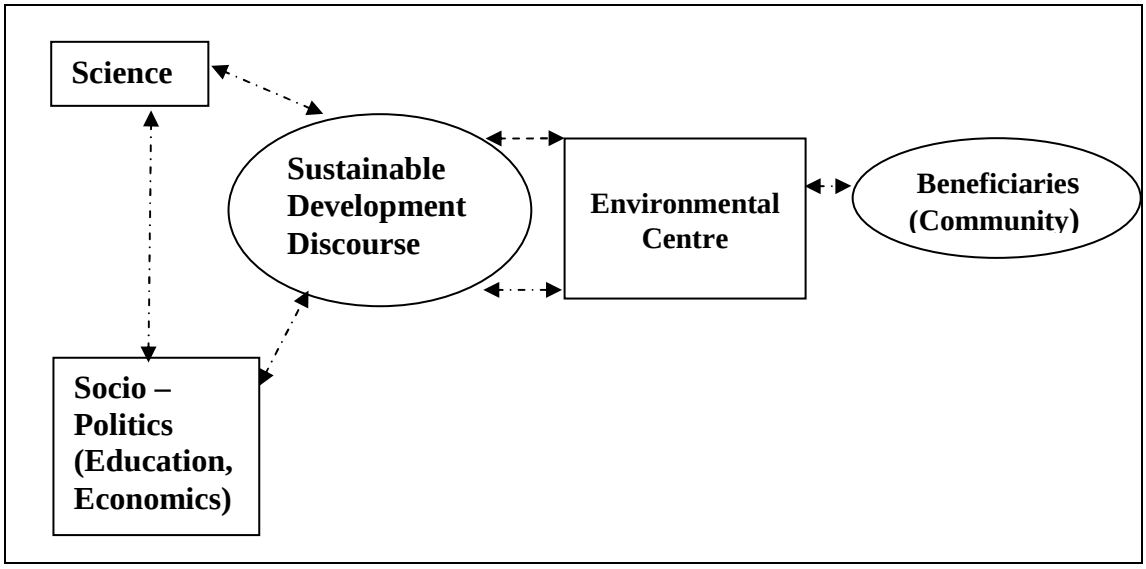


Figure 3.6 The position of the environmental centre in relation to other external systems

The environmental centre, in engaging with the discourse, is positioned amongst different systems (refer to Figure 3.6). The first system involves science as an external system in the context of sustainable development and the community (represented by the beneficiaries) and the second system is between politics of sustainable development and the community (represented by the beneficiaries). This is an example of hybrid management, since the systems of science and politics are inevitably linked in the context of sustainable development. The Departments of Science and Technology, and Mineral and Energy (both government political structures) in South Africa collaborate with organisations involved in scientific research (and to a smaller extent with organizations linked to education) that address sustainability issues. An example is the proposal by Eskom (the lead energy provider in South Africa) to make greater use of nuclear energy as an alternate energy source to coal to meet the increasing demands for energy.

Problems and threats of the present millennium, for example related to biodiversity, energy and agriculture are an obvious indication that science cannot be separated from environmental challenges (in the context of sustainable development). Miller (2001) acknowledges that the mobilization of science for the betterment of society is not simple and straightforward. The United Nations draft document on DESD (UNESCO, 2004) acknowledges that science provides people with ways of understanding the world and categorically pointed out that education for sustainable development needs to provide a scientific basis to understand sustainability together with values.

The United Nations is a political body which, to a large extent, guides governments on particular issues and strategies. Sustainable Development is one of the strategies. The fact that the United Nations has declared the Decade of Education for Sustainable Development also makes politics a

focus of the discourse. The implication is that the environmental centre as an organization is engaging with the discourse between the systems of politics, education and the community.

Boundary organizations face challenges in providing a valuable function. The International Research Institute for Climate Prediction (IRI) is an example of a boundary organization that linked the division between production and use of research between developed countries and developing countries (Agrawala, Broad and Guston, 2001). Relevant challenges experienced by the IRI included regions where poor communities were ill-equipped to make use of the research information; groups in societies have inequitable access and differential abilities to understand relevant climate information; households lacked the resources to take action on information provided in advance (Agrawala, Broad and Guston, 2001). It is useful to keep in mind these challenges faced by the Research Institute because similar challenges have the potential of surfacing in any boundary organization.

The boundary between the different systems can be blurred or kept distinctly apart, and the extent of blurring can be productive or it can be destructive (Guston, 2001). The United Nation's draft document on DESD (2004) proposed that a national civil society network for a coherent voice be formed. This proposition seems to imply a blurring of boundaries between organizations. This seems to be based on the assumption that all organizations would agree and engage (whether in part or whole) with the vision of sustainable development.

The vision for sustainable development seems to hinge on situations where political, economic and social infrastructures are taken for granted (Bak, 1995). This may not be true within the South African context given its history of apartheid, diversity and current phase of transformation. Members of an audience are well connected through a myriad of social networks that impact on interpersonal communication and social norms (Mileti and Peek, 2002). This, however, does not make working towards a coherent voice (i.e. blurring the boundaries) any easier. The limitation of blurring boundaries between into a "coherent voice" could also lead to a perception that the discourse is a blueprint for implementation or panacea to environmental problems.

3.3.1 Research context - key foci of boundary organizations

Through interaction with and analysis of the literature the following key foci that could be used in the analysis relating to the environmental centre as a boundary organization within the context of sustainable development have been drawn out:

(i) Projection of own identity: The environmental centre in providing a link between other institutions like the social, political or economic may or may not seek to project or retain its own identity.

(ii) *Blurring of the boundary*: The engagement with the discourse not only cuts across other institutions but also brings together other disciplines like science and education. The big question is: How are the boundaries between the institutions and / or disciplines managed?

(iii) *Impact outside the boundary:* Impact outside the boundary of the environmental centre can be divided into two sub-foci viz. the discourse of sustainable development on the one side and the beneficiaries on the other. On the side of the discourse the inquiry is about contributions of the boundary organization to the discourse or the resistance that it may raise against the discourse.

On the side of the beneficiaries the complexity is extended. In programmes offered by the centre beneficiaries not only engage with discourse but also interact with the environmental centre as an organization. The centre could impact on the beneficiaries by way of them responding and engaging with the discourse and the centre in a supportive manner. The contrary is also a possibility. The beneficiaries could become resistant to the discourse as well to the organization (i.e. the environmental centre). Criticisms of both aspects are relevant to this study to get a holistic understanding of the engagement with discourse of sustainable development.

(iv) *Challenges to boundary work*: The literature has shown that boundary organizations are likely to face challenges in carrying out their functions. Identifying challenges (if any) within the context of work done by the environmental centre would provide a reflexive base for the environmental centre to revisit their strategies and would provide a point of departure for other organizations engaged with similar work to revisit their own practices.

The role of environmental centres as boundary organizations is a useful consideration in this study. Within the context of sustainable development the environmental centre provides a link between society and innovations or ideas that are put forward by influential stakeholders, like national governmental organizations or international organizations for example, the United Nations. Of greater significance is the nature of the link between the environmental centre and society - is it indoctrination or creation of opportunities for society to engage with the innovation or idea?

3.4 Concluding Remarks

The tenets of three theoretical frameworks viz. Critical Discourse Analysis, Diffusion Theory, and Boundary Organizations have been used in a categorical as well in an integral way in the study. This is probably one of the rare cases where the theoretical frameworks of Critical Discourse Analysis, Diffusion Theory, and Boundary Organizations have been used in combination in research to analyse the engagement of an environmental centre with the discourse of sustainable development. The researcher has not come across the combination of the three theoretical frameworks within the context of the discourse of sustainable development.

The challenges and criticisms of each were considered during the research process. For example, discourses are perceived as diverse representations of social contexts raising the questions about the neutrality or subjectivity of the interpretation of the analyst. Real life situations are not linear; conditions may change or there may be interventions making it difficult in social contextual issues to accurately measure or qualify the spread of an innovation. In relation to boundary organizations one of the major challenges is the hybrid influence i.e. the difficulty in separating the influence of different sectors like education, politics or science. Bias is likely depending on which sector the analyst is more inclined to focus on. In this study the researcher has considered the hybrid influence and mainly reported using an integrated approach although there has been a categorical focus on science and on education issues.

Critical Discourse Analysis and the Diffusion Theory were selected as the two key theoretical frameworks used in the analysis and discussions. Critical Discourse Analysis and the Diffusion Theory have been applied in an integrated way in the chapters on analysis and discussion i.e. Chapters 5, 6, 7 and 8 and not necessarily as separate frameworks. The three dimensions of Critical Discourse Analysis are however, more suited to analyse texts than responses to interviews and questionnaires. In Chapter 5 which is based on document analysis, Critical Discourse Analysis is used more extensively than the Diffusion Theory as the main focus was on the analysis of texts.

The researcher believes that there are areas of overlap between Critical Discourse Analysis, the Diffusion Theory and Boundary Organizations that make them compatible for use in an integrated way. For example, condition of production which is a dimension of analysis in Critical Discourse Analysis overlaps with antecedents in the Diffusion Theory, and one of the antecedents could relate to the position that the environmental centre chooses (e.g. to maintain its own identity or to “blur” its boundaries). Antecedents refer to that which exists in a situation or context prior to the innovation. Another of the antecedents could be the condition under which a text was produced. For example, a policy based on democracy is a condition of production. Democracy at the same time is

an antecedent, which could support an innovation or provide a basis to reject the innovation, also dependent on whether the organization believes in democracy or not.

The areas of compatibility (overlap) between the three theoretical frameworks are not the only reason why the researcher used three theoretical frameworks. The nature of the discourse of sustainable development as well as the nature of an environmental centre makes the use of more than one theoretical framework valuable in this study. A continuous argument presented in this thesis is that the sustainable development discourse is challenging and complex. The use of more than one theoretical framework has the potential of increasing the depth of understanding of the discourse of sustainable development. The nature of the environmental centre as an environmental organization, as an educational organization and as a significant role player in responding to environmental issues justifies the use of more than one theoretical framework. Critical Discourse Analysis to understand the discourse within an educational context is complemented by the Diffusion theory to increase the depth of how environmental issues are approached and 'diffuse' within the educational context. No contradictions between the three theoretical frameworks were evident in this research.

To authenticate the contributions of the research to the existing body of literature, like in any trustworthy research, the approach was carefully thought out and planned in exploring the engagement of an environmental centre with the discourse of sustainable development. Keeping the elements of the three theoretical frameworks in mind, the approach, design and experiences during the research process are reported in the next chapter (Chapter 4).

Chapter Four

Research Design and Approach

We need integral, coherent education programs that help people construct ecological understandings, develop feelings for the natural world, and craft appropriate lifestyles. For that to be truly effective we need an accompanying integral, coherent research program.

Bruce Johnson (2007, p 93)

Introduction

Chapter 4 describes and justifies the research approach followed in exploring the engagement of an environmental centre with the discourse of sustainable development. The discourse of sustainable development (as discussed in Chapter 2) has raised concerns in relation to interpretation and implementation. In researching the discourse and engagement with the discourse, an in-depth study within a specific context (the environmental centre) which showed evidence of engagement with the discourse, was undertaken. In doing this study the opportunity was presented to engage with the concerns expressed in the literature in real situation (to concur with or reject).

Decisions about the paradigm in which to locate the study, the number of participants and the research tools had to be thoroughly considered. Ethical considerations had to be taken into account to ensure that the rights of the participants were protected both during the period of the research and after (i.e. taking steps to ensure that anonymity is maintained). Insight into the research process and decisions taken by the researcher are discussed in the rest of the chapter. An overview of Chapter 4 is represented in Figure 4.1 on the next page.

A discussion of the profile of the case study chosen i.e. the environmental centre, is presented in this chapter to provide the background for the analysis and interpretation of information gathered in the chapters that follow. A discussion of the tools used in the study includes the limitations of using the tools to gather the relevant information from the participants.

A detailed profile of the participants has not been presented in this chapter. The profiles are presented in Chapters 6 and 7 as part of the analysis. The placement of the profiles of the participants at the beginning of Chapters 6 and 7 makes it convenient for the reader to cross reference when necessary.

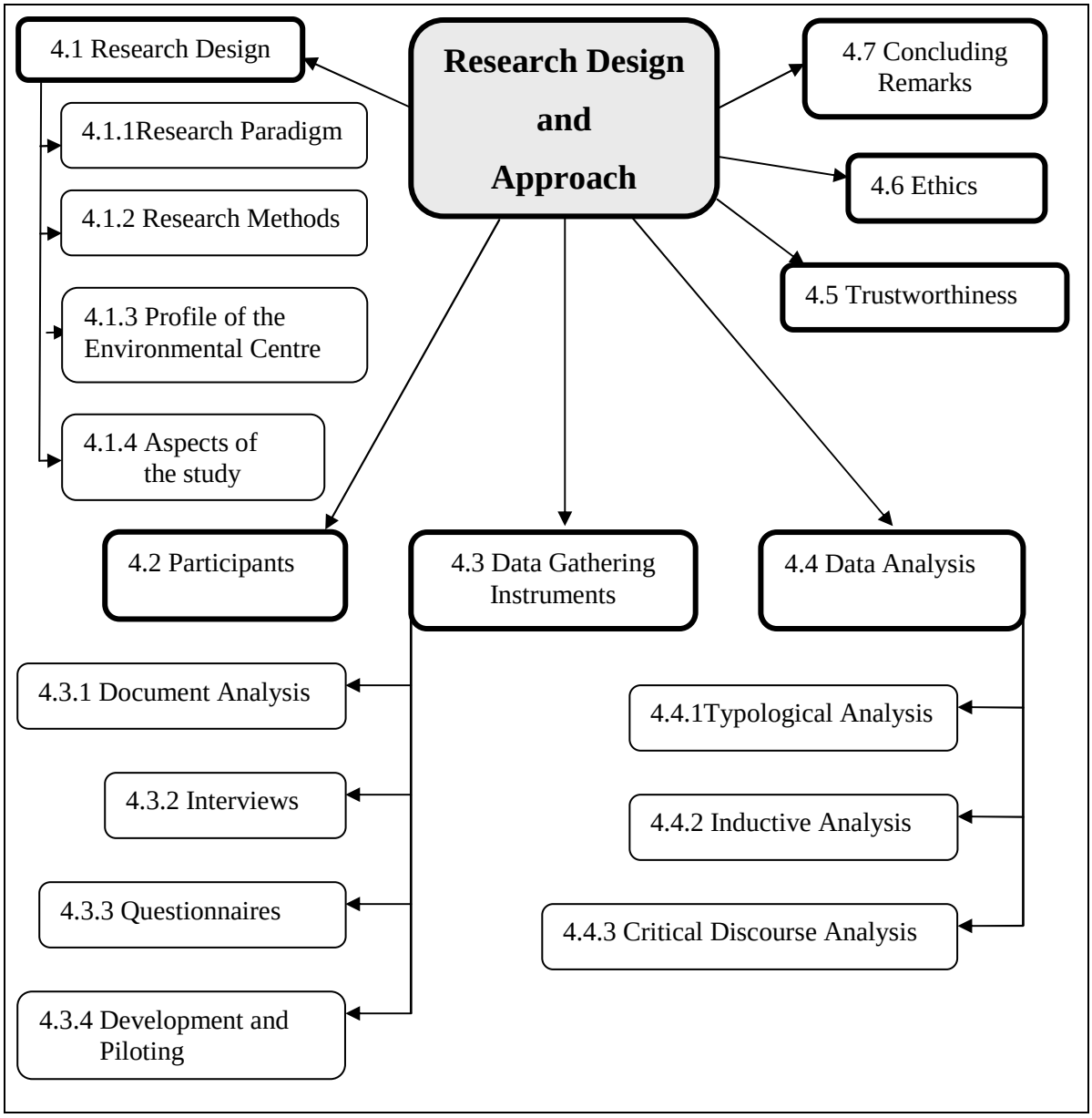


Figure 4.1 An overview of Chapter 4

Section 4.5 specifically focuses on issues of trustworthiness of the research. In other sections where necessary, issues of trustworthiness have also been raised. The same applies to the consideration of ethics that underpinned the research study. A discussion on the research design follows in the next section.

4.1 Research Design

The discussion of the research design is based on the choice of the research paradigm and on the research method that underpinned the research. The research design and methodology were guided by the Critical Discourse Analysis framework (Fairclough, 2003), the theoretical framework on innovations (Diffusion Theory) (Rogers, 1968; Carlson, 1971) and the literature on boundary

organizations (Guston, 2001). The key sources of information for analysis in this research were the human actors (namely staff and beneficiaries of Delta Environmental Centre) involved in or associated with sustainable development programmes (activities) and the key documents (e.g. reports or publications).

4.1.1 Research paradigm

The study was located within a qualitative paradigm. Working within a qualitative paradigm provides the framework for investigation and exploration of the quality of relationships and materials, and to get a sense and understanding of situations and contexts (Fraenkel and Wallen, 1990). Qualitative research has a noteworthy feature in that from an epistemological position it can be described as "interpretivist" with the emphasis on understanding the world through its participants (Bryman, 2004) with less emphasis on statistics. While an argument against qualitative research is that it might be subjective and time consuming resulting in more questions and with slow contributions to disciplined science, subjectivity should not be viewed as a failure but rather as essential to understanding (Stake, 1995). In the context of the complexity of the discourse of sustainable development (as discussed in Chapter 2) it was necessary to *understand* the views of participants rather than finding out and merely showing how many participants agreed or disagreed with specific perspectives.

The qualitative research paradigm rather than a quantitative paradigm was suited to this study as the intention was to explore and analyze the discourse of sustainable development and the engagement of an organization with the discourse in a non-experimental setting. Within the qualitative research paradigm, a holistic and detailed description of what goes on in a particular context is emphasized. A specific strength of qualitative research is to provide the researcher with a framework to focus on actual practice *in situ* with a view to understanding how interactions routinely play out (Silverman, 2003).

A post structural qualitative research design underpinned this study. Post-structural analysis aims at unpacking the patterns of power relations that shape practice (Ketlhoilwe, 2007). A post-structural framework also provides a basis to analyse the limitations of modernist ideals and practice (Janse van Rensburg, 2000). Qualitative research in the context of discourses such as sustainable development (which are complex) has advantages for both the researcher and participants. For both the researcher and the participant the approach in qualitative research is based on finding out rather than assuming in advance what will turn out to be important (Miller, Dingwall and Murphy, 2006). Rich descriptions of thought and practice provide the participants with a basis to compare their own thoughts and practice with that reported in the research (Bloor, 2006). For the researcher qualitative

research design is flexible and is an iterative process that provides a basis to understand and respond to possible unintended consequences during the course of the research (Miller, Dingwall and Murphy, 2006). Working within a qualitative research paradigm made it possible to understand the historical background of the environmental centre from a holistic perspective, as well as to critically explore and interpret documents and participant responses with focus on causal issues.

4.1.2 Research method

The research followed a case study design. A researcher has limits in observing. This limitation could be overcome through a case study which provides the focus for accessing the observations of others (Stake, 1995). A case study is an approach of intensity and depth to get into and see the uniqueness of what others have not seen (Stake, 1995). The use of a case study had the potential to reveal other ideas and views of the sustainable development discourse which may not have been as evident in the literature.

A case study is concerned with how and why things happen. A distinguishing characteristic of case studies is that information about a case is collected to provide a context to understand causal processes, meaningful and real life events (de Vaus, 2001; Yin, 2003). To get an in-depth understanding of how and why things happen (i.e. to understand causal processes in context) one environmental centre was selected as a case study rather than making a comparison between two environmental centres.

In case studies it is the unit of analysis that researchers seek information about and to understand, with the aim of observing the totality of the situation portraying features for a reader which have become significant to the researcher within a set of interests (Slater, 1996). Although the case study focuses on a unit which becomes the main source of information, it is not necessarily exhaustive because it may deal with some issues in greater depth than others (Gilbert, 1996). For the purpose of exploring the response to the discourse of sustainable development an environmental centre was the unit of analysis. Within this unit (the environmental centre), responses of the staff and the beneficiaries to the discourse of sustainable development, and the activities and programmes of the centre, are part of the way of exploring how the centre engages with the discourse.

Case study design relies on intensive analysis of individual cases (de Vaus, 2001; Bryman, 2004). The case or unit of analysis (the environmental centre) having been studied within a particular period (or particular point in time) took into account particular social, economic, cultural, historical and political contexts. Considering the nature of this study, the flexibility of using a case study was

best to accommodate and adapt to new perspectives that influenced the topical and debated discourse of sustainable development.

There are a number of organizations throughout Southern Africa with different environmental interests. These interests include HIV/AIDS, conservation, environmental education and social issues. In this study, a non-governmental organization, Delta Environmental Centre was chosen as an "exemplary case". An exemplary case is not one that is unusual or extreme in some way, but rather one that provides a suitable context for the research questions (Bryman, 2004). Given the focus of inquiry and the time limits for field work it is more logical to select a case that is easily accessible and congruent to the inquiry with participants who are willing (Stake,1995). Delta Environmental Centre was easily accessible both in terms of geographical location, as well for the eliciting of information from willing participants.

Delta Environmental Centre provided a suitable context for the research study in that the environmental centre as an organization had shown engagement with the discourse of sustainable development through presentations, participation in forums and in regular published and distributed materials. The centre is unusual in the sense of being located in a park in an affluent socio-economic urban residential area of Victory Park, Gauteng. In its mission statement Delta Environmental Centre claims to keep up with changes in the field of environment, as well with political changes of the country. Delta Environmental Centre although located in an urban environment, claimed to reach out to a wide range of beneficiaries and communities (Shongwe, 1996).

4.1.3 Case profile overview: Delta Environmental Centre

To get a holistic understanding of the key documents and the contexts in which the documents were generated, an overview of the profile of Delta Environmental Centre is first presented and discussed. The profile of Delta Environmental will be presented under focused points.

4.1.3.1 Location and infrastructure

The centre is located in the Delta Environmental Park in a suburb called Victory Park, Johannesburg, Gauteng Province, South Africa. The park is surrounded by a residential community within a well developed infrastructure of roads, schools and shopping areas.



Photo 4.1: Front view: Delta Environmental Centre



Photo 4.2: Garden area adjacent to the Centre

The building has offices, meeting venues, exhibition and interactive rooms like the water-wise room and the energy room, a museum, a library and an auditorium.

4.1.3.2 Historical background

The brief historical background of Delta Environmental Centre that follows is based on information in a document produced by the centre to commemorate the twenty-fifth anniversary in 2000. The centre came into being in 1975 through the environmental interests of a businessman, Mr. Norman Clifford Bloom. During work on a project in the area of Victory Park in the early nineteen seventies, Bloom noticed a neglected and vacant building in the park. The vacant building used to be a site of sewage works. Through the efforts of Bloom the building was turned into an environmental centre (Delta Environmental Centre, 2000). The centre was then known as the South African Nature Conservation Centre.

The following is a discussion on the development of the centre over the years from 1975. The points cover the foci of the centre and the impact of outside events on the centre.

(i) Core foci of the centre

The initial focus of the centre was two-fold. Firstly, the centre provided interactive exhibits as part of its architecture for people (especially school groups) to experience environmental issues. Secondly, the centre was a site which offered space for organizations with environmental interests to function within the same building. At present both foci are maintained. Presently the centre has developed a greater focus in relation to key environmental issues like energy, water and biodiversity This does not imply that other environmental issues are downplayed. There are modern interactive

energy-wise and water-wise rooms and a museum with examples of biodiversity. Structured programmes are offered to school groups in relation to the key environmental issues. Presently, the centre also accommodates another organization viz. Rand Water in a structured partnership arrangement.

During the seventies and eighties the formal school curriculum did not offer categorical environmental education (Delta Environmental Centre, 2000). The environmental centre played a pioneering role by filling in the environmental education gap within formal education. The centre played a significant role in creating awareness through its activities and programmes on environmental degradation. The seventies, eighties and early nineties were still the periods of the apartheid regime in South Africa. Although the country was under the Apartheid system of governance the centre interacted with different schools irrespective of race. The centre, however, existed within the apartheid framework without active protest. Two characteristics are evident in the history of the centre. Firstly, through pioneering efforts, the centre can be viewed as a leader in the field of environment and secondly, in going against the unjust laws of apartheid in South Africa, the centre can be viewed as being proactive.

(ii) Impact of outside events on the centre

South Africa became a democracy in 1994 and with the political change came a transformation in the centre. The name of the centre together with a rethinking of the vision and mission, changed from the South African Nature Conservation Centre to Delta Environmental Centre. The name change can be viewed in the context that there was a move away from a purely conservation focus to include other aspects of the environment.

The political transformation in South Africa in the 1990s led to a change in the education system. In 1997 the old curriculum (largely syllabus focused) was changed to a new Outcomes-Based Education (OBE) curriculum. The centre incorporated the new OBE curriculum through integration and implementation in programmes of the centre. The events in the international world also had an impact on the centre in the nineties and in the new millennium. In the nineties sustainable development gained momentum in the political and environmental field (discussed in Section 2.1, Chapter 2). The centre also started to include sustainable development, utilization of resources and resource management in their *EnviroTeach* publication (discussed Chapter 5). In the new millennium, during the World Summit on Sustainable Development the centre actively participated by offering the centre as a site for the delegates to interact with an environmental centre in an urban area.

The development over the decades is evidence that Delta Environmental Centre is an organization that is not stagnant but prefers being an active participant in the forefront of change.

(iii) Vision and Mission

The current vision, mission and values pledge has been extracted from a promotional pamphlet of the centre developed and printed in 2007.

Vision:

Delta Environmental Centre is a private, independent Section 21 Company (non-profit organization) that aims, through innovative education and training programmes and consultation, to enable people to improve the quality of their environment by promoting the management and sustainable use of all resources, in line with the South African Constitution.

Mission:

- To create an awareness about environmental issues by imparting/ sharing appropriate knowledge;
- To introduce new, and enhance existing participants' skills;
- To develop responsible values and attitudes to the environment; and
- To encourage participation in environmental "action" projects.

Through the use of the word consultation the vision and mission shows that there is willingness on the part of the centre, although an independent organization, to involve others (organizations or individuals) in the process of improving the quality of the environment. It is also an indication that the centre prefers a participatory approach rather than an autocratic approach to environmental issues. The vision also indicates that the centre supports the notion of sustainable use of resources (which is one of the basic tenets of the discourse of sustainable development and related discourses). The centre shows respect for the country's political framework by stating that all activities would be in tandem with the Constitution.

(iv) Values

Delta Environmental Centre has pledged in an advocacy brochure in 2007 to uphold the fundamental values in line with the constitution as identified in the "Manifesto on Values, Education and Democracy" (Department of Education, 2001). The values are:

Democracy	*Equality*
Ubuntu (Human Dignity)	*An Open Society*
The Rule of Law	*Social Justice and Equity*
Non-Racism and Non-Sexism	*Respect*
Accountability (Responsibility)	*Reconciliation*

The commitment to uphold these values shows that the centre believes that knowledge and skills alone cannot address environmental issues; values are an important component. The reference to values both within the context of the constitution and the Department of Education shows the influence of the political dimension on the environmental centre.

(v) Board of Management

Delta Environmental Centre is managed by a board of management that is responsible for making key decisions about the operation of the centre, while the day to day activities are overseen by an executive officer. The board has 11 members (9 male and 2 females). The individuals who serve on the board do not receive any payment from the organization. The board members with diverse backgrounds include retired persons and actively employed persons e.g. a professor, a director from a local metro council and businessmen. The diversity in backgrounds and expertise are useful when different kinds of expertise are required to provide a basis to make decisions or to carry out certain functions. New members are recruited when the need arises, for example if a member resigns. New members are recruited more on the basis of their expertise to contribute to the growth and sustaining of the centre. The researcher was approached by the centre to be part of the board of management, which the researcher accepted in March 2008. This was after the data for the study had been collected, analysed, and the draft report completed.

(vi) Key areas of foci of Delta Environmental Centre

The following are the key foci of Delta Environmental Centre:

- Delta Environmental Centre provides programmes and activities related to the environment. Some of the programmes are presented in partnership with other organizations (like Rand Water). Examples of some of the topics covered in programmes and activities include water quality, grassland ecology, invasive alien plants and soil erosion.
- The centre provides a consultancy service that includes fields of research, environmental impact assessment, the development of education materials, evaluation and training and development.

- The centre offers a range of venues to be used for the purpose of conferences and meetings.
- The *EnviroTeach* resource (discussed in Chapter 5) is a regular and key publication of the centre.
- In 2007 the centre applied for and had been provisionally granted the status of an accredited provider of environmental training programmes. The accreditation was granted by a body called the Education, Training and Development Practice (ETDP) of the Sector Education and Training Authority (SETA) of South Africa.

The activities of the centre indicate there is a spread from awareness to the development of skills and knowledge, to a business arrangement where the centre can be made available as a venue (at a fee) and to a consultancy. The provisional accreditation of the centre as a training institution shows that the centre has adopted an approach of becoming an institution of formal education as well (i.e. where participants receive an accredited qualification).

(vii) Funding of the centre

Delta Environmental Centre is a non-profit organization. The process of taking a non-profit organization to greater financial stability is challenging and the dependence on donor funds could imply that the future of the organization is at stake (Cannon, 1999). Delta Environmental Centre has survived the financial challenges by being in existence for over 30 years. Funding for the centre comes from different sources. The major source of funding is through projects based on proposals. Partnerships, for example with Rand Water is a more structured arrangement based on the shared responsibilities of staff and on the programmes conducted. The centre in establishing a consultancy wing also gets income from consultancy work. Sponsors and donors also contribute to the funding of the centre. For an example the *EnviroTeach* is usually funded by sponsors/donors who are acknowledged in the publication in the form of their logos, through inputs into the development of the edition or through their message in the foreword or editor's message. The donor-recipient relationship however, has an implication of a power-cohesive strategy which could be of a disadvantage constraining the expression of views of the centre. This is discussed in chapter 5. School groups attending the programmes at the centre usually pay a minimal fee.

The profile of the centre, using the historical background as a reference point, shows that Delta Environmental Centre has undergone transformation over the years (from 1975) in response to political developments as well developments in the environmental field and education. The profile of the centre describes the context for the analysis and discussion in the chapters that follow.

4.1.4 Aspects of the study

The study was structured to cover two aspects as shown in Figure 4.2 – the historical background (partly discussed in the previous section) and the practice at the environmental centre. In order to explore and analyze the engagement of the environmental centre with the discourse of sustainable development, it was necessary to understand the history of the environmental centre and the antecedents (norms) that underpinned its functions. Since the World Summit on Sustainable Development took place in 2002, the context of the centre prior to 2002 was taken to form the historical background.

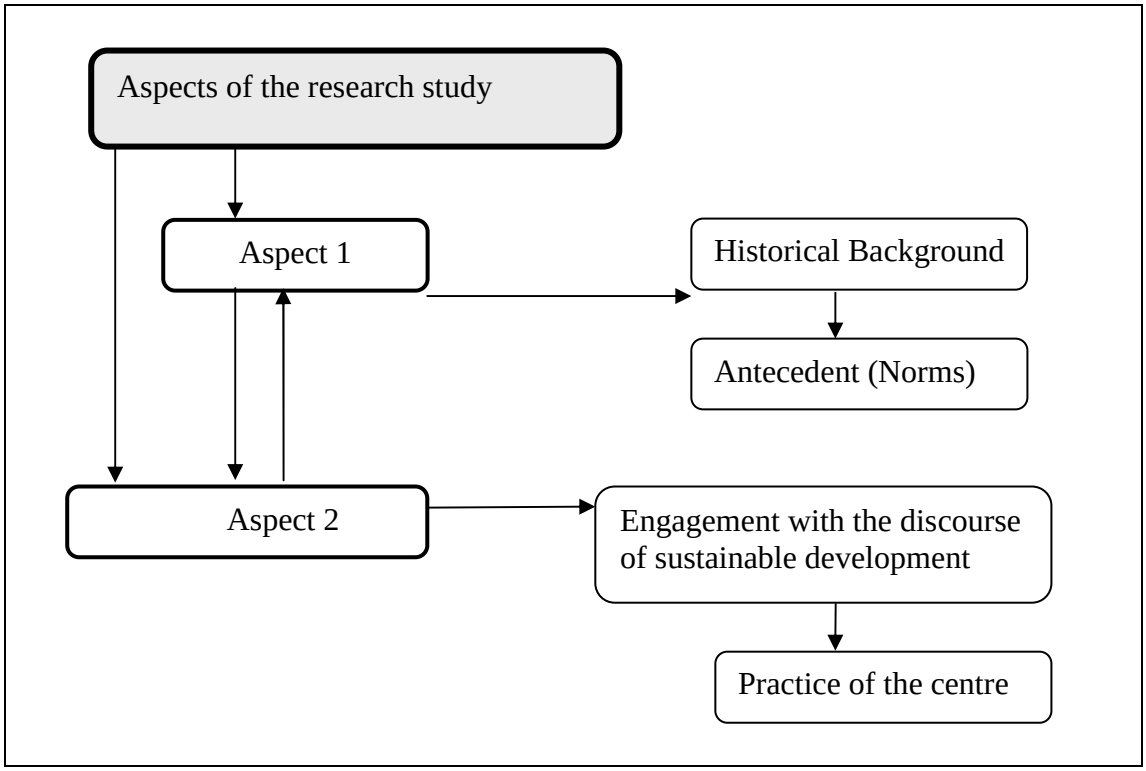


Figure 4.2 Aspects of the study

Aspect 1 focused on the historical context of the environmental centre from its inception to 2002 covering key points on *practice, activities and approach* to environmental issues. Aspect 1 also involved the exploration and analyses of why, when and how the discourse of sustainable development came to be adopted by the centre.

Aspect 2 involved the exploration of the actual engagement of the environmental centre with the discourse of sustainable development. Aspect 2 focused on a critical exploration, analysis and interpretation of the thinking that underpinned activities, the nature of and approach to programme design and delivery, the nature of the resource materials used, the nature of organizational input to the discourse of sustainable development and the nature of the mediation role between the centre

and beneficiaries (i.e. the persons who attend programmes or interact with resource materials of the centre).

During the execution of the research there was fluidity between the two aspects. The questionnaires and interview responses of the participants provided information which contributed to greater depth in the understanding of the historical background of the environmental centre. The document analysis also contributed to a better understanding of the responses of participants and the practice at the centre.

4.2 Participants

Two sets of participants viz. the staff of the centre and the beneficiaries of the centre were the key sources of information. The use of the word beneficiaries to refer to those who participate in programmes of the centre was preferred by the researcher as opposed to clients. Clients somehow seem to have an economic connotation. In the literature the word “development” in the discourse seemed to give many different perspectives due to the varied interpretation and its use within the context of economy. The researcher did not wish the similar economic interpretation with reference to people who participated in programmes of the centre. The word beneficiaries is more suitable as there was potential for people who attended the course to benefit from the programmes with reference to getting information, skills or reinforcing what they already know to reject or confirm their beliefs, ponder or ignore the discourse.

Sixteen staff members out of eighteen who were invited to participate (i.e. with relevance to the context of the aims of the research) participated in the study. Reasons for non-participation by other staff members could be attributed to unwillingness to participate in the research (as participation was voluntary), time constraints and availability for engaging in the interview or for response to the questionnaire. Some staff members who participated were involved or linked to almost all activities while some staff members were involved in specific activities of the centre (refer to the staff profile in Chapter 6). Different activities of the centre included aspects of policy development and implementation, programmme design and delivery and resource materials development. Staff members made inputs on different aspects of the research contributing towards a holistic understanding of the environmental centre’s response to the discourse of sustainable development. Appointments to meet with the staff participants were set up telephonically or personally.

The beneficiaries selected represented a diversity of those who had access to the environmental centre programmes. The beneficiaries were from the Department of Education, other governmental departments and environmental organizations (refer to the beneficiary profile in Chapter 7).

Children were excluded as participants from the study for two reasons. Firstly, given the complex, topical, intellectual and political debates around the discourse of sustainable development adults working in the field of environment were more likely to make a greater contribution in exploring the discourse. Secondly, without underestimating the contributions that children could make, the study would have been too vast and therefore had to be limited. The contributions of children would be better as an independent study and could be a possible focus for future research.

Many beneficiaries have attended the programmes of the environmental centre. In working within a qualitative paradigm and in using the environmental centre as a case study a sample of beneficiary participants were selected. The intention was to get in-depth understanding of views and impact of the discourse rather than to do a count of the number that came up with a certain view. The researcher is aware that a bigger sample could have had the potential of revealing a greater diversity of views on the discourse. Realistically, however, considering time constraints and that the beneficiaries were from all over the province, a sample (discussed in the next paragraph) sufficed to adequately respond to the research questions.

A list of twenty-five beneficiaries (participants) was initially put together in consultation with the Chief Executive Officer of the centre. A list of twenty-five participants was adequate as the researcher, considering that it was a qualitative study and a case study had planned that ten beneficiaries would serve the purpose of the study. The list of twenty-five was identified on the basis of their potential (ability) to provide the information and views required, and who had attended programmes and interacted with resource material of the centre based on sustainable development. The beneficiaries were contacted and the context of the study was explained to them. Thirteen beneficiaries of the centre eventually participated based on their willingness, availability and potential to meaningfully contribute to exploring the discourse. The beneficiaries were located throughout the Gauteng Province. Appointments to meet with the beneficiaries were set up telephonically, via email or personally.

4.3 Data Gathering

The nature of case studies makes possible the use of many tools and techniques to gather information to contribute to the authenticity or validity of the research findings. Interviews, questionnaires and document analysis were used to gather information about the two aspects – historical background and practice of the centre within the context of sustainable development. The interviews, questionnaires and document analysis focused on the themes of:

- the participants' understanding of the discourse,
- the activities of the centre based on the discourse of sustainable development,
- and the impact of the centres activities and programmes on the beneficiaries.

Document analysis was done in a progressive manner from the outset of data gathering as the documents became available. It was not possible to follow a sequence of giving the questionnaires first and then conducting the interviews, as the researcher could not apply any kind of pressure either than appeal for participants to respond on time to the questionnaire. Furthermore, the interviews had to be conducted according to the availability of the participants. Ideally, the researcher would have preferred to have received responses to the questionnaire first to do a preliminary analysis and then follow up on emerging issues as part of the interviews.

4.3.1 Document analysis

Texts in documents simultaneously represent different aspects of the world like the physical and social world (Fairclough, 2003). In general, documents can take different forms (official and unofficial, formal and informal) and cover a wide range of different sources e.g. documents generated outside the organization or generated within the organization (Bryman, 2004). Documents have the potential to serve as substitutes for activities that were not possible to observe directly, however, it is useful to pre-determine the potential of documents in order to use time meaningfully on the analysis of documents (Stake, 1995). Two key documents viz. the *EnviroTeach* publication and the Annual Reports of Delta Environmental Centre (both generated under the direct involvement of the centre) significant to the context of the study were used for document analysis.

Document analysis can be described as a transparent (Bryman, 2004) and usually a convenient method of gathering significant information. Document analysis may be considered transparent since what is on paper is more a permanent record of events or activities of that time frame. Document analysis may be considered convenient because once obtained, the analysis can usually be conducted at the convenience of the researcher (without the need to set up appointments). The disadvantage of document analysis is that it can only be as good as the documents on which the researcher works. Transparency is based on what appears in the document and may not necessarily be exactly what the author intended to say. Documents may reflect a particular time frame and in reality updates may not have been timeously recorded. The limitation of documents not being updated within the context of the discourse is that more recent valuable arguments and changes in practice would not be known to make valuable contributions to the research.

For this study document analysis was necessary to understand the historical context of the organization by analyzing documents generated prior to 2002, and to explore the responses to the discourse on sustainable development in practice through analyzing documents post 2002. Responses from participant interviews and questionnaires also contributed to information that was available in documents as well as providing information that was not available in documents.

The key documents used for the analysis viz. the most recent annual reports of the environmental centre, and the *EnviroTeach* publication were obtained from the staff at the centre. The *EnviroTeach* publication was used because it had the potential to provide information within the context of the study from the early nineties into the present decade. It is a regular publication (published at least three times a year) and is developed under the responsibility of the centre with other representations from institutions in an editorial committee. The history and regularity of the publication makes it a rich source to contribute to the analysis of the centre's engagement with the discourse.

Twenty-seven backdated issues (from 1994) were initially perused, with thirteen issues found to be relevant (further discussed in document analysis in Chapter 5). The editorials of all twenty-seven issues were analysed. Thirteen editions with greater relevance to the discourse were further analysed using the whole edition. A useful approach to document analysis is to determine the focused worth of documents for in-depth analysis (Stake, 1995). This not only means the use of time effectively but also a greater focus on documents that provide the most comprehensive information. Four of the thirteen editions were analysed in greater depth because of their direct focus on sustainable development or related discourses of sustainable living or sustainability. The title of the editions or the key focus in each of the four editions compared to the other editions justifies their use for in-depth analysis of the discourse.

- March 2002 edition: Water and the environment. The editorial uses the World Summit on Sustainable Development as the key point of departure as this was also the year in which the summit was convened.
- May 2004 edition: Educating for sustainable living – Water, Sanitation and the Environment (title)
- June 2005 edition: Financial literacy and sustainable living (title)
- November 2005 edition: Energy use and management. The editorial uses the World Summit on Sustainable Development as the key point of departure.

The other editions of the *EnviroTeach* provided some useful information to analyse the engagement with the discourse but not with the same depth as the four editions listed above.

4.3.2 Interviews

Interviews are an effective strategy to obtain information in qualitative research. Interviews are a strategy to get an understanding, linkages and explanations of the multiple realities not just *yes* or *no* responses (Stake, 1995). In order to explore sustainable development mere *yes* or *no* responses may be closed, inconclusive and superficial and contrary to qualitative research. The purpose of the interview is to get the participant to share information (Gaskell, 2006). In an individual interview it is often possible to probe what might seem to be a simple answer on a written instrument (Johnson, 2007). Information that otherwise cannot be gathered through document analysis or through the use of questionnaires that do not permit the immediate probing of responses can be obtained through interviews.

Paraphrasing, repeating in different words and probing make it is possible to check whether the participant's response has been correctly understood (Gaskell, 2006). In interviews the exact words of the participant may not always be the focus but rather what meaning is conveyed (Stake, 1995). During the interviews with staff and beneficiaries, perceptions, understanding and professional viewpoints were probed to explore responses to the discourse of sustainable development.

Semi-structured interviews rather than structured interviews were used. Bryman (2004) alludes to the point that in semi-structured interviews there is greater interest in the interviewee's point of view and the "going off the target" may give insight into what the interviewee sees as relevant. However, during interviews it was necessary to be in control to prevent the interview from becoming a casual conversation or going right off focus. One participant had a specific medical problem of losing focus of the initial thought. Semi-structured interviews assisted in refocusing the participant. The participant was a valuable source due to experience, qualification and knowledge and could not be excluded from the research. Semi-structured interviews assisted in refocusing some other participants as well, especially where participants tended to ramble. Semi-structured interviews made it possible to get the maximum amount of in-depth information within the time made available by the participant. Forty-minutes to an hour was used as a guide as part of the ethics protocol, however, in reality participants were not restricted and willingly participated.

The semi-structured interview covered the following domains: understanding and views of the discourse of sustainable development; the translation of the principles of sustainable development into practice; and the focus of scientific knowledge and skills within the context of the discourse of sustainable development. The interview questions (in both the staff and beneficiary interviews) correlated to specific questions in the questionnaires (of both the staff and the beneficiaries). This made the triangulation of data as well the supplementing of data possible. Examples of questions

from the beneficiary interview that correlated with the questions from the beneficiary questionnaire are: *What is your understanding of sustainable development?* and, *Some aspects of sustainable development as a strategy may require a certain amount of scientific knowledge and skills. How are the scientific knowledge and skills brought across to you in the programmes of the centre?*

The semi-structured interview allowed for the varying of the order of the questions in the interview schedule. Varying the order of questions during interviews provides the flexibility to pick up on certain responses (Bryman, 2004). In Chapter 2 it was pointed out that there are other discourses that some people have preferred to sustainable development, while others have used the same discourses interchangeably with sustainable development. During interviews the participants used other discourses like sustainable living and sustainability. Semi-structured interviews were appropriate to accommodate the *related* discourses, contradictions in responses, to probe and clarify responses. Members of staff were interviewed individually at the environmental centre at their convenience. Beneficiaries were interviewed at a site of their choice and convenience. Convenience for staff and beneficiaries was important to make them feel comfortable and not to feel intimidated.

All interviews (staff and beneficiaries) were audio-taped and later transcribed. Staff and beneficiaries had to give written consent to be audio-taped. Refer to Appendix 5 for the informed consent form used in this study. During the interview with respondents brief points of importance were noted on the semi-structured interview schedule (by the researcher) for probing, and also used later during the analysis. Some participants also made valuable additional comments after the tape-recorder was switched off (i.e. when the interview had ended). These comments were recorded by the researcher in the interview schedule and used as part of the analysis.

In accordance with the ethical procedures of the university no participant was coerced or forced to participate (ethical procedures have been discussed in detail in Section 4.6). Out of the sixteen staff members who participated thirteen were interviewed. The other three were not available. The three staff members who were not interviewed made a valuable contribution by responding to the questionnaires. Out of the thirteen beneficiary participants eleven were interviewed. Two beneficiary participants were not available for the interview and like the staff members who were not available for the interview made a valuable contribution by responding to the questionnaire.

Refer to Appendix 7 for a sample of the semi-structured interview schedule for the staff of the environmental centre and Appendix 10 for the beneficiaries.

4.3.3 Questionnaires

Well designed questionnaires can provide for the collection of reliable and reasonably valid information, in a timely manner that is not easily gathered through observations (Leedy, 1998). Although there are disadvantages to the use of questionnaires such as delayed response rates and the researcher being unable to probe responses (Bryman, 2004), there are also advantages like giving respondents time at their own convenience and under their own conditions to respond. Besides, the absence of an interviewer is less likely to make the respondents feel intimidated by the questions. However, there is no guarantee that respondents will provide a response or an adequate response to every question. An example of an inadequate response from the staff questionnaire is the response to the question: *Describe 5 examples of the kinds of activities for your beneficiaries in programmes that involve sustainable development.* Some staff participants responded to the question by providing two examples instead of five.

Questionnaires allow researchers to get responses without personal interaction to establish a broad picture of the thinking and views of participants (Clough and Nutbrown, 2002).
Questionnaires served a twofold purpose in exploring the engagement with the discourse of sustainable development. Firstly, to enrich the information gathered through interviews and document analysis, and secondly, to provide a source to cross-check data during analysis to contribute to the trustworthiness of the research. Refer to Appendix 8 for the questionnaire for the staff of the environmental centre and Appendix 11 for the beneficiary questionnaire.

Staff members of Delta Environmental Centre responded to a questionnaire that focused on the engagement with the discourse of sustainable development in the context of the activities of the organization. The same beneficiaries who were interviewed were asked to respond to the questionnaire on programmes that related to the discourse of sustainable development that they attended at the centre.

Most of the questionnaires were handed to staff and beneficiaries, while some questionnaires were emailed. The hard copies of the questionnaires had a coloured cover to distinguish between the questionnaire for the staff and the beneficiaries (blue for the beneficiaries and yellow for the staff members). In addition it was convenient and easy to keep track of the return of beneficiary or staff questionnaires. Questionnaires were returned by email, physically collected or posted back. The process of returns was not an automatic flowing one. As in many questionnaire processes, follow-ups with participants was necessary. This was done through friendly telephonic, email or personal reminders. With all ethical protocols being observed the full complement of thirteen beneficiary questionnaires and sixteen staff questionnaires were received. Since the study is a qualitative one

the returns could be considered as sufficient for the intended focus. The researcher had set an initial target of 10 staff participants and 10 beneficiary participants. The number was exceeded for both the staff and beneficiary participants.

4.3.4 Development and Piloting of the instruments

The development of the instruments (questionnaire and semi-structured interview schedule) followed a process of draft development, face validation and piloting. Through use of the literature and careful consideration of the research questions, the researcher set about drafting the instruments. The researcher revised questions in the draft instruments through revisiting the literature and the research questions. Face validation of the instruments was done by the supervisors. Face validation takes place when other experts make judgements whether the instrument measures what it is designed to measure (Sanders, 1993). Submission of the instruments to the university ethics committee also contributed to face validation. Face validation was not once off but developmental. In other words, the instruments were revised through a process that involved inputs by the supervisors. Face validation helped in reducing the initial 15 questions in the interview schedule into 10 semi-structured questions in the beneficiary schedule.

After the face validation process the questionnaire and interview schedule were piloted. A pilot study is useful to check for ambiguity and clarity before the main study is conducted (Converse and Presser, 1986). Pilot studies are useful to find out whether: the questions are pitched at an appropriate level for the participants to understand; the questions are phrased properly to gather the information required; any valuable questions have been omitted and the length of the interviews is suitable to get the required information.

The questionnaire and interview schedule for staff members of the centre were piloted with one person who was involved with the implementation of sustainable development in an environmental centre (but who was not employed at Delta Environmental Centre). The questionnaire and interview schedule for beneficiary participants were piloted with one person who attended programmes of Delta Environmental Centre that related to the discourse of sustainable development.

The researcher asked the participants of the pilot study for their inputs on the appropriateness and clarity of the questions. The responses to both staff and beneficiary pilot instruments (interview and questionnaire) were analysed. Questions that did not seem to elicit a response that was appropriate (based on the analysis and on the inputs from the pilot participants) were revised or modified. Although not many of the questions needed rephrasing, one example was the question on scientific knowledge and skills (in the interview) which had to be rephrased to make it clearer for the

participants. The pilot exercise contributed towards revising questions and improving the instruments before use with the actual participants.

4.4 Data Analysis

Some are of the belief that the researcher should suspend all analysis until all information gathering is complete and completion is reached when a saturation level is attained (Shulze, 1991). Stake (1995) states that there is no blueprint for when data analysis begins. Although data analysis depends on the nature of the study, it is recommended that analysis starts (even in an informal way) soon after the initial data has been gathered (Hatch, 2002). Due to the qualitative nature of a case study it was better to analyze the information as an explorative process from the beginning rather than at the end of data collection. Responses to questions from the first few interviews were analyzed to accommodate the possibility of unanticipated views and issues that might have needed further investigation.

Data analysis was done in three ways: typological analysis, inductive analysis and Critical Discourse Analysis. All three forms of analysis were based on finding patterns. According to Hatch (2002) patterns are found in the form of similarities, correspondence (in terms of activities) or causation. The three forms of analysis are discussed in the sections which follow.

4.4.1 Typological analysis

Typological analysis was used as the starting point. Typological analysis (Hatch, 2002) is when the data is divided into categories based on predetermined criteria (typology). An obvious starting point is the topic the researcher had in mind and the interview questions which may be open but yet fairly focused (Hatch, 2002). Predetermined categories were determined from the literature, research objectives and from initial analysis.

Pre-determined broad categories (guided by the questions in the questionnaire and the semi-structured interview) for each question were identified. Researchers working within a post-positivist paradigm seek guidance from the literature for typology (Hatch, 2002). The vision provided in the United Nations DESD (UNESCO, 2004), The South African Constitution which makes reference to sustainable development in Chapter 2, Bill of Rights (Section 24 – Environment), and sustainable development criteria for planners alluded to by McDonald (1996) provided the guideline for the development of the broad categories. These documents were used as a point of departure and not as

a blueprint for the analysis. The typologies were coded and the data was searched for the coded typologies.

An example of the use of typologies used in the analysis is the question in the staff interview that asked the participants for their opinions on the sustainable development and environmental education. Typologies based on the literature were developed. The typologies were based on views that emanated from an international debate of ESD (Hesselink, van Kempen, Wals, 2000). The typologies (refer to Chapter 6 on views on sustainable development and environmental education) used for the particular question were:

(i) *Environmental education is the same as sustainable development*
(ii) *Environmental education and sustainable development are linked*
(iii) *There is some difference between environmental education and sustainable development*
(iv) *The difference between environmental education and sustainable development depends on the history and context from which it is viewed.*

4.4.2 Inductive Analysis

Inductive analysis is when the data are read with intent of searching for patterns that can be grouped into domains, which are then reduced to categories due to specific relational characteristics (Hatch, 2002). Through reading the data new emerging categories were determined and coded accordingly. The data were then analysed based on the emergent new categories. Inductive analysis was applied to responses to the questionnaire and to the interview schedule.

An example of where inductive analysis was used is the question from the staff questionnaire (Question 9): *Describe 5 examples of the kinds of activities for your beneficiaries in programmes that involve sustainable development.* The researcher first read through the responses of the participants looking for patterns, and then highlighted (using coloured highlighters) points of significance and related points. Based on the highlighted significant related points, and patterns of responses, categories were developed. The categories listed below (that emanated from the data) were used for the analysis (inductive analysis).

- Pen and paper activities
- Investigative Activities
- Interactive Activities
- Physical activities

4.4.3 Critical Discourse Analysis

The Critical Discourse Analysis framework which is usually more suited to the linguistic field was adapted to understand the engagement of the environmental centre with discourse of sustainable development from an environmental, educational and scientific perspective.

Chouliaraki and Fairclough (1999) point out that Critical Discourse Analysis is evolving as it is being applied to new areas of social research. Critical Discourse Analysis is complex, but analysts may choose what to focus on according to the purpose of analysis (Chouliaraki and Fairclough, 1999). The three dimensional framework for Critical Discourse Analysis (Blommaert, 2005) was mainly used to analyze and interpret the data from documents but also applied to questions from the questionnaires and the interviews.

Prior to doing the analysis of the discourse on sustainable development an example provided by Janks (1997), an expert in the field of Critical Discourse Analysis, based on a linguistic perspective was studied. Working through the example provided more insight on how Critical Discourse Analysis can be applied, and how Critical Discourse Analysis could be adapted for the analysis of the discourse on sustainable development. The adapted (modified) questions with reference to the work of Janks (1997) used for the analysis of the discourse of sustainable development for each dimension of Critical Discourse Analysis are indicated in Tables 4.1, 4.2, and 4.3

Table 4.1 Questions used for textual analysis

1	**Text Analysis (use of verbal signs/visual signs / hybridity)**
1.1	What is the key discourse?
1.2	What are the other discourses / or evidence of emerging discourses? (hybridity – drawing on one or more than one discourse)
1.3	Textual Hybridity – whose interests are being played out?
1.4	How does the text position the reader or listener? (is there a pattern/pull in the same direction)
1.5	How does the overall construction of the text – logical reasoning/sequencing/ visual selection/ and organization/ interaction patterns contribute to the representation? (include verbal and visual signs)
1.6	Are there internal contradictions?
1.7	How is language used to construct a representation of the world? (scientific or subject specific terminology and words e.g. environment – biophysical importance / social importance….)

Table 4.2 Questions used for analysis of processes of production and reception

2	**Processes of production and reception**
2.1	Who is speaking to whom?
2.1.1	*When (situational context)*
2.1.2	*Where(situational context)*
2.1.3	*On what occasion? (what contextual factors influenced the production)*
2.2	What relations exist between the speaker/writer and the reader/listener?
2.3	What is going on in the content?
2.4	Who is involved (subjects)?
2.5	What relations exist between them?
2.6	What is the *discourse type/approach*?
2.7	Who is the ideal reader? (e.g. educator who needs personal awareness)
2.8	What are the inter-textual references? (What other texts are related to the text, or the obvious place to find the additional data)
2.9	How do the inter-textual references influence the reader?

Table 4.3 Questions used for analysis of conditions of production and reception

3.	**Conditions of production and reception**
3.1	What is the socio-historical context?
3.2	What power relations shape this discourse? social, institutional
3.2.1	*Social*
3.2.2	*Institutional*
3.2.3	*Situational*
3.3	What are the common sense assumptions that underlie the text?
3.4	What is taken for granted?
3.5	What is presented as natural?
3.6	How is the discourse positioned in relation to reproducing or changing social practice?
3.7	Does it work to sustain or transform (is it awareness/experience/ action)?

The guiding questions provided by Janks (1997) for the three dimensional framework (refer to Chapter 3 under the section on Critical Discourse Analysis for the framework) were adapted to suit the analysis of the data on the discourse of sustainable development. The questions were adapted (modified) to shift the focus from a linguistic perspective to education, science and social perspectives within the context of the discourse of sustainable development.

While the three dimensions of Critical Discourse Analysis have been categorically separated in the tables there are links between them. Findings in one dimension could lead to further concerns that may arise in other dimensions. The point is that in Critical Discourse Analysis the point of entry could be any of one the three dimensions (Janks, 1997) and not necessarily in the order presented.

In the analysis of documents, the researcher responded to the questions for each dimension (text analysis, process of production and conditions of production) for each edition of the *EnviroTeach* publication by reading through the editorials and relevant topics within the edition. The dimensions of Critical Discourse Analysis have been discussed in the previous chapter (Chapter 3). Following the response to each question consistent trends and patterns (stable signs) as well as non-conforming signs (unstable signs) were identified for discussion and interpretation of each of the questions (within each of the three dimensions). The interpretation and discussion of the consistent trends as well the non-conforming trends are discussed in the chapter (Chapter 5) that follows.

4.5 Concerns of trustworthiness (Validity and Reliability)

The terms validity and reliability are often used to describe the worth of research. Validity of the research findings can be described as whether the researcher has measured what was intended, (Craft, 1996) that is according to the aims and the research questions. Validity also concerns the appropriateness and the meaningfulness of the deductions made based on the information collected (Fraenkel and Wallen, 1990). Reliability refers to the consistency of the data in regard to the meaning (Schumacher and McMillan, 1993). It also relates to the concern that similar findings are revealed on another occasion under the same conditions of the research (Craft, 1996).

Validity is not the most appropriate term to use in a non-positivistic qualitative research context and Kincheloe (1993) suggests that trustworthiness is a more appropriate term to use. However, the credibility of constructed knowledge based on multiple perspectives used to view the world does not always provide benchmarks to turn to for certainty to measure trustworthiness in qualitative research. This does not imply that we cannot judge the quality of research. The quality of the research (trustworthiness) can be judged within limits of a theoretical base and according to prior assumptions.

Threats to trustworthiness were considered prior to the research and during the research. The development of a holistic, well rounded causal account (de Vaus, 2001) contributed to trustworthiness of the study. Integral to the holistic causal account in the context of sustainable development was: understanding the historical context of the environmental centre as an organization and the engagement of the researcher with the policies, literature and debates relating to the discourse of sustainable development.

A multi-method data collecting strategy (use of interviews, questionnaires and document analysis) made cross checking of data possible. The involvement of the supervisors, reference to the literature, communication with other doctoral students and piloting made the data gathering tools

authentic. The University Human Research Ethics Committee input, feedback and approval of the data gathering tools contributed to reducing concerns of trustworthiness.

During the interviews probing was used unsparingly to explore participant responses and to confirm correct interviewer interpretation of responses. An example from the staff interview schedule is the question: *What is your opinion about sustainable development as a way to approach environmental issues in our country?* The researcher probed responses for examples as well as reasons why participants agreed, disagreed or were of the opinion that the discourse needed further thought. Member checking (Stake, 1995) was used to see whether things were correctly transcribed and interpreted i.e. participants were given a copy of the transcript to see whether what was said during the interviews was correctly transcribed.

The researcher started the analysis right from the piloting stage as a continuous process. An exploratory approach to analysis rather than waiting for the completion of information gathering as a process, provided space to revisit areas of concern for further information and clarification. The exploratory approach also addressed the issue of trustworthiness.

In this thesis many quotes of staff and beneficiary responses (raw data) is presented. The provision of raw data gives readers the space to consider their own interpretations without directed influence and to later on also support generalizations (Stake, 1995; Hatch, 2002). The provision of raw data gives the reader direct insight into the context (Hatch, 2002) contributing to trustworthiness. In the chapters on analysis that follow, raw data in the form of actual quotes from interviews, extracts from documents and from questionnaires has been presented for the reader. Accurate and clear quotations are also a form of check on the analysis (Hatch, 2002).

4.6 Ethical Considerations

Due consideration was also given from the outset of the research and during the research to different aspects to maintain a high standard of ethics. The intention of the research was communicated to the Chief Executive Officer of Delta Environmental Centre. Written permission was granted by the Chief Executive Officer to use the organization as a unit for the case study (refer to Appendix 1 for the letter of permission to use Delta Environmental Centre as a case study). An application was made to the Gauteng Provincial Department of Education for permission to engage with personnel (as beneficiaries of the environmental centre) employed by the department. The Gauteng Provincial Department of Education subsequently granted written permission (refer to Appendix 2 for the letter of permission granted by the Gauteng Provincial Department of Education).

The final research proposal with all supporting documentation was submitted to the Human Research Ethics Committee (Non-medical) of the University and approval with a protocol number was granted (refer to Appendix 3 for the approval of the research by the University Human Research Ethics Committee).

Participants were informed in writing about the intentions of the research and the methods of collecting the information (refer to Appendix 6 for the staff information sheet and Appendix 9 for the beneficiary information sheet). Participants were required to complete and sign an informed consent form confirming their voluntary participation (refer to Appendix 4 for the informed consent form). The staff at the centre (not all were present) were briefed at a meeting about the aims of the research and an appeal was made for their voluntary participation. Participants were allowed to withdraw (although withdrawal from the study at anytime could have impacted on the study) without any victimization or coercion to continue. No staff or beneficiary participant withdrew from the research.

Participant responses to interview questions and to the questionnaires were kept confidential. Viewpoints of the participants were accepted as a response with respect, even when probing took place. Original documents of the environmental centre were used only for the purpose of the research. The original data were only available to the researcher and the supervisors of the research programme. According to the research ethics protocol original data e.g. tape recordings should be carefully stored but need to be destroyed after eighteen months of the protocol being granted.

The researcher adhered to two ethical cautions within the framework of Critical Discourse Analysis. Discourses have a discursive character (Locke, 2004) which opens them to different levels viz. individual, communities, nations or global. The first caution relates to opinions. The opinions of the participants were respected and interpreted both during data gathering and during the analysis in the context of collective domains of social, educational and public interests without individual focus. The individual space of the participants was protected through a mainly collective focus of reporting on the opinions on the discourse.

Discourses are known to have ideological effects (Fairclough, 2003). The second caution is that one of the perceptions of the sustainable development discourse (refer to Chapter 2) is that it may be an attempt to offer a blueprint based on a dominant world view. The researcher was careful not to debate the discourse with or present principles of the discourse categorically to the participants. Instead the opinions of all participants were accepted unconditionally for analysis. Even during probing, caution was taken not to present the discourse as a blueprint by asking questions that were

more open ended e.g. *Is there anything else that you would like to tell me about sustainable development?*

In the reporting, caution was taken to maintain the anonymity of the participants. In the reporting words/phrases that would have made the identity of the participant conspicuous was deleted from the quotations. Direct reference to work place or institutions was omitted from the quotations from the staff and beneficiary responses.

4.7 Concluding remarks

The research process was well thought through with expert and professional advice from the supervisors, the research proposal seconding committee, the ethics committee and substantiated by what is contained in the literature on qualitative research, discourse analysis and on the discourse of sustainable development. A further contribution to the research approach with a focus on analysis, were the various inputs made by fellow students and lecturers at the PhD weekend for students of the School of Science, where the researcher was given the opportunity to present work in progress.

The literature and the interactions of the researcher with various stakeholders such as the Department of Environment provided evidence, prior to undertaking the study, that there were many unanswered questions about the meaning of sustainable development and about practice relating to sustainable development. Keeping in mind the need to explore the “grey areas” about sustainable development, the use of a qualitative framework to guide the study was appropriate. The in-depth analysis of the key documents and the probing of responses of the participants provided the researcher with the space to elicit views of the participants about the discourse and to analyse the views rather than do a count of how many participants shared similar views.

The development of the tools for gathering the information involved a process of phrasing and rephrasing questions. The piloting of the tools for both the beneficiaries and for the staff members was a useful exercise. Piloting the tools not only helped to refine the tools but also helped in the process to consider emerging issues that were useful to understand the discourse of sustainable development in the context of the study. The development process of the tools also serves to buffer criticisms of those researchers who think that qualitative research is not as trustworthy as quantitative research.

The rigorous ethical procedures of the university show that ethics in any research is to be taken seriously. Although this study did not involve any participants who were vulnerable or at risk of serious injury, the requirements to obtain a protocol was just as stringent. This was also a constant

reminder to the researcher to observe all protocols when engaging with the participants. It is also for this reason that complete transcripts were not included in the appendices, but extracts placed at appropriate points in the discussion, especially for the staff members of the environmental centre. Complete transcripts would have made it possible to identify the staff member due to differing responsibilities and functions at the centre.

The results, interpretation and discussion of the analysis will follow in the next three chapters. Chapter 5 – Engaging with sustainable development: analysis and discussion of key documents, Chapter 6 – Staff response: Sustainable Development - interpretation, practice and impact, and Chapter 7 – Beneficiary responses: Sustainable Development - interpretation, practice and impact.

Chapter Five

Engagement with sustainable development: Analysis and discussion of key documents

Our challenge is to find ways of achieving our growth and development objectives without compromising the environment.

(Marthinus van Schalkwyk, Special Report, Financial Mail, October 2007, page 4)

5.1 Introduction

The focus of Chapter 5 is the analysis and discussion of two key documents of Delta Environmental Centre viz. the *EnviroTeach* resource for educators, and the annual reports on the activities of the centre. The *EnviroTeach* resource publication (compiled by an editorial team) and the annual reports (compiled by the Executive Officer of the centre) were selected as key documents as the documents reflect the practice and have the potential to show any changes in the practice of the environmental centre over time. The analysis and discussion of the key documents respond to the research question and sub-questions.

The key research question:
How does an environmental centre in a South African context engage with the discourse of sustainable development?

The chapter also has a focus on the research sub-question:

How does the discourse of sustainable development feature in the practice (how things are done) and activities (i.e. ways of engaging with the discourse, actual programme design and delivery) of the environmental centre?

The analysis and discussion of the documents in relation to the environmental centre's engagement with sustainable development is located within the frameworks of the three dimensions for Critical Discourse Analysis (CDA), Diffusion Theory, and Boundary organizations (refer to Chapter 3). In the analysis of documents, although Critical Discourse Analysis has been used as the main framework (because of the focus on text analysis), it has been integrated with the other theoretical frameworks and not isolated. An overview of Chapter 5 is represented in the organizer shown in Figure 5.1 on the next page.

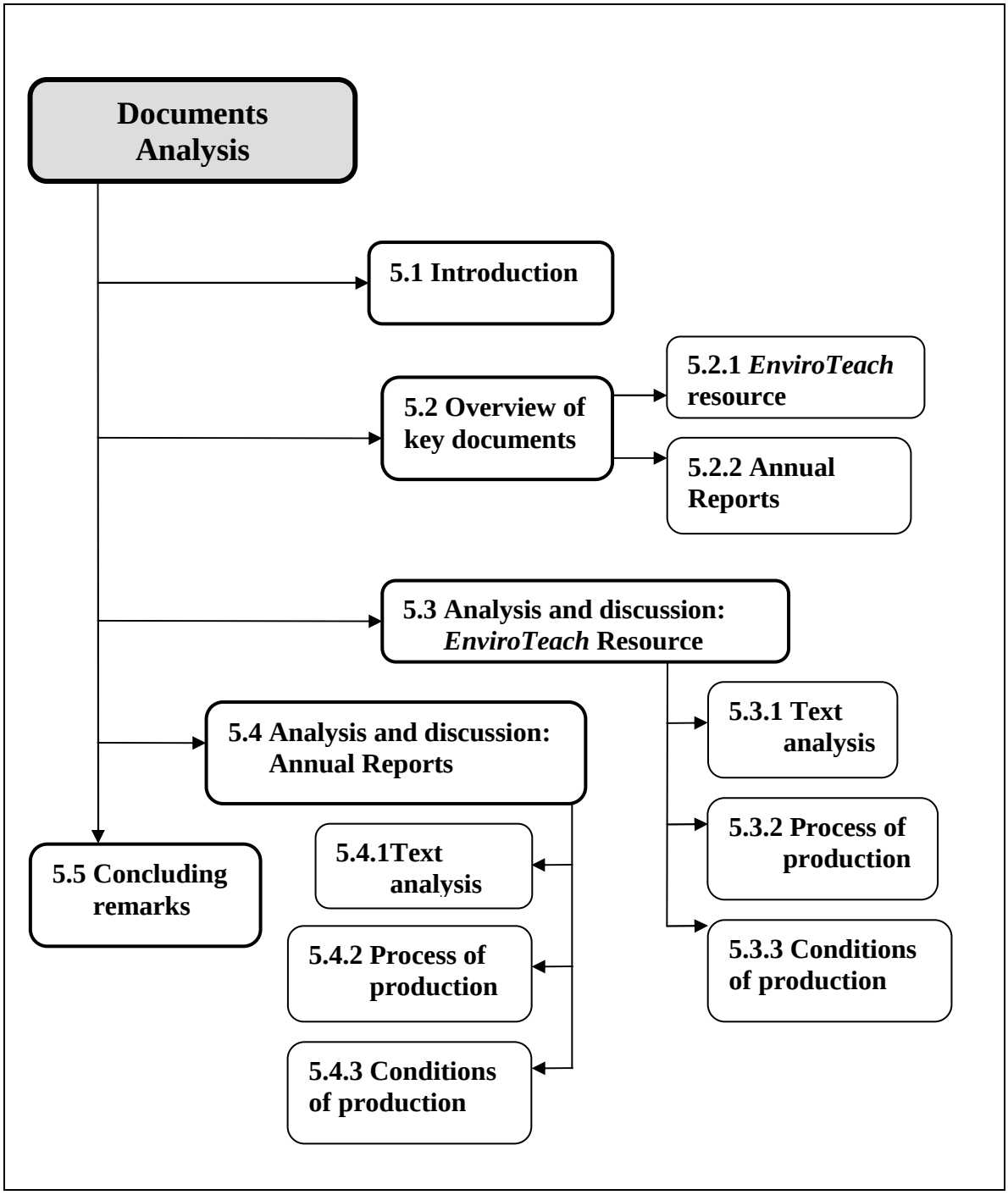


Figure 5.1 An overview of Chapter 5

An overview of the *EnviroTeach* resource publication and the annual reports is presented, followed by the detailed analysis and discussion of these documents.

5.2 Overview of the key Documents: *EnviroTeach* Resource and Annual Reports

An overview of the *EnviroTeach* resource is presented in Section 5.2.1 and is followed by an overview of the annual reports in Section 5.2.2. The overview of the *EnviroTeach* resource and annual reports has been presented separately as the documents have a different purpose.

5.2.1 *EnviroTeach* Resource Publication

The production of the *EnviroTeach* is coordinated by Delta Environmental Centre under the guidance and inputs from a panel of editors consisting of regular editors and also at times includes guest editors, the board of the centre and with inputs from editorial consultants. The frequency of the number of issues published usually ranged between two to three per year and is dependent on funding being secured. The publication is in partnership with other stakeholders. The stakeholders (e.g. Rand Water and Eskom) mainly provide the funding while the content is mainly driven by the environmental centre and an editorial committee.

The *EnviroTeach* resource is distributed free of charge to all schools in South Africa. Due to funding limitations copies of the resource are distributed per school rather than per learner or educator. The centre does make extra copies available should a school require more. The *EnviroTeach* is also given to beneficiaries in relevant programmes at the centre and is made available to other institutions.

The publications covered various themes usually with each publication having a focused theme tied to the funder e.g. the edition based on the theme of Water is related to a water funding agency. Themes have been repeated in some issues. The resource is basically developed with the intention of supporting and assisting environmental educators and school based educators within the formal education system in their fields.

The editorials of twenty seven available editions of the *EnviroTeach* i.e. editions published from 1994 to 2006 as shown in Table 5.1 on the next page, were analysed. Attempts to get editions prior to 1994 were not successful. In the interview with staff members it was indicated that in 1998 Delta Environmental Centre was approached by the publishers of the *EnviroTeach* and given the responsibility to drive the publication. To understand trends or changes in development of the resource a range of editions were analysed (before and after) Delta Environmental Centre took over the responsibility for the resource.

Table 5.1 Editions of the *EnviroTeach* used for analysis and discussion.

Number – (logistical purpose)	***Date and Volume***	***Title***	***Core themes***
1	1994, October	*Litter and littering*	Litter, Waste and recycling
2	1995, July	*Soil*	Soil types, recycling
3	1995, October	*Shelter*	Housing Crises
4	1996, April	*Parks and Education*	Outdoor-Environment education
5	1996, July	*Energy and the Environment*	Use of energy, alternate energy
6	1996, October	*Eco-Tourism*	Cultural Diversity, Eco-Tourism
7	1997, October	*Environmental Education*	Curriculum *2005*
8	1998, March	*Forestry and the Environment*	South African Forestry, Natural Forests
9	1999, March	*Water and the Environment*	Use of water, Pollution
10	1999, October	*Environmental Assessment and Management Projects*	Development of Environmental Projects
11	2000, January	*Water and the Environment*	Water, Poverty, Water use
12	2000, March	*Aids in my Environment*	Health
13	2000, October	*Mining and the Environment*	Mining
14	2000, November	*Aids in my Environment*	Health
15	2001, January	*Water and the Environment*	Use of Water
16	2001, May	*Energy and the Environment*	Use of Energy
17	2001, October	*The Chemical Industry*	Sustainability and the Chemical Industry
18	2002, March	*Water and the Environment*	Water
19	2002, October	*Our Coast and Our Oceans*	Marine Environment
20	2003, September	*Our Oceans and Coasts*	Marine environment
21	2004, March	*EcoTourism*	Ecotourism, Sustainable Tourism
22	2004. April	*10 Years of freedom*	Role models, Diversity, Safety
23	2004, May	*Educating for sustainable Living - Water, Sanitation and the Environment*	Use of Water, sanitation
24	2005, June	*Financial Literacy and sustainable living*	Financial literacy, poverty, entrepreneurship
25	2005, November	*Energy use and management*	Managing energy consumption, Sustainable Energy supply
26	2006, August	*Financial Literacy and sustainable living*	Financial literacy, poverty
27	2006, October	*Invasive Alien species in our environment*	Legislation, Invasive plants

The greater focus has been on thirteen editions produced from 2001 to 2006 because of their relevance to this study i.e. the discourse of sustainable development. The dates of the thirteen editions have been highlighted in Table 5.1. These editions were focused on in greater depth because the editions were produced at a time when the discourse of sustainable development gained momentum due to two key world events. The World Summit on Sustainable Development having taken place in South Africa in 2002 and the launching of the United Nations Decade of Education for Sustainable Development (2005-2014) in 2005. Also at the same time there were curriculum changes that were taking place in the Department of Education. The *EnviroTeach* is a resource that also supports the curriculum of the National Education System. The *EnviroTeach* and the curriculum are discussed later in the chapter.

It is useful to pre-determine the potential worth of the documents for meaningful in-depth analysis to use time effectively (Stake, 1995) to respond to the research foci. The thirteen editions were further narrowed down to five (which includes one reprint). The five editions had direct emphasis on sustainable development. The five editions that have been used extensively for the analysis have been completely highlighted in Table 5.1. The August 2006 edition was a reprint of the June 2005 edition with an additional four page curriculum-related insert.

5.2.2 Annual Reports

The Annual Report of the centre is a document that provides a reflection of the year's activities of the centre. It is a valuable source for the research study as it reflects on the challenges and achievements of the centre, provides an idea of perceived impact on beneficiaries and implicitly (if not explicitly) shows the response of the environmental centre to broader debates and developments that have taken place in the areas of environmental education and sustainable development. The annual reports are also useful to trace over time developments or changes from a structural perspective (i.e. the influences on the centre and how the report has been structured) and from a content perspective (that is what it actually reports on).

The annual reports of Delta Environmental Centre are tabled at the Annual General Meeting of the Board (and interested stakeholders) where the reports are opened for discussion and adoption. The reports cover the activities in the period between the 1st April from one year and 31st March of the following year.

The following reports were made available by the centre and were used for analysis (discussion on analysis follows in section 5.5):

1. Annual report: 1999/2000
2. Annual report: 2000/2001
3. Annual report: 2001/2002
4. Annual report: 2002/2003
5. Annual report: 2003/2004
6. Annual report: 2004/2005
7. Annual report: 2005/2006

5.3 Analysis and discussion: Editions of the *EnviroTeach* Resource Publication

The analysis of the five editions (represented as four because of the reprint of one edition) with a very significant focus on sustainable development has been presented in a table under each of the key dimensions of Critical Discourse Analysis viz. text analysis, process of production and conditions of production. The Tables (5.2, 5.3 and 5.4 respectively) also show the guiding key questions adapted from Janks (1997) for each text analysis, process of production and conditions of production. Analysis of other editions (aside from the four in the table) will also, where necessary, be referred to in the discussion. It must be noted that some of the trends identified in the analysis may be cumulative i.e. the trends could be a thread that is constant through different editions while some of the trends may be specific to an edition.

5.3.1 Text Analysis

Text analysis within the framework of Critical Discourse Analysis is more than just a superficial reading of the visuals and written words (Janks, 1998). In analyzing editions of the *EnviroTeach*, trends, contradictions and messages of both written and visual signs have been identified. The trends, contradictions and messages should be understood with caution in that not all may have been predetermined or intended. Unintended messages usually become more evident through in-depth analysis, like the one undertaken in this study.

The titles of the four editions (excluding the reprint) used in the text analysis are:

- March 2002 - Water and the Environment
- May 2004 – Educating for Sustainable Living
- June 2005 – Financial Literacy and Sustainable Living
- November 2005 - Energy Use and Management

These four editions either in their title or in their table of contents highlighted sustainable development. For example in the March 2002 edition one of the key topics is: *What does the World Summit on Sustainable Development mean for Water Resource Management in South Africa?*

Table 5.2 (on the next page) provides insight into how the trends that run within an edition or through editions have been identified. Question 1.3 is an example: *Textual Hybridity – whose interests are being played out?* Mainly "Government interest" can be identified as a trend as it appears in three of the editions. This can be regarded as a cumulative trend in the texts. Discussions that follow will be based on the analysis in Table 5.2, although reference will be made to other editions of the *EnviroTeach* that were analysed in a similar way.

Table 5.2 Analysis: Text Analysis – March 2002, May 2004, June 2005 and November 2005 editions

	EnviroTeach Edition:	***March 2002***	***May 2004***	***June 2005 (reprinted August2006)***	***November 2005***
1	**TEXT (use of verbal signs and /visual signs / hybridity)**	Title: Water and the Environment	Title: Educating for sustainable living - Water, Sanitation and Environment	Title: Financial literacy and sustainable living	Title: Energy use and management
1.1	**What is the key discourse?**	Water and the socio – economic approach	Sustainable Living -Water sanitation and the environment	Financial Literacy and Sustainable Living	Sustainable utilization of resources - Energy Use
1.2	**What are the other discourses? / or evidence of emerging discourses? (hybridity – drawing on more than one discourse)**	Sustainable development (linked to WSSD)/ Political (letter from minister)/Cultural Heritage	Constitutional responsibility/ sustainability	Values / Consumer Education/ Literacy	Sustainable Development/ Alternate Energy sources – key focus on nuclear energy
1.3	**Textual Hybridity – whose interests are being played out?**	Government/ public/ reference to generations (future and present)	Government –Department of water affairs	Financial Institutions and Consumers	Government and citizens
1.4	**How does the text position the reader or listener? (is there a pattern/pulls the reader in the same direction of the discourse /idea or the author)**	As part of a chain (ancestors) – with responsibility for future generations. Appeals to the values and love of ancestors for the environment /rediscover the values	Empowerment to use the resource to implement the curriculum. Challenges the reader (educator)	Empowerment and introspection / reflexive position	Position of ownership of the energy crises and resolve – “our future energy options are in your hands too”

Table 5.2 (Continued) Analysis: Text Analysis – March 2002, May 2004, June 2005 and November 2005 editions

	EnviroTeach Edition:	***March 2002***	***May 2004***	***June 2005 (reprinted August2006)***	***November 2005***
1.5	**How does the overall construction of the text i.e. logical reasoning/sequencing/ visual selection/ and organization and interaction patterns contribute to the representation? (includes verbal and visual signs)**	Authenticity – letter from Minister / the world is based on values of respect and care and this is presented as the basis for sustainability	Authenticity – Department of Water affairs/ Highlights vision – mission/milestones reached about the goals of a water project Visual: The active learning model is presented Logo of the Department is presented	Authenticity: Insurance – Association/ Financial Services Board. Visual: Concept of Environment Flow from the principles of the NCS to consumer education to sustainable development and living	Visual: Highlighted passage on the Kyoto Protocol. Authenticity: Director ESKOM Resources and Strategy Division. Statistics on the energy demands are presented together with safety of nuclear power as an alternative.
1.6	**Are there internal contradictions?**	Acknowledge that water is the most important resource but yet many do not have water/ Water becomes important in the light of the WSSD	No apparent internal contradictions	While making consumer education a key focus it is also providing products of insurance as a need – bringing people back into the loop of spending (subtle contradiction)	Acknowledging demands causing shortages – the focus is on meeting the demands and not reducing the demands.
1.7	**How is language used to construct a representation of the world? (terminology and words: environment – biophysical importance/social importance….)**	Sustainability and sustainable development /WSSD is used often, raising the concern of the world about sustainability issues including water.	The headings are in bold. Words like participate and capacitate/ implementation are used often – indicating that a change is possible.	Constitutional values and principles are repeated social justice related to consumer education	Integrated curriculum language and scientific terminology relating to energy.

Each box in Figure 5.2 will be used as the key focus for the analysis and discussion on the editions of the *EnviroTeach* within the context of sustainable development. The foci have been derived from the key guiding questions used in text analysis of the *EnviroTeach* (refer to Table 5.2).

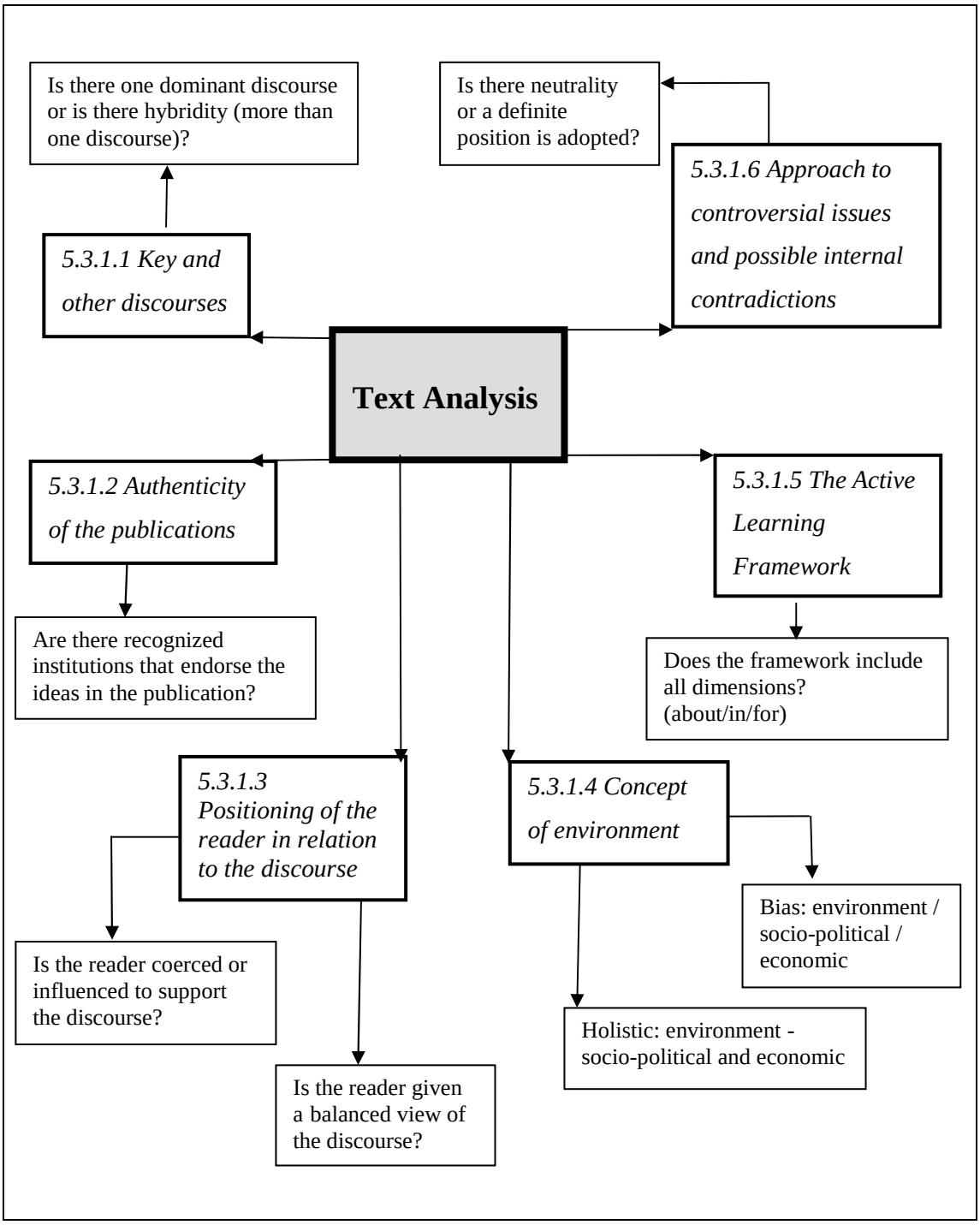


Figure 5.2 Focus of text analysis: Editions of *EnviroTeach*

5.3.1.1 Key and other discourses

In Chapter 2 (Section 2.3) other discourses related to sustainable development (such as sustainability) were discussed. Other discourses also feature in the text (like conservation and economics). The *EnviroTeach* publication has focused on many different themes. In the years prior to 2000 the message of conservation in the form of environmental protection and care seemed to be the key discourse. The conservation message and care for the environment message were also trends embedded in the international arena in the 1980s and 1990s. According to the literature, in the 1980s there were multilateral agreements to protect the environment. Multilateral Agreements included the 1982 United Nations Convention of the Law of the Sea and the 1987 Montreal Protocol on Substances that Deplete the Ozone layer (UNEP, 2002). A main area that resulted from the Earth Summit of Rio in 1992 as part of *Agenda 21* was the conservation and management of resources (UNEP, 2002). Environmental protection appeared to be explicit in the texts. The following extracts from two editions of *EnviroTeach* show the emphasis on environmental protection and conservation:

"In this issue of the *EnviroTeach* we have focused on some of the positive and exciting initiatives in our country which are in one way or another concerned with soil, its utilization, conservation and rehabilitation…"

(Guest Editor, *EnviroTeach*, July, 1995, p3)

"We need to enable all who have a love for the environment to hear 'the song of the earth'. One way to do this is to escape to the bush and spend time observing, perceiving and discovering the outdoors."

(Enviro-Comment, *EnviroTeach*, No.1 of 1996, p2)

In the years (from 1999 onwards) after Delta Environmental Centre took over responsibility for *EnviroTeach*, a change in the explicit key discourse was noticeable. From 1999 sustainable development was an emerging discourse, while from 2002 sustainable development became the key discourse. The researcher uses the word "emerging" to show that the discourse is alluded to but is not the focus of or "thread" that runs through the editions. However, the conservation message still remained implicit or integrated within a holistic perspective. The history of sustainable development (refer to Chapter 2) shows that from early 2000 the discussion on the discourse of sustainable development worldwide, and in South Africa, gained momentum. In 2002 the World Summit on Sustainable Development took place in Johannesburg. In editions especially from 2002 there seems to be a link in the focus of the key discourse in the *EnviroTeach* and what was building up or taking place in the

world outside the Delta Environmental Centre. The following two quotations make reference to the link:

"This year poses many exciting opportunities for our country, especially since we have been honoured with hosting the World Summit on Sustainable Development. This summit of global significance will deal with a broad range of issues, but particularly, the issue of poverty eradication and socio-economic empowerment will be thoroughly discussed."

(Letter from the Minister – Department of Water Affairs and Forestry, *EnviroTeach*, March, 2002, p2)

"For the purpose of sustainability, the DWAF through this programme strives to ensure full integration and effective implementation of water and sanitation into the school curriculum of General and Training (GET) by having a holistic approach."

(Foreword – *EnviroTeach*, Volume 11, May 2004, p2)

(DWAF – Department of Water Affairs and Forestry)

In later and more recent editions of *EnviroTeach* from 2005, sustainable development has been used interchangeably and at times replaced by sustainable living and sustainability. Critics have raised concerns about the interpretation of the word development (Rosenberg, 2004). From a pure economic interpretation development could mean "expansion" or "growth" in a material sense and in relation to profits. This interpretation would negate the conservation aspect, as well the responsibility to reduce or prevent destruction to the environment.

"The United Nations has declared the years from 2005 to 2104 as the *Decade of Education for Sustainable Development*. South Africa is playing a prominent role in this decade. This edition of the *EnviroTeach* will serve as an excellent resource as it illustrates the strong links and interconnectedness between education (in this case, *Financial Literacy*) and understanding the need to live sustainably."

(Editorial – *EnviroTeach*, Volume 14, June 2005, p3)

In the recent editions (2005 and 2006) of the *EnviroTeach* Delta Environmental Centre was inclined to adopt a perspective where sustainable living is used more in preference to sustainable development (which seemed to have an ambiguous interpretation). This is evident in the titles of the May 2004 edition (*Educating for Sustainable Living*) and in the June 2005 edition and its reprint in 2006 (*Financial Literacy and Sustainable Living*).

In all the editions of the *EnviroTeach* i.e. pre and post 1999 *values* and the exploration of values was the other significant related discourse. In the context of the research values would refer to what was considered important in relation to the environment e.g. responsible use of resources and care of the environment and the influence of values on human action. The quotes that follow are examples of the focus on values.

"We do need, however, to develop a responsible society where it is the norm not to drop litter, and the schools obviously have an important role to play."

(EnviroComment – *EnviroTeach*, No.3, 1994, p2)

"Everyone's culture has an influence on how they view the world and their day-to-day practices. Throughout one's lifetime, these ideas and practices influence and steer one's decision-making ability."

(EnviroFeature – *EnviroTeach*, March, 2002, p4)

"Values and morality give meaning to our individual and social relationships. They are the common currencies that help make life more meaningful than might otherwise have been."

(Editorial – *EnviroTeach*, Volume 14, June 2005, p3)

The researcher has identified four possible reasons as to why Delta Environmental Centre places continued with the emphasis on values. Firstly, values were always recognized as being important from an environmental ethics perspective (values were part of *Agenda 21* – 1992). Secondly, the worldview of sustainable development is underpinned by values. Thirdly, the United Nations Decade of Education for Sustainable Development also places great emphasis on values as integral to sustainable development (UNESCO, 2004). Fourthly, values are entrenched as part of the mission of the centre and in working in tandem with the formal school curriculum, the centre upholds the values that underpin education in the country. The centre has committed to upholding the values in the Manifesto on Values, Education and Democracy. The mission statement of the centre has the following point on values (Delta Environmental Centre, 2007, p6):

"To develop responsible values and attitudes to the environment."

In an advocacy brochure (Delta Environmental Centre, 2007, p6) the following is stated about values:

"Delta Environmental Centre upholds the ten fundamental values as identified in the *Manifesto on Values, Education and Democracy* (Department of Education, 2001). They are democracy, equality, ubuntu (human dignity), an open society, the rule of the law, social justice, non-racism and non-sexism, respect, accountability (responsibility) and reconciliation."

According to the analysis, it could be interpreted that in the environmental centre sustainable development is the more dominant discourse in the present decade. The evidence from the data analysis concurs with the literature that there are uncertainties in the use of the sustainable development discourse, and alternates are preferred but used interchangeably with sustainable development. The analysis also points out that the sustainable development discourse is not an isolated discourse. Other discourses like values are linked. The quotation from the advocacy brochure also makes reference to the "rule of the law" which implies that the legal discourse is also linked to the discourse of sustainable development. The links between the sustainable development discourse and the other discourses make it difficult to use sustainable development as a blueprint. In the context of values there are always questions that arise about whose values are the most appropriate (indigenous cultures, western cultures or purely religious values), especially where there may be distinct differences.

5.3.1.2 Authenticity of the publications

The *EnviroTeach* editions seem to show that they are authentic publications by the significant letters or messages in the foreword section of the publication by persons with status of authority (like Ministers and Chief Executive Officers). This was not only the case in the four editions of the *EnviroTeach* used for detailed analysis but also in other editions e.g. July 1996, November 2000 and September 2003 editions. The word "authentic" means that something is *trustworthy, entitled to acceptance or valid* (Oxford Dictionary, 1998). Table 5.3 on the next page shows the use of key persons to authenticate the publications.

The sources to authenticate the editions vary from sponsors of editions (like Eskom) to government departments (like the Department of Water Affairs and Forestry). The source of the authenticity of the publications is more from outside Delta Environmental Centre. The messages that authenticate the publication usually appear on page two. The placement of the messages in the foreword gives the sense that the environmental centre is in support of

government initiatives and policy. However, the standpoint of the Delta Environmental Centre on issues is downplayed (discussed further in the next quotation). The reader could be misled into believing that the centre supports the views of the representatives in the foreword. In some editions it might be the case of supporting the views of representatives from other organizations, in other editions support is not categorically stated. Energy is an issue central to the discourse of sustainable development. An example of the November 2005 edition, Volume 15 on *Energy use and management* will be used to show that the stance of the environmental centre is not always categorically stated to support or reject the message of the sponsor in the foreword.

Table 5.3 *EnviroTeach* Editions with messages as an indication of authenticity

Edition	Title	Form of authenticity
2002, March	*Water and the Environment*	Letter: Minister – Department of Water Affairs and Forestry (page 2) Foreword message: Deputy Director – Department of Water Affairs and Forestry (Water Conservation Directorate) (page 2)
2004, May	*Educating for sustainable Living - Water, Sanitation and the Environment*	Foreword message: Editor with a representative from the Department of Water Affairs and Forestry (page 2)
2005, June	*Financial Literacy and sustainable living*	Foreword message: Chief Executive (The South African Insurance Association) Foreword message: Executive Officer (Financial Services Board) (page 2)
2005, November	*Energy use and management*	Foreword message: Managing Director (Eskom Resources and Strategy Division) (page 2)

In the foreword in the November 2005 edition, Volume 15 (page 2) on *Energy use and management* - the managing director states:

"One alternative that is very viable for the future is nuclear power. Even though nuclear power is not renewable, it does not have emissions and has an excellent safety record in South Africa and most of the world. Koeberg Power Station in the Western Cape has been operating safely for 20 years."

In the very next page in the same issue, the editor states (with reference to alternate energy sources and clean technology):

"With the global spotlight on Climate Change at present, these issues are relevant and sometimes controversial and topical for Further Education and Training (FET) learners."

Later in the same edition an entire section is dedicated to nuclear power (pages 27-29). In this section the environmental centre does not commit to supporting or refuting the use of nuclear power as an alternate energy source but in the editorial has acknowledged that alternate energy sources could be controversial. Especially after the damage done during the nuclear spillage in Chernobyl in 1986 there are skeptics regarding the use of nuclear power. This could be one of the challenges that the environmental centre faces in the role of a boundary organization – how much to project about its own identity and views. Either way explicit support or rejection of nuclear power as an alternate source of energy could be perceived as a power-cohesive strategy or a top-down approach (refer to Section 3.2.5 in Chapter 3) to influence the reader.

A power-cohesive strategy is when authority or representatives of authority are used to convince the audience about a particular standpoint (Bishop, 1986). While the issue is authenticated by an authority figure, the response to the issue from the position of the environmental centre may not necessarily be categorical. The power-cohesive strategy of the funder could be having an influence on two levels of the publication. One is at the level at Delta Environmental Centre i.e. the centre is constrained by the funds that it receives. In this context it could be interpreted as unethical or not strategic to oppose the views of the funder (directly or subtly). Any opposition to the views of the funder could mean strained future relationships, with the potential result of that source of funding being withdrawn or the loss of that source for funds for other projects. On another level, the funders being aware of the constraints placed on and the obligations of those that receive the funds, use this as a position of power to advance their pro-agendas on issues.

The environmental centre has also used the formal school curriculum as a basis to authenticate the editions of the *EnviroTeach* within the context of sustainable development. All editions have the educator as the focus of interest, in particular the educator who is based at a formal school institution. This is quite distinct in that most editions of the *EnviroTeach* are planned and written within the context of the National Education System and Curriculum. The National Curriculum from a version of Outcomes-Based Curriculum called *Curriculum 2005* was in the process of being revised in 2001 to a different version called the *National Curriculum Statement (NCS)*. The environmental centre supported educators to implement the education curriculum policy changes by government in regard to education and sustainable development. This could also be interpreted as the influence of a power-cohesive strategy. It

may or may not have necessarily been the intention of the centre to use the publication in that way. However, by virtue of the publication being embedded in a legal education policy gives the reader (such as an educator) no choice but to accept the authenticity of the edition in the context of obligations to policy. Three editions of the *Enviroteach* will be used as examples to show support for these changes.

In *EnviroTeach*, Volume 3 of 1999 (Topic: Environmental assessment and management projects) the language used in the *Curriculum 2005* policy (such as specific outcomes used for the planning of learning activities) was used. In keeping with changes in the *National Curriculum Statement (NCS)* the policy language changed in the *Enviroteach* edition No 1, 2001 and in subsequent editions (to the use of a new terminology – like learning outcomes to be used for the planning of learning activities). In the *EnviroTeach*, Volume 11, 2004 (page 1) it is stated that:

"Delta Environmental Centre takes the responsibility for the editorial function to ensure that the magazine fits into the framework of *Curriculum 2005*,…."

In the edition of volume 11, 2004 the centre takes a categorical position in terms of supporting the curriculum. *Curriculum 2005* was still used in the 2004 edition because it was being progressively phased out (to be completely phased out) in 2007, at the same time the *National Curriculum Statement* was progressively phased in.

However, while Government authority or authenticity for the publication may be a strong message, Delta Environmental Centre can be viewed as being proactive. Aside from the South African Constitution, even with Decade of Education for Sustainable Development being declared in 2005, there was no categorical published government policy for public use on a strategy for Education for Sustainable Development up to July 2007. From the analysis it is evident that from mid 2000 there has been greater focus on the sustainable development discourse. The strategy of getting across sustainable development was deeply embedded in the use of terminology from education curriculum policy. In implementing a strategy to achieve the vision of sustainable development (whether it is the view of the centre or the view of government) Delta Environmental Centre has identified the formal school curriculum as a medium to deliver the discourse. In using the formal school curriculum (a structure of the National Government) both the *EnviroTeach* publication and the discourse are authenticated.

5.3.1.3 Positioning of the reader in relation to the discourse

With the *EnviroTeach* having the educator in mind as the key user, the question is how does the publication position the educator? The pre-Delta editions (before 1999) mainly positioned the educator as a recipient of information and activities. For example in the 1993 edition titled *Our Precious Soil*, information and examples of activities with their conclusions are provided for the educator to use but without challenging the educator to seek alternates or asking for the educator's input or comment. The post-Delta editions (1999 and since) take a different approach (refer to Table 5.2 – question 1.4). The following are examples of positions that the educator is influenced to adopt.

(i) An appeal to consider cultural heritage and values: In the March 2002 edition (page 3) it is stated that:

"Our cultural heritage is the key to how people in the past used to love and take care of the environment in general and water, in particular. This cultural heritage perspective should lead to an integrated approach to sustainable resource management. This is especially important since 2002 is the year for the World Summit on Sustainable Development which will take place in Johannesburg, South Africa….. Sustainability is something that can be achieved if we rediscover the values and love our ancestors used to have with regard to the environment. You, as the educator, can utilize the *EnviroTeach* to facilitate the process for your learners to achieve just that. In your hand you are holding a resource to be used as a starting point for such a process."

While an argument may be that the quotation refers to a romanticized view of the past, the reader is nevertheless encouraged to think about knowledge that is outside the realm of scientific knowledge to respond to sustainable development. Both indigenous and scientific knowledge are recognized as important in the Decade of Education for Sustainable Development (UNESCO, 2004). Solutions are not presented. Instead educators are to use the resource to engage learners.

(ii) Introspection into one's own behaviour: The editions of the *EnviroTeach* encourage the readers to introspect (that is look at their own behaviour). The economic dimension is recognized as one the dimensions of sustainable development (refer to the literature review in Section 2.2 Chapter 2). Two statements are made in the foreword in the June 2005 edition on *Financial Literacy and SustainableLiving* which encourages educators to be introspective.

"It is a fact that many people in South Africa are not financially literate." (The Chief Executive – The South African Insurance Association, page 2)

"As a regulator, the Financial Services Board (FSB) strongly supports the idea of educating consumers as part of its overall consumer protection role…" (Executive Officer, Financial Services Board, page 2).

The section on personal financial management follows in the same edition from pages 4 to 9. In the editorial (Appendix 12) the educator is also placed in the position of a consumer. Some of the activities that were designed in the section on personal financial management for the learner are equally applicable to the educator, like the activity to promote discussion on needs and wants (on pages 4 and 5). The activity on needs and wants is based on pictures that depict different things people buy e.g. food, cigarettes and clothes.

(iii) Taking ownership as a citizen: The reader is positioned as part of the problem and as part of the strategy to respond to environmental challenges. The reader is inevitably put in the position of taking ownership and responsibility.

"I hope that the information in this edition gives you great insight into energy in South Africa and all the options for the future. Our future energy options are in your hands too – start thinking wisely about your electricity consumption today."

(*EnviroTeach*, Volume 15, November 2005, page 2)

Sustainable consumption is recognized as one of the possible themes in the Decade of Education for Sustainable Development (UNESCO, 2004). The quotation equally applies to the positioning of the reader as discussed in point (ii).

(iv) Attempts to empower the educator: The four editions in Table 5.2 as well as other editions, contain examples of activities that the educators can give their learners based on the themes of the *EnviroTeach* within the context of the formal school curriculum. There is also an attempt to engage the educator in the planning of the activities.

"Educators Note: Which Assessment Standards would apply based on your approach to this Activity?"

(*EnviroTeach*, Volume, 11, May 2004, page 15)

Empowerment is more from the perspective of curriculum implementation than from a perspective of the discourse of sustainable development. While some editions try to position the educator as a critical reader, editorial inputs of the government sector and constant references to government policy (as indicated in the previous section on authenticity) downplay the role of being critical. In other words the stance taken by government through policy and "rule of the law" makes the discourse appear more as a blueprint than a discourse that needs a deeper understanding.

In editions from 2002, which have frequent reference to sustainable development, the educator is not engaged with the discourse, but is provided with activities that can be used to integrate sustainable development in the classroom. This is likely to send out two possible (intended or perhaps unintended) messages. One is that sustainable development has underlying principles which are acceptable (which the educator needs to be aware of since the educator is not given the opportunity to engage critically with the discourse). An example is the August 2006 edition. An entire page (page 29), entitled "The synergy between financial literacy and sustainable living" is focused in support of the discourse (with reference to *Agenda 21* and the WSSD) without any remarks about the contested nature of the discourse.

The other is a shift in focus. Sustainable development is being used to develop the skills of the learner, rather than for the discourse itself to be challenged. In the June 2005 edition, activities for the learner are preceded by the phrase: "By completing these activities the learners will have acquired the following: …(headings)..Knowledge; Skills; Values / Attitudes." The activities focus on empowering the educator on what the learner should achieve within a curriculum context within a specific subject, but does not encourage debate on the discourse.

With the change from the use of *sustainable development* in editions from 2002 to 2004 to *sustainable living* in editions from 2005, no rationale underlying or tracing the change is provided. The title of the June 2005 edition reads as: *EnviroTeach – Financial Literacy and sustainable living.* In the same edition the following is stated on page 30: *South Africa has a tailor-made curriculum and is a trendsetter in education for sustainable development!*

Educators as recipients are provided with another version of the discourse of sustainable development i.e. sustainable living. The impression created is that sustainable living and sustainable development are interchangeable concepts if not the same thing. Internationally however, there is academic debate about sustainable development and about the alternate conceptions. These academic debates and criticisms are not included in the *EnviroTeach.*

5.3.1.4 Concept of environment

The United Nations document on the DESD (2004) makes reference to sustainable development and environmental education as separate discourses. However, the *EnviroTeach* editions do not seem to portray them as separate. Hesselink *et al*. (2000) have shown that there are different views about the relationship between sustainable development and environmental education. A model or framework of the environment (see Figure 5.3 on the next page) that is used often in environmental education appears in seven out the nineteen editions from 1999, from the time Delta Environmental Centre took over responsibility for the publication. The model appears in five of the editions of the thirteen that make reference to sustainable development. The five editions that make reference to the model were editions published from March 2004. While the word sustainable development does not appear in the model the dimensions of sustainable development (environment, socio-political and economic) are represented in the model by the political, social, economic and biophysical. The model basically shows interrelationships between the different dimensions of the environment. According to the model, a response to environmental issues should involve a consideration of all dimensions.

In the use of the model from environmental education to respond to sustainable development the view that comes through is that environmental education and sustainable development are not separate. The linked dimensions of environment, economic and socio-political provide the continuity and overlap in viewing both environmental education and sustainable development as not being different.

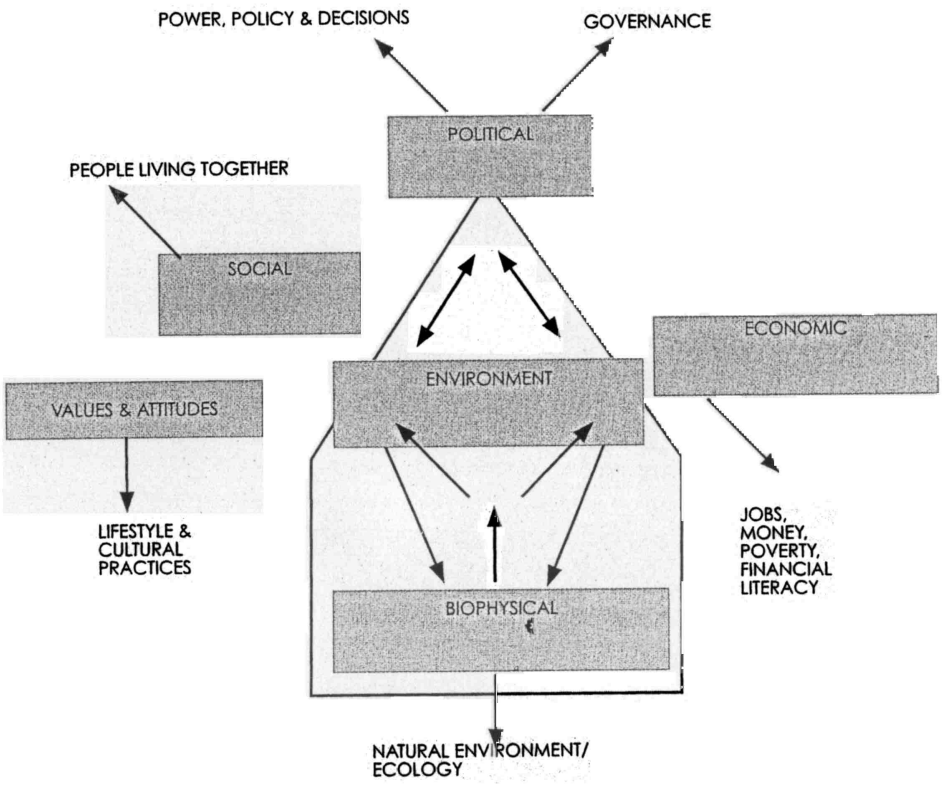


Figure 5.3 Concept of the environment (*EnviroTeach, August 2006:Financial Literacy and Sustainable living)*

The discourse of sustainable development should not be partial to only one dimension (either economic or biophysical) or apply to different dimensions in an isolated way (Rosenberg, 2004). The view is that all the dimensions of the environment (political, economic, biophysical and social) are interlinked and impact on each other. In using the model (Figure 5.3) showing the interlinked dimensions of the environment (holistic approach) within the context of sustainable development, it can inferred that the environmental centre subscribes to a holistic approach to the discourse on sustainable development. In using a model from environmental education in the context of sustainable development, it could be inferred that the centre portrays a view that the discourses overlap and are not entirely disconnected.

Even within the holistic approach there is a tendency to sometimes focus more on one dimension than the other. The visual presentation of the model in Figure 5.3 has an intended influence. The outline of the design of the model is in the shape of a house. The bottom line or foundation of the house is the biophysical (or natural) environment. The importance of the

natural or biophysical environment is maintained in all editions of the *EnviroTeach.* The inference is that although the centre engages with the sustainable development discourse the greater focus is on the natural environment. However, the relationship between the natural environment and the other dimensions e.g. the socio-political dimension (as shown in Figure 3) are not consistent in all editions. Bond (2002) has raised concern with reference to the Lesotho Water Project, about the impact of power and politics on the sustainable development discourse.

A holistic view of the environment has been translated in the approach to teaching and learning within the structure of the curriculum. With specific reference to editions that focused on or referred to sustainable development, the discourse was not constrained to one subject in the formal school curriculum but was also linked across the subjects. In the June 2005 edition of *Financial literacy and sustainable living* (page 4) the section on curriculum links include the subjects of Economics, Mathematics and Mathematical Literacy. In an activity in the November 2005 edition on *Energy use and management* (page 4) the subject geography is identified as the core subject while Mathematics and Mathematical Literacy were identified as subjects that can be integrated in the activity.

The integration does not mean that sustainable development was "watered" across subjects. Greater focus was maintained within the selected subject or subjects, while links were made to bring about the holistic nature of the environment and sustainable development. The core (focused) and integration approach to subjects could be a seen as a response to the criticism of the triple bottom line stance (environment, social and economic pillars) of the United Nations DESD (UNESCO, 2004). The impression of the triple bottom line stance is that while the different dimensions are considered, the dimensions are confined and do not impact on each other. With reference to the triple bottom line stance, Rosenberg (2004) and Bak (1995) have pointed out that sustainable development should not be embedded in only one dimension, but should cut across the dimensions of economy, socio-politics and environment. If Delta Environmental Centre had implemented the triple bottom line conception of UNESCO (2004) rigidly then the social pillar would have been confined to the social subjects and likewise the environment and economic pillars to the science (including geography) and commerce subjects respectively.

5.3.1.5 The Active Learning Framework

Another common link to environmental education that has been transferred to the discourse of sustainable development is the use of the active learning framework (Figure 5.4) which is

based on two underlying premises which also overlap with the aims of the national curriculum. One is that of an inquiry process and the other is a move from awareness to action. The inquiry process is based on three components around the focus issue:

- Finding information
- Exploring and questioning
- Acting and reporting

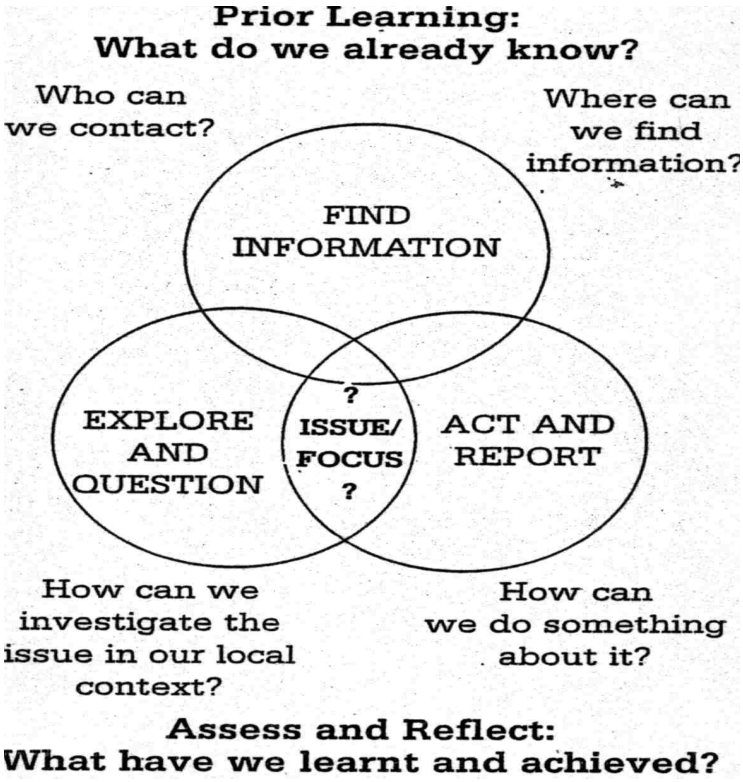


Figure 5.4 The Active Learning Framework (*EnviroTeach, May 2004: Educating for Sustainable Living – Water, Sanitation and the Environment*).

Visually the components are not presented in a linear arrangement but rather in a cyclic and intersecting arrangement. This brings out an implicit understanding of the inquiry process within a sustainable development frame of thinking. The process is not a process with an end, but is a reflexive ongoing process. Within the context of the active learning framework the meaning of "development" in the discourse of sustainable development can be interpreted as

cognitive and intellectual development (or growth). Academic critics of sustainable development tend to argue against the discourse with a focus on development from an economic premise sense. The use of the active learning framework could be interpreted as a way to show that sustainable development is not viewed as attaining an end but rather as a continuous process from a learning perspective.

To understand the active learning framework (as a borrowed framework from environmental education) in the context of sustainable development, it is useful to review criticisms of environmental education. One of the criticisms of environmental education was that programmes often focused on learning *about* the environment and on learning *in* the environment instead of *for* the environment (Delta Environmental Centre, 2000). Learning *about* the environment is characterized by information sharing and the raising of awareness of environmental issues. Learning *in* the environment is characterized by experiencing the natural environment (e.g. studying the environment in a nature reserve or going on a nature trail). However, the limitation of both these foci is that there was not much impact on change in attitude and behaviour in the form of taking action in response to environmental issues. The learning *for* environment of environmental education seemed to complete the response to environmental issues. The learning *for* environment response implies an approach where it is hoped that a behaviour change will be expressed in action (Lotz, 1996; Job, 1996).

The *about, in* and *for* approach has been integrated within the inquiry process. The inquiry process itself is depicted as one of awareness and action. Although sustainable development is viewed as a vision by some, others have placed emphasis on behaviour change and action by referring to lifestyle choices, sustainable living and sustainability.

The active learning framework was implemented in the designing of activities for learners. It can be inferred that the intention of the approach (the active learning framework) in the *EnviroTeach* is of raising awareness with the hope of promoting a change in behaviour in the form of taking action. From 1999 which is the period when Delta Environmental Centre took the responsibility for the publication, the active learning framework has appeared in nine of the nineteen editions listed in Table 5.1 (refer to Section 5.2.1), with eight of the editions published from 2001. The November 2005 edition on *Energy use and management* makes reference to a case story on energy efficiency (page 6) and “energy conservation ideas” which include the reduction of “hot water wastage”, change of thermostat setting of the geyser and the advantage of using fluorescent lights (page 13). The information in the case story and the energy saving ideas are examples of the intention to raise awareness (*about* the environment).

Many of the activities in the *EnviroTeach* have been designed in a way that participants (learners) become involved in taking proactive and responsive action in local environmental issues. Some of these activities are in the form of challenges to participants e.g. sustainable development in the form of starting food gardens as an immediate response to poverty (*EnviroTeach*, May 2004, page 25). In the June 2005 edition on *Financial literacy and sustainable living* (page 6) as part of the taking of action, an activity focused on first drawing a monthly budget for a hypothetical example of a family income and then drawing up a budget for the income of one's actual household. A key finding is that the centre's approach to the discourse attempts to go beyond raising awareness to more learning *for* environment approach.

5.3.1.6 Approach to controversial issues and possible internal contradictions

In editions relating to sustainable development, especially where there are controversial issues, the centre does put forward its own views. While the centre is in a position to be influential, in not only raising awareness but also taking a standpoint, it does not do so. This in itself shows that the centre shows a position of neutrality. It could be possible that reasons for neutrality are related to funder or sponsorship obligations or that the centre within its boundary responsibilities intends for the beneficiaries to be critical without the influence of the centre. The downside is that the beneficiaries could be influenced by the funders of the publication. Two examples of the controversial issues in question are:

- the safety and environmental impact of the chemical industry (October 2001 edition),
- the use of nuclear energy as an alternate source (November 2005 edition).

The one edition (2001) was produced prior to the year of the World Summit on Sustainable Development having taken place in South Africa, and the other edition (2005) was produced in the year that the Decade of Education for Sustainable Development was declared. In both examples while the issues are controversial, the editorial inputs by representatives (of the chemical industry and the national suppliers of energy) are biased in favour of giving credibility to the issues.

The following quotations within the context of the discourse show that controversial issues are made to appear to the reader as if there is nothing to be concerned about.

"…One alternative that is very viable for the future is nuclear power…..it does not have emissions and has an excellent safety record in South Africa and in most of the world.. "

(Foreword, *EnviroTeach*, November 2005 edition, page 2)

"Over the past few decades public concerns about the effects of the manufacturing industry on health, safety and the environment have increased. The chemical industry has responded to these concerns by attempting to inform the public about its operations and to provide evidence of its benefits to society….Responsible care reflects the chemical industry's concern for health….introducing cleaner technologies, sustainable development through reducing the use of energy and water…safe handling and transportation of chemicals."

(Foreword, *EnviroTeach*, October, 2001, page 2)

"…South Africa became a signatory to Responsible Care in 1994 and now has 130 companies committed to the initiative…"

(Foreword, *EnviroTeach*, October, 2001, page 2)

Common to both the November 2005 and the October 2001 editions are:

- the dependency of society on resources seems to take precedence rather than the safety of society
- the responsibility is shifted to the citizens through references made to the country (South Africa….)
- the impact of both issues on humans and on the natural environment are downplayed for example through reference to world statistics (although there have been serious disasters with great impact on the human and natural environment).

The above analysis confirms that the neutral stance of the centre creates the space for the sponsors of editions to further their own agendas. This is also an example of how discursive courses make the sustainable development discourse complex. Transparency or openness to the public (refer to the quotation from the 2001 edition) are used to justify the practice of chemical industry.

The discourse of sustainable development is made more complex through internal contradictions. The focus is placed on meeting the perceived needs of humans rather than on reducing demands as shown in the next quotation.

"One thing is certain; chemicals are here to stay in our lives….the chemical industry has responsibility to see that its operations are safe and responsible towards the environment …This initiative is also a driving force in the chemical industry's quest for sustainable development."

(Editorial comment, *EnviroTeach*, October, 2001, page 2)

The impression created is that people have rights within these controversial contexts, but these rights are secondary because of human dependency. Although these are the not the views of Delta Environmental Centre, the positioning of the views in front page editorials, and in the case of the chemical industry, with support provided by the editor, served to convince the reader to accept the credibility and worth of the statements, making the issues seem less if not controversial at all. The covert message that is conveyed (intentionally or unintentionally) is that Delta Environmental Centre does support the perspectives in question (e.g. the dependency on the chemical industry or the need for nuclear power). While it may argued that the editor may be a guest editor, a representative of the centre is always part of the editorial committee. This implies that there is some space for the centre to intervene in what is going to be published in the edition. The profiles of the editors have not been analysed in this research. It is possible that another editor may have presented a different viewpoint. However, as mentioned previously (refer to section 5.3.1.2) reasons for non-interference, irrespective of the editor could be based on funder dependency.

Within the Decade of Education for Sustainable development key themes have been identified, among them is poverty alleviation. One of the roles of education (in this decade) is identified as an agent of transformation through capacity building. In two of the editions that focus on sustainable development (June 2005 and August 2006, both on *Financial Literacy and Sustainable living*) the main thrust is for educators to respond to empowerment, capacity building and poverty via the curriculum by engaging their learners. The learners mainly represented in the June 2005 and August 2006 editions, are learners from disadvantaged backgrounds. However, the *EnviroTeach* is circulated nationally to all schools and not only to schools with learners from disadvantaged backgrounds. There is a possibility of an internal contradiction that sustainable development is a response to only address poverty or that it relates only to disadvantaged communities.

In summary the key finding under the dimension of textual analysis of Critical Discourse Analysis reveals that the centre engages with discourse in different ways. The discourse of sustainable development and related discourses are used interchangeably. A reader who is

unaware of the debates of the discourse would be led to believe that sustainable development, sustainability and sustainable living are common ways of expressing the same discourse.

The environmental centre through a making a point that the *EnviroTeach* editions are authentic directly or indirectly creates a perception through references to sustainable development, that the discourse is also widely accepted. The authenticity is supported by using the National Curriculum as a medium for the discourse, through the constant reference to government policy and by placing messages from the government in the foreword or usually within the first two pages of the publication. A concern raised in the literature is whether education is being used as a promotional tool for an ideology (Jickling, 1994). Jickling's point is valid. In the case of the *EnviroTeach*, by giving such exposure to government the educational value of the publication may be undermined.

The environmental centre attempts to empower the reader through the contents of the *EnviroTeach*. The empowerment is more from the point of providing support to implement the National Curriculum within the context of sustainable development than from the point of critically engaging with discourse.

The environmental centre uses the framework of the environment commonly used in environmental education to bring across a holistic and interlinked perspective of the dimensions (environment, economic, social) of sustainable development. Rosenberg (2004) has suggested that a holistic and interlinked framework is more appropriate to overcome the notion that sustainable development is only about economic development. The environmental centre also uses the *The Active Learning Framework* (an inquiry based framework) as an approach to the discourse. The message is that there is an attempt to go beyond knowledge and awareness to action and encourage a change in values and behaviour.

In approaching controversial issues the environmental centre does not take a categorical stance. In the way controversial issues are presented within the context of the discourse, the reader is unlikely to detect the controversies. The key reason is that pro-governmental support or pro-sponsor support is given precedence over presenting the issue as a controversial one. While the issue may be for the centre to acknowledge the financial contributions of the sponsors of the publication, controversial issues within the context of the discourse are weakened or hidden. The discourse is then more likely to be perceived as blueprint. Jickling (1999) has raised caution to presenting the discourse as a blueprint.

5.3.2 Process of production

Production in this research study is used in a broad context and does not typify a sequenced manual process. Production is inclusive of physical resources, symbolic resources (like photographs and publications) and as well as semiotic practice (Chouliaraki and Fairclough, 1999). In the research, semiotic practice within the context of the process of production would refer to how various factors (like international or national events) influenced the attribution of meaning to written texts and visual representations. The analysis that follows is based on the symbolic resources and semiotic practice.

Table 5.4 shows the analysis of the four editions of the *EnviroTeach* which have direct significance to the discourse of sustainable development. The analysis is based on the guiding questions for the dimension of process of production of Critical Discourse Analysis. As in the previous section on text analysis, examples from other editions of the *EnviroTeach* would also are used where necessary.

Table 5.4 Analysis: Process of production – March 2002, May 2004, June 2005 and November 2005 editions					
	EnviroTeach Edition:	***March 2002***	***May 2004***	***June 2005***	***November 2005***
2	**Processes of production and processes of reception**	Title: Water and the Environment	Title: Educating for sustainable living - Water, Sanitation and Environment	Title: Financial literacy and sustainable living	Title: Energy use and management
2.1	**Who is speaking to whom?**	Government to citizens/ Delta to educators	Government – Department to educators	Financial services board to the consumer in the form of secondary school learners	Eskom to consumer
2.1.1	***When (situational context)***	Water Week / Impending WSSD	Support of 2020 Water Vision	Present decade – economic boom and poverty co-exists	Present Decade
2.1.2	***Where(situational context)***	South Africa	South Africa	South Africa	South Africa
2.1.3	***On what occasion? (what contextual factors influenced the production)***	WSSD/ Water Week	Environment is in the curriculum and the 2020 water vision is in place – the curriculum is a medium to promote the vision	High illiteracy / and high debt creation in the South African Society/need to live sustainably.	High Demand for energy / utilities finding difficulty in meeting demands
2.2	**What relations exist between the speaker/writer and the reader/listener?**	The reader is motivated to do introspection – rediscover values/ a perspective of human dependency on nature.	The reader is in trainee to become a facilitator (training tool/manual provided)	Educator of the ill or uninformed	Ownership / citizenship role – Reference to SA being a signatory to Kyoto Protocol / JPOI/ Millenium development Goals
2.3	**What is going on in the content?**	Issues of water as the most important resource for survival and sustainable development / a strong values base is the focus/ international concern is highlighted through the repetitive mention of the WSSD.	The programme goals are rolled out/approach is holistic /Preparation of Intermediate Phase educators for curriculum implementation	Highlights different aspects of financial literacy - personal and business, brings in the aspect of ethics	Energy efficiency and managing consumption and demands provides background for discussion on sustainable energy supply.
2.4	**Who is involved (subjects)?**	Citizens and Government	Government/ Education Support Staff	Consumer and the Financial Services Industry	Energy supplier and consumer

Table 5.4 (Continued) Analysis: Process of production – March 2002, May 2004, June 2005 and November 2005 editions					
	EnviroTeach Edition:	***March 2002***	***May 2004***	***June 2005***	***November 2005***
2.5	**What relations exist between them?**	Citizens should be helping government	Trainer and trainee	Mutual Benefit	Motivating ownership of the problem
2.6	**What is the *discourse type/approach*?**	Messages from government, Articles	Training manual, articles,	Case stories, articles, messages, Reports	International Agreements, Messages
2.7	**Who is the ideal reader? (e.g. educator who needs personal awareness)**	Any user of water	District Education Officials wanting to train educators/ educators preparing to implement the new curriculum (proactive strategy)	Consumer/ Business entrepreneur	User of energy especially electricity
2.8	**What are the inter-textual references? (What are the other texts related to the text, or the obvious place to find the additional data)**	WSSD/ NEEP/Previous issues of the EnviroTeach based on water	Constitution/ NEEP/Curriculum Policy	NCS/ Decade of education for Sustainable Development	Millenium Development Goals/ Kyoto Protocol / JPOI/WSSD
2.9	**How do the inter-textual references influence the reader?**	There is local as well as international concern. A special programme called NEEP is a focused strategy for education. The reader will be missing the point of not taking cognizance of the situation. The emphasis of the WSSD taking place "here" in SA shows that the reader is not excluded.	The water vision is an ideal example to be used in training educators to implement the new curriculum.	The reader is led to believe that he/she is part of transformation to build a better society	Reader sees the problem in an International and National context /concern. Problem is not small.

The analysis in Table 5.4 is referred to in the discussions which follow. Figure 5.5 shows the key foci that have been used in the discussion of the analysis of the process of production. The foci have been developed for the purpose of discussion keeping in mind the guiding questions used in the analysis of the process of production (refer to Table 5.4). While the foci appear as categorical in Figure 5.5, there may be cross cutting relations in the discussion.

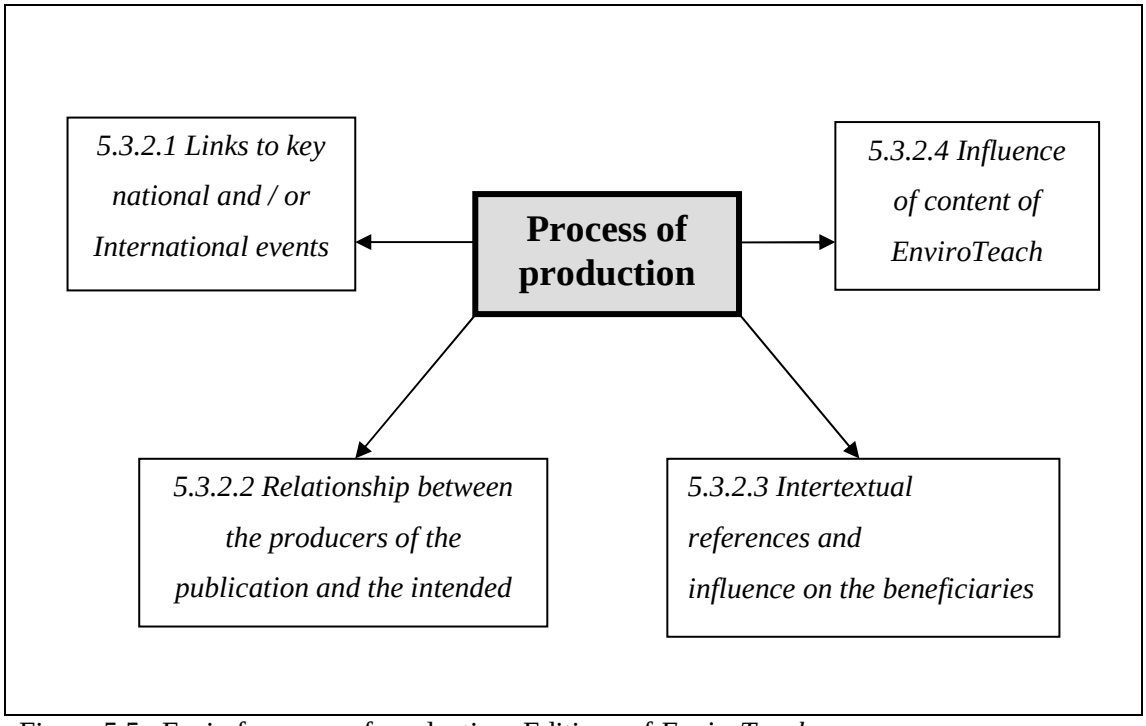


Figure 5.5 Foci of process of production: Editions of *EnviroTeach*

5.3.2.1 Links to key national and/ or International events

Situational context under process of production refers to the relative time period or events during which the text was written. In editions of *EnviroTeach* especially from 2002, sustainable development was one of the foci that provided the situational context. The provision of water and issues of poverty as elucidated in the State of the Environment Report (DEAT, 2006), were also situational factors during this period. Editions were in some way linked to events (national or international) related to sustainable development. Some of the editions, in relation to international events (especially in 2002) were linked to the World Summit on Sustainable Development.

The March 2002 edition on *Water and the environment* carried an article on the World Summit on Sustainable Development which was to take place later in the year. The following was the heading of the article:

"What does the World Summit on Sustainable Development mean for Water Resource Management in South Africa?"

(Envirofeature, *EnviroTeach* March 2002, page 5)

The October 2002 edition on *Our coast our oceans* was developed in the context of both National and International Events relating to the discourse of sustainable development. The national event was the National Marine Week and the international event was the World Summit on Sustainable Development.

"The National Marine Week 2002 theme: *Using the resource of our oceans and coasts in a sustainable way* draws sharp attention to the need to manage our resources responsibly without compromising the needs of future generations."

(Foreword, *EnviroTeach*, October 2002, page 2)

"…As we could glean from the recent World Summit on Sustainable Development, protection and conservation of our oceans is a matter that concerns us all. Simply put, the pressure on our environment is so great today, that if you cause one part to falter, it impacts on all other parts.."

(Foreword, *EnviroTeach*, October 2002, page 2)

Editions from 2002 onwards included, to a large extent, themes or concerns that were raised in the World Summit on Sustainable Development and /or in the United Nations document on the DESD (UNESCO, 2004). Examples of the themes or concerns are represented in the Table 5.5.

Table 5.5 Examples of concerns in *EnviroTeach* related to sustainable development

Theme/concern	Edition of EnviroTeach	Example – Article/Case Story
Poverty	March, 2004, *Ecotourism* September 2005, *Water, Sanitation and the Curriculum*	"Developing a socio-economic development program." (page 18-19) "Food gardens to improve the quality of life." (page 24-28)
Cultural diversity	March 2002, Water and the Environment	"Mythical stories about water in our cultural heritage" (page 13)
Access to potable water	May 2004, *Educating for sustainable living – Water, Sanitation and the Environment*	"Musa will not drink from that stream again." (page 14)
Energy Crises	November 2005, *Energy use and management*	"Énergy: our challenges for the future." (page 20)

The themes of water and energy also appeared in editions of *EnviroTeach* before 2002. Although editions were based on these themes as complete focus, the difference is that in editions from 2002 the themes were framed in the context of sustainable development. The themes in the Table 5.5 are contained in the UNESCO implementation scheme of the DESD (UNESCO, 2005). The implementation scheme makes reference to poverty reduction. The WSSD also recognised the link between poverty reduction and sustainable development (Fakir, 2002). The article in the September 2005 edition "Food gardens to improve the quality of life" is an example of how *EnviroTeach* supports the discourse or related discourses of sustainable development.

The environmental centre links the discourse of sustainable development to national or international events within relation to specific themes. Three key points emerge from this practice. Firstly, environment as represented in the international and national environmental days are linked discourse of sustainable development within an environmental ethical framework. Hattingh (2002) points out that the point of departure for environmental ethics is to be aware of the impact of our choices and actions on the environment. For example the October 2002 edition which coincided with National Marine Week, had three sections with following titles respectively:

- Why is the sea important and value to us
- What is our impact on our coast and oceans?
- How can we utilize the resources of our oceans and coasts in sustainable way?

The second point is that discourse is presented in an unchallenged way as a strategy to address environmental issues. The controversial aspect of the discourse is downplayed. Judson (2007) has pointed out that sustainable development is problematic because it undermines cultural contexts that influence ecological crises. Thirdly, linking the discourse to various national and international events and different environmental themes shows that sustainable development is a discourse that can be applied to almost all (if not all) environmental concerns and is not limited to a few or one.

5.3.2.2. Relationship between the producers of the publication and the intended beneficiaries

EnviroTeach is primarily an educator resource (as stated previously) including educators responsible for education on environmental issues in environmental organizations, business, community-based organisations and in the formal school. The learner is also a key beneficiary considering that the educator utilizes the resource in the learning situation.

With government representatives, as well government regulations and policy (especially in education), dominating most of the editorials and being featured quite prominently within editions,

two key trends are evident from the analysis in relation to the discourse of sustainable development. Firstly, educators are positioned as employees of the state and their responsibility is to government. By virtue of being employees of the state, the implementation of the new curriculum is mandatory. The environmental centre used this situational context to develop activities on sustainable development within the new curriculum.

"The National Curriculum Statement (NCS) Grades 10-12 (General) is being implemented in South African schools from 2006, starting with Grade 10. This presents the project partners with an excellent opportunity to make a positive contribution to education and training at the senior secondary level."

(Editorial, *EnviroTeach* June 2005, Volume 14, page 3)

"The activities that have been developed for this edition illustrate how outcomes based education (OBE) can be introduced into the classroom. The Department of Education Overview document for the National Curriculum Statement (NCS) – Grades 10-12 (General) 2003 states that *OBE encourages learner-centred and activity-based approach to education*."

(Editorial, *EnviroTeach* November 2005, Volume 15, page 3)

A situation of mutual benefit also emerged. Educators (as well as their learners) were exposed to the idea of sustainable development while at the same time being assisted in implementing the new curriculum. Most activities in the *EnviroTeach* editions were designed within the policy framework and expectations of the new curriculum.

The second trend focuses on another role of the educator, outside of being an educator. Constant reference is made to citizenship responsibility. The resource integrates in most cases, but also accentuates at points the citizenship responsibility of educators and learners in sustainable development. Quotes such as: "matter that concerns us all" (*EnviroTeach*, October, 2002, page 2), and "We are talking about the intersection between environment, poverty and development" (*EnviroTeach*, March 2002, page 5), with the emphasis on *we* show the appeal to citizenship and ownership responsibility.

The citizenship responsibility seems to be emphasized more than the role of individuals. Although both are located within the same person, there is a difference between the two responsibilities. The citizenship responsibility is more likely to elicit support and action where environmental issues have been broadly identified. A pertinent example is the concern of water and sanitation. As a social minded citizen one would support programmes of the government (or of other organizations) to provide better access to communities that do not have water. However, what

the same person does to use water in the home in a way that is not wasteful is an individual responsibility. In the *EnviroTeach*, there are also activities where learners as individuals are encouraged to take individual action within their own contexts.

"Why should we practice good sanitation?"

(Activity, *EnviroTeach* May 2004, Volume 11, page 15)

"Good hygiene practices."

(Activity, *EnviroTeach* May 2004, Volume 11, page 21)

"Water conservation tips."

(*EnviroTeach* September 2005, Volume 14, page 45)

Two key trends emerge from the analysis of *EnviroTeach* as support for educators. One trend is that producers of the publication offer support for the educator. However, the support has a dual agenda. One is that support is offered to implement the new national curriculum. The other is that the educator is supported to integrate the discourse of sustainable development into the learning situation simultaneously. Perhaps the danger is that the discourse could be sidetracked by the beneficiary as the new curriculum is likely to appear as the more immediate and greater challenge. The strategy of using a new and challenging situation (e.g. curriculum change) to engage the beneficiary with the discourse has the potential to divert the attention of the beneficiary from the important debates or principles of the discourse.

The second trend is that producers of the publication appeal to the beneficiaries on two levels, one in the role of a citizen and the other in the role of an individual. Both roles are important if environmental concerns are to be genuinely addressed. Andrews, Stevens and Wise (2002) have alluded to the point that activities should focus on building individual knowledge and skills as well as building an infrastructure for change that is sustainable and empowering for society.

5.3.2.3 Intertextual references and influence on the beneficiaries

Intertextual references (refer Section 3.1.2 in Chapter 3) refer to the presence of elements from other texts which do not necessarily originate with the authors but have links implicitly or explicitly with other texts (Fairclough, 2001). Intertextual references may also provide some direction as to where additional information on the issue may be found. Cumulatively in all the editions of the *EnviroTeach* used for the analysis there are countless intertextual references. Some of the key, relevant and repeatedly used intertextual references within the context of discourse of sustainable development (in the same or in different editions) are:

- The South African Constitution, with special reference to the section on environment
- The National Curriculum Statement (NCS)
- National Environmental Education Programme (NEEP)
- Government laws and policies on different aspects of the environment
- Different programmes / initiatives of the government (like the 2020 Vision for water and sanitation education programme)
- The World Summit on Sustainable Development (WSSD)
- The Johannesburg Plan of Implementation (JPOI)
- The Earth Charter
- Agenda 21
- Other key international agreements/ treaties

The influence of the intertextual references on the beneficiaries is multiple. The South African Constitution alludes to sustainable development. The beneficiary is influenced as a citizen to uphold the constitution. References to the World Summit on Sustainable Development inform the beneficiary that the discourse is of world concern. The Johannesburg Plan of Implementation arising from the World Summit on Sustainable Development is an intertextual reference that shows the beneficiary that there is provision for action and that the world summit was not just an international meeting. *Agenda 21* and the Earth Charter raised attention to the point that sustainable development is not a new discourse but has emerged through the previous decade. The focus on WSSD and *Agenda 21* shows the influential role of politics in engaging with the sustainable development discourse. The net influence seems to be more of pressure on the beneficiary to accept the discourse (whatever form that might take) than to ignore it.

In the quotation which follows is an example of an intertextual reference that serves to legitimate the discourse. Janks (2005) expands on legitimation (as one of the modes of operation of ideology of Thompson, 1997) by referring to rationalization. Rationalisation is used to convince the reader that the representation of the idea is worthy of support.

"The United Nations has declared the period 2005 to 2014 as The United Nations Decade of Education for Sustainable Development. There is no universal model of education for sustainable development. There will be differences according to local contexts, priorities and approaches. South Africa has a tailor-made curriculum and is a trendsetter in education for sustainable development"

(*EnviroTeach*, June 2005, page 30)

The quotation indicates to the beneficiary that education for sustainable development, within the South African context, is not going to be difficult to implement within the curriculum. The deeper message is that the education for sustainable development is not something that the educator has to add on but rather put into action what is already there.

Through the making of various intertextual references as in the list of examples from *EnviroTeach,* the discourse of sustainable development is presented as something that is supported in different ways, in different sectors of society, and at different levels (i.e. national and international).

A synthesis of the analysis of the intertextual references shows different kinds of influence. Firstly, intertextual references show that the discourse of sustainable development is of both national and international concern (world leaders have recognized the importance of the discourse by coming together in the WSSD). Secondly, there are policies, agreements and laws (like the South African Constitution) that support sustainable development. Thirdly, that sustainable development has support in different sectors and tiers of society. Fourthly, the intertextual references used as examples (like the 2020 water vision) are ways of showing that sustainable development can be achieved in practice.

5.3.2.4 Influence of content of EnviroTeach

Content in the context of this study includes all that appears in the publication. Content covers all technical, subject specific content (e.g. alien species) as well as the language used in the related policies and information of social, economic or environmental relevance.

A division appears in the way the content of the *EnviroTeach* is presented. The division is between one of experts and one of novices. While the division may appear to be top-down, the division does not manifest as a power-play but rather one of the expert seeking to empower and capacitate the novice with regard to sustainable development. The experts are represented by the editorial consultants and the environmental centre. The novice is the educator who might use the resource. The school-based educator is made to feel privileged by this division by being provided with support especially to implement the new curriculum. The wording in the quotations which follow (e.g...*teachers will, for the first time*..), is an indication of the position of privilege accorded to the educator.

"…Of equal significance is that teachers will, for the first time, have a financial education resource in keeping with the requirements of the curriculum and assessment standards and which contains detailed lesson content and a variety of suggested student learning activities from which to choose."

(Foreword, *EnviroTeach* June 2005, page 2)

"Ideas for Assessment are also provided…The NCS for FET will be implemented from January 2006. Since the previous curriculum had a completely different approach and focus, I hope this publication will throw a little light on the process…"

(Editorial, *EnviroTeach* November 2005, page 3)

However, it is not only the school-based educator that benefits. Many organizations that work with the formal school curriculum also need to update and empower themselves to work with new the curriculum.

The analysis shows that the editions of the *EnviroTeach* bring out two foci about knowledge within the context of the discourse of sustainable development. One is that both cultural (including indigenous knowledge) and scientific knowledge positioned as significant in the sustainable development strategy. Both cultural knowledge and scientific knowledge are presented in most editions of the *EnviroTeach.* In the March 2002 edition two sections are dedicated to culture viz. "Environmental learning, culture and sustainable environmental management" (page 4), and "Our cultural heritage and water: sustainability, water and our cultural heritage" (page 6). These quotations show a focus on environmental ethics. In reference to culture, Hattingh (2002) has raised the point that environmental issues challenge notions of material progress and the reduction of cultural diversity.

In the October 2006 edition (pages 9-16), in a fact sheet on alien invasive plants entitled "The what, why, where and how of invasive alien species" scientific knowledge is integrated with knowledge about human activities.

The second focus brought in the *EnviroTeach*, is that knowledge (cultural, scientific or both) can be applied to the dimensions of sustainable development in an integrated way. A good example appears in the June 2005 edition on *Financial literacy and sustainable living.* The discussion that follows is based on a case story in the June 2005 edition (page 11). entitled, "Can integrated waste management be profitable?"

The case story shows how a resident uses the recycling of waste (environmental dimension) to generate an income to financially sustain (economic dimension) his family and himself (social

dimension). The resident is located in a township with a high population, less than average infrastructure and where poverty is rife contributing to a situation where the need for an environmental ethic is probably considered secondary to human survival. The resident uses scientific knowledge at a basic level e.g. what kinds of waste materials can be recycled and also within a certain category of waste materials the kinds of plastic that can be recycled. This scientific knowledge is then put to use to collect waste material. In collecting waste material the resident contributes to an environmental strategy to sustain the earth's resource through recycling. In selling the recyclable materials the resident is able to contribute to the economy by sustaining himself through the sale and finally by providing the recycling company with materials that can be recycled or reused to produce other products. The content in the example of a case story shows the reader that sustainable development is achievable to the advantage of the natural physical environment and to humans.

In summary the key findings under the dimension of processes of production of Critical Discourse Analysis reveal that the environmental centre (knowingly or unknowingly) engages with the discourse in different ways. The analysis shows a clear tendency of the centre to support the discourse and to influence the beneficiary to accept the discourse rather than to oppose it. Evidence showing the tendency to support and influence the beneficiary to follow the trend of the environmental centre is multiple. The constant intertextual references to national and international events in an unproblematic way make it categorical to the beneficiary that sustainable development is topical and widely considered as a strategy to global environmental problems. The beneficiary is provided support and empowerment from a national curriculum perspective with a focus that sustainable development has a place within the national curriculum. The reference and focus on both scientific and cultural knowledge make the sustainable development strategy appear accessible to all sectors and communities of society in that it is inclusive and not an elitist strategy. The beneficiary is provided with information that makes the discourse more plausible than not, as a way forward to address both national and global environmental concerns.

5.3.3 Conditions of production

Conditions of production (see Section 3.1.3) focus on the practice that influenced the production of the text (the *EnviroTeach* resource). Before proceeding into an in-depth analysis on the conditions of production, it is necessary to understand the interpretation of *practice*. Practice in the context of conditions of production has three main characteristics: One, practice includes all forms of production of social life (e.g. economic, political and cultural); two, practice is not independent but positioned within relationships to all forms of practices (i.e. there is a relationship between the economic, political and cultural) and three, practice has a reflexive dimension (Chouliaraki and

Fairclough, 1999). In the third characteristic i.e. the reflexive dimension, practice need not be permanent, i.e. practice may be relative for a particular condition, but could change, if the impact (whatever the source may be) to transform is greater than to sustain. Delta Environmental Centre has existed through various national and international events (see Section 2.1 for the time line), since its formation in 1975. The historical background (see Section 4.1.3.2) indicates the transformation of Delta Environmental Centre through the years. Table 5.6 provides the context for analysis of the editions of the *EnviroTeach* by focusing on the key events within the history of the discourse thereby illustrating the conditions of production in relation to this history.

Table 5.6 *EnviroTeach* editions with the focus on sustainable development in the time line of key events (conditions of production)

Date	***Title***	***Key Events***
2001, January	*Water and the Environment*	-Build up to World Summit on Sustainable Development -Revision process of the education system in South Africa from a version called *Curriculum 2005* to the National Curriculum Statement (RNCS) -The National Environmental Education Programme – General Education and Training (NEEP-GET) was being integrated into the formal school curriculum.
2001, May	*Energy and the Environment*	-Consideration of a design for using nuclear energy as an alternate source (in South Africa) gains momentum together with Public Participation -Build up to World Summit on Sustainable Development
2001, October	*The Chemical Industry*	-Build up to The World Summit on Sustainable Development
2002, March	*Water and the Environment*	World Summit on Sustainable Development took place in South Africa
2002, October	*Our Coast Our Oceans*	
2003, September	*Oceans and Ecosystems*	Year after the World Summit on Sustainable Development
2004, March	*EcoTourism*	-South Africa celebrated ten years of Democracy -United Nations Draft International Implementation scheme for the Decade of Education for Sustainable Development is in place
2004. April	*10 Years of freedom*	
2004, May	*Educating for sustainable Living - Water, Sanitation and the Environment*	
2005, June	*Financial Literacy and sustainable living*	The United Nations declaration of the Decade of Education for Sustainable Development (2005-2014)
2005, November	*Energy use and management*	
2006, August	*Financial Literacy and sustainable living*	Second year of the Decade of Education for Sustainable Development
2006, October	*Invasive Alien species in our environment*	

Table 5.6 shows the location of the thirteen editions related to sustainable development within a time line of key national and international events. The four editions that have been used in the analysis in much greater depth have been highlighted.

There are two main conditions that can be identified as influencing the practice of the environmental centre (within the dimension of conditions of production for the *EnviroTeach*). The first condition is that in 1994 socio-political changes took place in South Africa. The influence of socio-political changes on the production of the *EnviroTeach* is evident in the frequent reference to constitutional values (social justice and healthy environment) and the repeating of extracts from the constitution that focus on the environment. The second condition influencing production is that the period from 2000 to present is representative of international events that greatly influenced South Africa in relation to sustainable development. Both conditions (socio-political and the key events) will be discussed in the sections that follow in a more integrated rather than in an isolated way.

In Table 5.7 the reader is provided with the in-depth analysis of the four editions of the *EnviroTeach* mainly used in the discussion for the dimension of conditions of production.

Table 5.7 Analysis: Conditions of production - March 2002, May 2004, June 2005 and November 2005 editions

	EnviroTeach Edition:	***March 2002***	***May 2004***	***June 2005***	***November 2005***
3.	**Conditions of production and reception**	Title: Water and the Environment	Title: Educating for sustainable living - Water, Sanitation and Environment	Title: Financial literacy and sustainable living	Title: Energy use and management
3.1	**What is the socio-historical context?**	Lost respect for cultural heritage and ancestors' value of the environment	Curriculum Change	High Financial Illiteracy	Growing economy / Impact on the environment is great
3.2	**What power relations shape this discourse? social, institutional**				
3.2.1	***Social***	Cultural heritage is important – cultural heritage is significant because of the WSSD	Department of Water Affairs is taking action in the form of the water vision to create awareness amongst communities	Financial literacy is a way to fight poverty	Society is becoming more technologically advanced and relies on energy
3.2.2	***Institutional***	WSSD is taking place in our country – the concern of water is on the agenda	Department of Education is going to implement the new curriculum	The Insurance Industry and the Financial Services have the strategies to improve the consumers' choice and lifestyles	Utilities are under pressure to meet the demands but also under governmental pressure

Table 5.7 (continued). Analysis: Conditions of production - March 2002, May 2004, June 2005 and November 2005 editions

3.2.3	***Situational***	South Africa has erratic rainfall and periods of drought/ water is taken for granted / mismanagement is going to affect the future generations	Educators need to be capacitated on the water vision and on curriculum implementation	Poor people have little or no access to financial services to suit their needs and the consumer education programmes increase their access	Energy demands are about exceeding supply, coal emissions and environmental degradation and pollution is increasing
3.3	**What are the common sense assumptions that underlie the text?**	There is no infinite supply of water.	New curriculum is going to be implemented and there is an integrated approach to environmental education	Consumers are making unwise financial decisions – consumer need protection	Negative Environmental impacts due to the use of fossil fuels / shortage of sustainable fuel sources/ increased demand for energy
3.4	**What is taken for granted?**	Water is essential for survival	New Curriculum	Financial literacy is lacking in lower income groups	Shortage of fossil fuels is becoming a reality
3.5	**How is the discourse positioned or positioning in relation to reproducing or changing social practice?**	Links generations from a value perspective / revival of ancestral view of the environment	The discourse is presented as empowering /capacity building	Consumer Education and financial literacy will produce “happy and productive individuals”	Places the problem and solutions in the minds of the reader
3.6	**Does the discourse work to sustain or transform (is it awareness/experience/ action)? (The analysis was done through typological analysis – refer to section 4.4.1).**	Stimulates introspection and awareness – shows the potential to transform	Has the potential to transform	Has the potential to transform	Directs towards transforming but the potential of alternative sources may not necessarily change behaviour.

An analysis of the conditions of production of the *EnviroTeach* resource is of significance as it responds to the research question to find out how Delta Environmental Centre has engaged with the Discourse of Sustainable Development through influence of the different socio-cultural contexts. The boxes (in Figure 5.6) with darkened outlines show the main socio-cultural conditions that follow in the discussion.

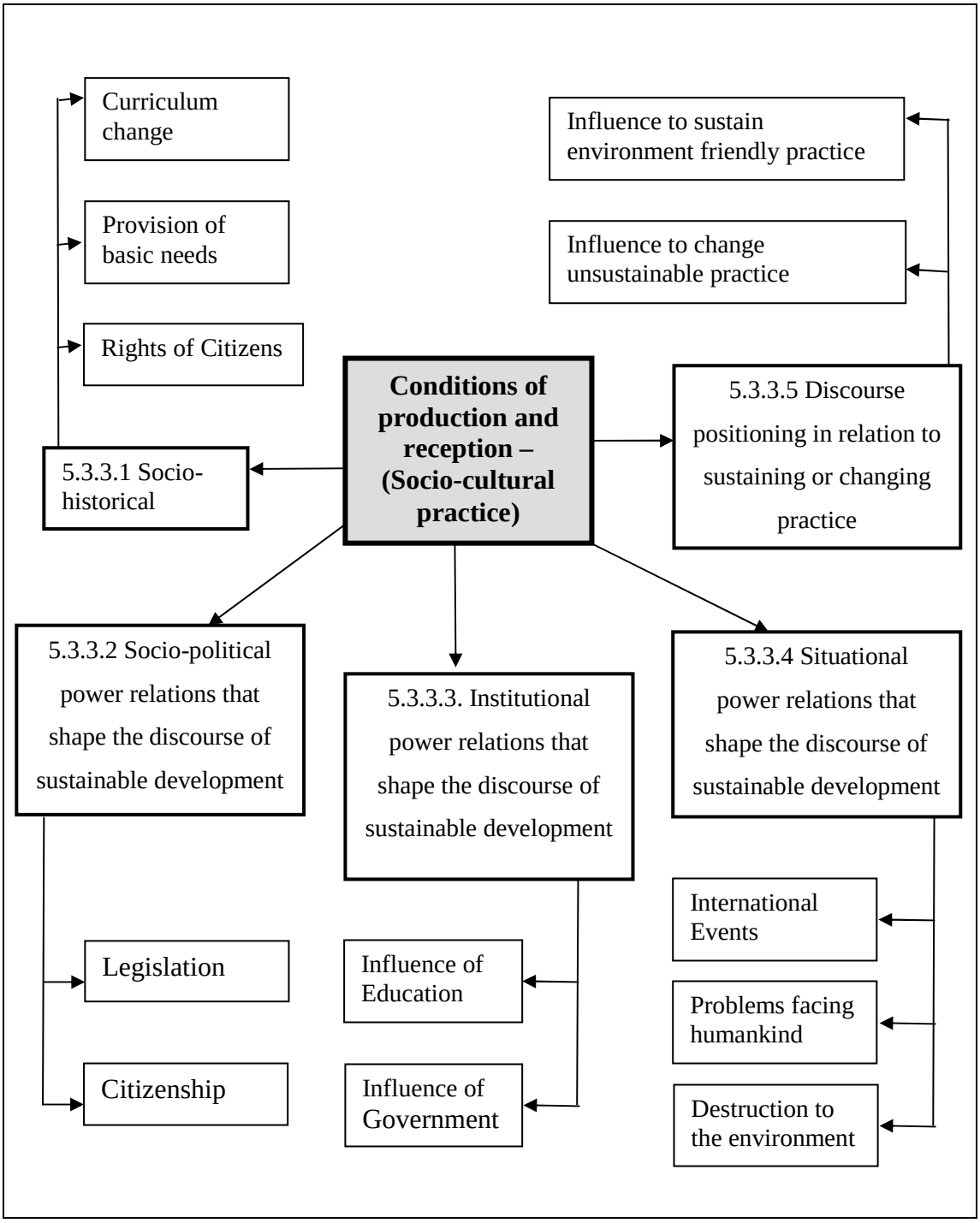


Figure 5.6 Main foci of the conditions of production (Socio-cultural practice)

In reviewing the conditions of production for all the different editions of the *EnviroTeach* the trend in practice is centred on two major discourses through the 1994 to 2007 timeline. Environmental Education was the dominant discourse in the nineties. In the late nineties into the turn of the millennium up to about 2004 sustainable development became the major discourse. From 2004 sustainable development seemed to have been intermittently replaced by sustainable living. However, neither the environmental education discourse nor sustainable development was totally discarded. Firstly, environmental education as a conceptual framework is used often, and secondly, the environmental centre has recognized the Decade of Education for Sustainable Development as a national and international strategy to improve life on earth. The second point i.e. support for the discourse was also a finding in the analysis of the process of production (see Section 5.4.2). The analysis and discussion of the influence of the different aspects of the conditions of production follows.

5.3.3.1 Socio-historical context

The turning point that seems to best describe the socio-historical context of the production of *EnviroTeach* resource is the shift in South Africa from apartheid governance to democratic governance in 1994. Although editions prior to 1994 were not analysed, in the editions that were analysed there was attempt to reflect the kind of changes that were expected within the political shift with respect to attitudes and practice. The key trends that tend to define the socio-historical context in the *EnviroTeach* publications are (specific examples can be found in Table 5.7):

- People have moved away from nature and have lost touch with their cultural heritage.
- The rights of all citizens need to be recognized, and together with the environment have to be protected, in other words everybody is part of the environment.
- Increased concern over specific issues that included the provision of basic needs (e.g. water), increase in demand for energy, unsustainable use of the natural environment (e.g. marine environment), the impact of the growing economy on the environment, unsustainable financial habits of citizens.
- Curriculum change within the education system was a definite way to represent democracy and a move away from discriminatory practice.

The more recent issues from 2002 onwards highlight concerns within a generational context (i.e. present and future generations). The concerns are related to themes like water and energy, which have been addressed in dedicated editions of the *EnviroTeach* (March 2002 – water,

November 2005 – energy). The generational issue (of present and future generations) is of concern within the discourse of sustainable development as shown in the Brundtland definition (refer to the definition given in the *Brundtland Report* in section 2.2.1).

The belief of humans that nature will self-compensate for human impact and destruction seemed to be contested in the *EnviroTeach* resource. This means a belief that humans can continue using the limited resources of earth (and even increase the use of the resources), thinking that nature will naturally replenish what has been used. The contestation comes in the form of the constant emphasis of an integrated approach to the environment based on social and economic impact, the relationship to the environment and the generational concern (i.e. triple bottom line concept represented in the DESD by the economic, socio-political and environment dimensions). The integrated approach raises caution about the fallacy of natural replenishing of resources and places focus on the impact on the environment, by linking human activities (social and economic) to the environment. Figure 5.3 (in Section 5.3.1.4) that shows the relationship between the different dimensions of the environment appears in a number of the editions of *EnviroTeach* for example March 2004 – *Ecotourism*, September 2005 – *Water, sanitation and the curriculum*, June 2005 – *Financial literacy and sustainable living* and October 2006 – *Invasive alien species in our environment*.

In summary the key socio-historical influence on the engagement with the discourse of sustainable development in the *EnviroTeach* publications is the political changes in South Africa (like the focus on equity i.e. the provision of basic needs for all). The curriculum change that has accompanied the political change has been used as a medium for the diffusion of the discourse to beneficiaries. A socio-historical condition that has continued with greater emphasis is that all the dimensions of the environment need to be considered through the generations within the context of the discourse of sustainable development.

5.3.3.2 Socio-political power relations that shape the discourse of sustainable development

The key signs of socio-political power influence on the conditions of production within the context of sustainable development can be reduced to two interrelated significant foci viz. legislation and citizenship. In the editorials, and within editions, quotations from government policies, the use of photographs of government ministers and the reference to initiatives of government departments served to legitimize sustainable development. The cover of the March 2002 edition on *Water and the environment* (refer to Appendix 13) has the picture of the president of the country with the minister responsible for water affairs engaging in an activity relating to water. The May 2004 edition on *Water, sanitation and the environment*

makes reference to the responsibility of the Department of Water Affairs and Forestry (DWAF) (page 2):

"The constitutional responsibility of DWAF is to ensure sustainable water and forestry resources in South Africa…"

The quotation of the section on environment from the South African Constitution (June 2005 edition and April 2004 edition), the constant appeal through the use of words like "one nation" and the reference to culture (and the significant emphasis placed on indigenous knowledge) emphasized obligations of the citizen. Although the source of the power lay in the socio-political dimension, there was an attempt to make it seem like the power that shaped the discourse actually lay in the "people". Frequent use of patriotic phrases such as "one nation" and "one people contract" shows a disguise the power source. This is a limitation of document analysis, as it is difficult whether disguising of the power source was intentional or unintentional.

While success stories in the context of sustainable development to individuals featured prominently in editions (e.g. in April 2004, June 2005, November 2005, August 2006 and October 2007 editions), the success stories of organizations (in particular government schools) and society portray how socio-political power outside the legal framework can influence the discourse. The reference to government and legislation in the editorials and constant reference to legislation dominated the editions.

5.3.3.3 Institutional power relations that shape the discourse of sustainable development

The analysis shows that the key institution that influenced the discourse of sustainable development in *EnviroTeach* resource is education. The influence of education was evident in the context of the formal national education curriculum and that of environmental education as one of the interests of the centre.

The primary source of institutional power (environmental education) that shaped the discourse is the fact that an environmental centre co-ordinates the production of the *EnviroTeach* resource. The title of the resource "*Enviro Teach*" and frequent use of the conceptual diagram on the environment (see Figure 5.3 in Section 5.3.1.4) enhance the environmental centre's institutional power on the discourse.

Views explicit (or implicit) of the environmental centre as a source of institutional power is likely to influence beneficiaries in a similar as with titles of *EnviroTeach*. The environmental centre tries to balance views against and for environmental solutions and issues. Pertinent examples are a concern of sustainable development viz. alternate forms of energy like nuclear energy (November 2005 edition) and the controversy about ecotourism (March 2004 edition). In raising the concerns the institutional power of the environmental centre is influential. However, the institutional power of the environmental centre in both the examples of nuclear energy and ecotourism is not categorical. In the example of the use of nuclear energy the focus is shifted to the energy provider as an institution, by the pro-nuclear energy remarks of the managing director.

"One alternate that is very viable for the future is nuclear power. Even though nuclear power is not renewable, it does not have emissions and has an excellent safety record in South Africa and most of the world."

(Foreword, *EnviroTeach,* November, 2005, page 2)

A fact on nuclear energy is presented in the November 2005 edition (page 26, 27 and 28), with scientific details about nuclear energy is generated without the pros and cons of the alternate energy source. However, one cannot ignore that editions of *EnviroTeach* are funded. Presenting points against the funders could mean withdrawal by the funder. The funder to an extent restrains the institutional power of the centre. In the example of ecotourism the pros and cons of the issue are presented with no deliberate conclusion in favour of either the pros or cons.

The discourse is also dominantly shaped by formal education, influenced by changes in the education system in South Africa. The principles of the National Curriculum Statement with an Outcomes Based Education approach is similar to that alluded to in the Decade of Education for Sustainable Development. Principles like holistic education, social transformation, equity and high emphasis on values are common to both education and sustainable development (the editorial of the June 2005 edition on *Financial literacy and sustainable living* allude to the principles of the National Curriculum Statement). A common approach in the *EnviroTeach* is to use the formal education system to bring across sustainable development e.g. in the June 2005/2006 edition terminology from the curriculum (like learning outcomes and assessment standards) is repeatedly and categorically used to frame activities within the context of sustainable development.

The institutional power over the discourse was also evident in the shift in the use of terminology of sustainable development (March, 2002 edition) to sustainable living (June 2005 edition). The change in terminology could be interpreted to be the result of the influence of national and international critics (refer to Section 2.2.1), mainly because the word "development" has been misunderstood, although the principles seem to remain the same.

The key influence of institutional power on the conditions of production in the context of sustainable development is embedded in the interest of the centre i.e. environmental education and the formal education system which is based on learning outcomes.

5.3.3.4 Situational power relations that shape the discourse of sustainable development

According to the analysis that the researcher conducted, the influence of situational power on the production of the *EnviroTeach* are embedded in three key areas viz. the destruction that human activities are causing to the environment (like the concern of global warming); the problems faced by humanity (like the limited availability of potable water, poverty, and diseases e.g. malaria and HIV/AIDS); and international events (like the World Summit on Sustainable Development (2002) and The Decade of Education for Sustainable Development (2005-2014).

The March 2002 edition (published in the year that the WSSD took place in South Africa) focused on the summit and on water resource management within the context of sustainable development. The June 2005 edition alludes to the Decade of Education for Sustainable Development with particular reference to the appropriateness of the South African school curriculum to offer education for sustainable development. In 2005 in South Africa the formal school curriculum was in the process of undergoing changes. Educators had no choice but to implement the formal school curriculum according to government policy. Consequently, with sustainable development being included in learning outcomes and with emphasis of sustainable development in the *EnviroTeach* educators were given no choice but to include the discourse (whether they were in favour or not) in teaching and learning within the formal education context.

The situation of human dependency on the environment and on the multiple problems facing humankind is evident i.e. of the situational power on the conditions of production. Poverty, financial illiteracy, energy shortages, diseases, indiscriminate economic development, sanitation and not having access to water are some of the examples of situational influence. Chemicals (October 2001 edition), water (March 2002 edition), energy (November 2005

edition) and alien species (October 2006 edition) are examples which show human dependency on the environment and the problems facing humankind. Since the both editions have a focus on sustainable development, an inference is that situational power is used to raise the importance of sustainable development for the continuation of human existence. However, this is more likely to be interpreted as a deterministic approach to the discourse.

Humankind while being challenged by concerns that threaten human survival (like the lack of potable water and poverty) has simultaneously caused damage to the environment. The damage of human activity on the environment is an example of situational power used in the *EnviroTeach* to underpin the discourse. An example of situational power that is used to respond to environmental damage is in the September 2003 edition on *Our oceans and coasts:*

"During the National Marine Week I would like more and more and even more people to discuss and discover how fragile the environment around us has become. Twenty years ago most people did not care too much; in essence, their view was that nature could cope and compensate when humans did damage to a species or to an ecosysytem. Maybe we should have been more careful previously but today it stares us in the face…"

(Foreword, *EnviroTeach*, September 2003, page 2)

It would be reasonable to assume that the South African nation, if not only the government, is aware of local and global environmental problems. The local and global environmental concerns show the situational influence in shaping the discourse of sustainable development. The situational influence on the conditions of production has mainly focused on human dependency on the environment and on damage to the environment through human activity. Editions of the resource have focused on singular concerns like water or energy. However, sometimes different issues were integrated e.g. the June 2005 edition focused on poverty, social justice and on environmental damage.

5.3.4.5 Discourse positioning to sustain or change practice

It is evident in the analysis that the discourse is positioned to influence the beneficiary to either sustain or change practice. In editions from 2002 there is an attempt to encourage the sustaining of certain practices (which could be considered as environment friendly) and yet change other practices (which could be considered as unfriendly to the environment). It was not possible to compile a comprehensive profile of the editors of the different editions as not much information was provided on the background of the editors. The researcher has

acknowledged the issue of funding as a reason that could have influenced the stance taken by the editor. However, there could be multiple reasons for this positioning. These reasons are discussed within the paragraphs that follow.

(i) The discourse is positioned to change practice through direct engagement with issues of sustainable development (e.g. water resource management, energy, and marine and coastal degradation) rather than through subtle reference. Knowledge, impact of behaviour that leads to destruction and legislation are used very strongly to show the need to change practice. The March 2002 edition has tips in bold print on water saving: "How to budget with *6000* litres of water per month" (page 30). The November 2005 edition has tips on energy saving: "Energy conservation ideas (working with natural process)" (page 13).

(ii) There were gazetted ideological changes in the political situation in South Africa in 1994 i.e. from apartheid to democracy. From this perspective the sustaining of democratic ideals viz. equity, access to basic provisions for all and social justice are encouraged with the intention to transform to democratic practice. The June 2005 edition on *Financial literacy and sustainable living* is an example of an attempt to achieve social justice and equity.

"Statistics show that those in the lower income groups often do not have sufficient knowledge about financial service products (including insurance) to make informed decisions, do not have access to financial service products, and need to be empowered in this regard."

(Foreword, *EnviroTeach*, June 2005, page 2)

The edition referred to (June 2005) has sections on personal financial management and insurance options to cater particularly for people of lower income groups. The intention was to get the beneficiary (especially from lower income groups) to reflect on spending habits that reflect a sustainable lifestyle than a debt ridden one.

(iii) Within the context of curriculum change in South Africa, the discourse is positioned to influence a change in practice on two levels. One level refers to the practice in which educators need to change thinking through implementation of the principles of the new curriculum. The other level is where educators need to change practice by responding to environmental issues by including key issues of sustainable development (like energy and water) in lessons to develop skills in learners (like environmental auditing skills). The assumption is that through the transforming of educator practice it is hoped that the practice of learners and eventually society (or the future generation) will be changed.

(iv) The concerns of sustainable development are linked to attitudinal change by trying to bring out values. An ethical transformational agenda (Hattingh, 2002) is evident. The focus of values in this respect is both on an individual and on an organizational (or national) level. Respect for the environment and culture and non-destruction of the environment are examples of national values. Reduction and wise use of water are examples of values that relate to the individual or household or organizational level. It is an assumption that a focus on values and the environment will bring about a change in practice, although it might be so in some instances.

In the attempt within the context of the discourse to encourage the sustaining of certain practices and the changing of others, editions of the *EnviroTeach* are pitched to include both awareness and action. Awareness is generated through knowledge and information and publication of success stories while action is stimulated through the projects and tasks set for learners. Action on the part of educators is stimulated through the empowerment of planning and designing of activities that are underpinned by principles of sustainable development (e.g. to integrate the social-economic-ecologic dimensions). The frequent quoting and reference of South African Legislation serves the purpose to raise awareness and to stimulate action in tandem with the law.

Through focus on different aspects (success stories, legislation and curriculum) the position of the discourse shifts to reproduce what is considered as sustainable practice and to transform unsustainable practice.

In summary the key findings under the dimension of conditions of production of Critical Discourse Analysis reveal that socio-political practices influence the engagement of the centre with the discourse. The analysis shows that the centre responds to the discourse within the context of political changes (change in political ideology), within the context of using what exists (like the concept of the environment), within the context of legal frameworks e.g. the National Constitution, and within the context of its function as an environmental centre with an interest in environmental issues.

A key finding is that situational power has a very strong influence on the conditions of production. The two main foci of situational power that emanate from the analysis are human dependency on the environment and the destruction caused by human activities on the environment. The situational power through focus on key issues like water and energy positions the discourse to influence the beneficiary to change practices or realize the need for change. As in the other dimensions of Critical Discourse Analysis, this analysis shows that

the environmental centre focuses on showing support for the discourse rather than on raising or engaging with criticisms against the discourse.

However, the situational power cannot be isolated from the influence of donor funding of *EnviroTeach*. Delta Environmental Centre depends on donor funds and sponsors. There is a possibility that even if the centre or the editor had a different opinion on the issues contained in *EnviroTeach*, the influence of donor-recipient power relations cannot be ignored. This means that due to the centre's dependency on the donor, the centre's or editor's categoric position on issues (for example nuclear power) could have been downplayed, or not articulated for the reason of obligation to donor-funds or to maintain the relationship with the donor for future funding.

5.4 Analysis and discussion: Annual Reports of Delta Environmental Centre

The annual report, unlike the *EnviroTeach* resource, is a document that serves the purpose of summarizing the activities of the centre for those who are interested. The analysis of the annual reports within the framework of Critical Discourse Analysis is based on criteria that are slightly different from those used for the analysis of the *EnviroTeach* because the reports have a different purpose than that of the *EnviroTeach* resource. However, the criteria for the analysis of the annual reports have been developed using the guiding questions of each dimension of Critical Discourse Analysis.

Table 5.8 on the next page shows the key foci for each dimension of Critical Discourse Analysis that was used in the analysis of the annual reports. The information in the table provides the basis for the discussions on the analysis of the annual reports.

Although each dimension for the analysis of the reports is presented independently, there are common issues across the dimensions raised in the discussions. It was pointed out in Section 3.1.3 that although the dimensions of Critical Discourse Analysis may be separated for the purpose of discussion and analysis links between the dimensions are inevitable.

Table 5.8 Analysis of the annual reports of Delta Environmental Centre

Dimension of CDA	***Text analysis***	***Process of production***	***Conditions of Production***
Focus of the analysis	*Foci: Content - Key discourse*	*Foci: Reporting style - situational context*	*Foci: Influence - Social (so) /Institutional (i) / Situational (s)*
1. Annual report: 1999/2000	Environmental education	Official Business reporting Influenced by environmental education discourse	Page 1. Destruction of the environment (s) / environmental education (i)
2. Annual report: 2000/2001	Environmental education/ sustainable development mentioned	Official Business reporting Influenced by environmental education discourse	Page 5. Addressing challenges (i) / destruction to the environment (s)
3. Annual report: 2001/2002	Environmental education/ sustainable development mentioned (WSSD)	Official Business reporting Influenced by environmental education discourse	Page 1. EE challenges (i) /stressed economic (so)
4. Annual report: 2002/2003	Environmental education/ sustainable development	Official Business reporting Influenced by environmental education discourse	Page 1. Eco-challenges (s)
5. Annual report: 2003/2004	Environmental education/ sustainable development in the context of DESD	Official Business reporting Influenced by environmental education discourse	Page 2. Developing young South Africans (so) (generational issue) Page 3. *EnviroTeach* - 10 years of democracy (so) Page 10. Community development
6. Annual report: 2004/2005	Environmental education / sustainable development	Sustainable development: Triple bottom - performance indicators (economic / social / environmental)	Cover page (so) Page 1. Challenges (s) Page 2. indigenous culture (so)/sustainable development (s/i)
7. Annual report: 2005/2006	Environmental education /sustainable development / DESD	Sustainable development: Triple bottom - performance indicators (economic / social / environmental)	Pages 2/3. (so) society's focus on environment and sustainability Policy development (i) / (s)/ (so) Sustainable development (s/i)

5.4.1 Text analysis – Key discourse

In the March 1999/ 2000 report environmental education is the key discourse as there is categorical reference to environmental education. In the 1999/2000 report there is no categorical reference to the discourse on sustainable development, but the term sustainable

living is used once. In the March 2000/2001 and 2001/2002 reports there was evidence that the centre had become more conscious of the discourse (refer to text analysis in Table 5.8). In both reports although environmental education was still key, sustainable development is brought up in the context of a strategy or as an event (World Summit for Sustainable Development / Decade of Education for Sustainable Development). The following are quotations that show that sustainable development was considered in the context of an event.

"On a wider front, we stand ready to be actively involved, as required in the World Summit on Sustainable Development to be held in Gauteng in September 2002 and expected to attract 50,000 international delegates."

(Annual Report March 2001, page 5)

"On the horizon looms the World Summit for Sustainable Development (WSSD), scheduled to be held in Johannesburg from 26 August to 6 September, 2002."

(Annual Report March 2002, page 1)

In the years following 2002, the reports show that the centre considered sustainable development with greater interest in relation to the activities of the centre. The following are quotations that show that sustainable development was considered in more depth both as a strategy and an event.

"As we enter the Decade of Education for Sustainable Development (2005 – 2014), we need to constantly assess our programmes and activities, looking for improvements and innovation at every turn."

(Annual Report March 2004, page 19)

"At a national level….were invited to serve on an Advisory Panel to develop a Framework for Action for the Department of Education on the Decade of Education for Sustainable Development."

(Annual Report March 2006, page 12)

However, there is evidence that in the years post 2002 while Delta Environmental Centre embraced the discourse of sustainable development, it did not ignore environmental education. Environmental Education and sustainable development were not seen as separate but as having a link. The following quotation shows the environmental centre's view of a link between environmental education and sustainable development, with a strong belief in the role of environmental education.

"Environmental education is undoubtedly at the heart of finding solutions for the now critical sustainability challenges confronting each one of us."

(Annual Report, 2002/2003, page 2)

The more recent report of March 2006 shows that the environmental centre has fully embraced the discourse within the DESD. Delta Environmental Centre (DEC) projects an intention to use the discourse to shape the activities of the centre.

"The United Nations *Decade of Education for Sustainable Development 2005-2104* also provides a useful framework for action (developed by the Department of Education with input from Delta Environmental Centre) that ought to shape DEC's work for the foreseeable future."

(Annual Report March 2006, page 19)

It also evident in the March 2006 report, that the environmental centre maintains the view that there is a close link between environmental education and sustainable development. In years post 2003 environmental education and sustainable development were the key discourses.

"As the focus on the environment and sustainability intensifies and while we continue to be well managed and at the forefront of environmental education, we can face anticipated, increased work pressures with confidence."

(Annual Report, March 2006, page 3)

The last two quotations show that sustainability and sustainable development have been interpreted as interchangeable rather than as categorically different discourses. The quotations from the annual reports show that the environmental centre supports both the strategy and the events related to sustainable development. The support is active. Firstly, representatives from the centre were part of the advisory panel to develop an action strategy for sustainable development. Secondly, the centre has acknowledged the use of the DESD framework to shape activities and programmes of the centre.

5.4.2 Process of Production - Foci: Reporting style (situational context)

The influence of the discourse of sustainable development is evident in the change in the reporting style of the environmental centre from 2005. From 2005 the centre changed the reporting style to be in line with the three dimensions ("triple bottom line") advocated in the

Decade of Education for Sustainable Development. The three dimension corporate reporting framework is based on economic performance indicators, environmental performance indicators and social performance indicators.

"The scope of the Centre's activities has increased steadily over the years as the environment has perforce come into prominence in all spheres of education and business. The 'triple bottom line' and 'sustainability' have become the focus of corporate reporting and emerging environmental concerns for society as a whole."

(Annual Report March 2006, page 1)

Linked to the three dimensions advocated in the DESD, there was a definite intention to shift from a limited focus of conservation and the physical environment to a more holistic approach to the environment. The chairperson's review (March 2005 report) alludes to the adoption of a holistic approach to environmental challenges and not just a biophysical approach (i.e. only focusing on the physical environmental issues). This is a common premise of both environmental education and sustainable development (as shown in the use of Figure 5.3 in Section 5.3.1.4 for both environmental education and sustainable development). The holistic approach is an indication that environmental education and sustainable development are not being viewed differently by the centre.

"…A holistic approach is imperative."

(Annual Report 2005, page 1)

The main influences on the process of production of the annual reports are based on two linked points advocated for the Decade of Education for Sustainable Development viz. the three dimension reporting style and the holistic approach to environmental issues. The environmental centre has put into practice what was advocated within the context of the discourse by using the three dimensions (environmental indicators, economic indicators and social performance indicators) as a basis for reporting on the activities of the centre.

5.4.3 Conditions of Production – Influence of Social /Institutional/ Situational factors

Compatibility and relative advantage (Rogers, 2000) are attributes of an innovation that makes it more likely to be adopted and maintained by an organization (see Section 3.2.2 and 3.2.4). Compatibility is the extent to which new ideas are congruent with existing ideas and relative advantage is the extent to which the new idea is perceived as more appropriate. In the 1999/2000 Annual Report the situational factors such as the destruction of the environment

seem to influence the conditions of production as evident in the quotations that follow. There is a strong emphasis on the impact on human activities on the environment within the context of environmental education. The condition of production is influenced by the situational power of the challenges that humans are faced with.

"The main challenge facing our world as we move into the twenty-first century lies in developing an economic system that will save and sustain the earth rather than destroy it. There is no concern these days more important than the environment."

(Annual Report 2001, page 1)

"Our focus remains on being well managed and at the forefront of environmental education in a world that is perforce becoming more environmentally aware for its survival."

(Annual Report 2001, page 1)

The discourse of sustainable development, as in environmental education, also focuses on the environment in recognizing the environment as a dimension. There is compatibility between the existing belief in the context of environmental education and what is believed in the context of sustainable development. In the 2002/2003 Annual Report the dominant influence is environmental issues (ecological challenges) within the context of sustainable development but the impact of human activities (an existing concern) is also raised as a situational factor that influences the discourse of sustainable development.

"While the World Summit on Sustainable Development (26August – 2 September, 2002) proved disappointing from the viewpoint of attracting delegates to the Centre (only one group visited us), it did serve to highlight the formidable eco-challenges for the future, including fresh water scarcity and habitat destruction and degradation through exploitation and pollution, with resultant increasing species extinctions. These are no longer *soft issues*. "

(Annual Report 2003, page 1)

However, the environmental dimension was not the only dimension that was an existing situational influence on the conditions of production. The social and economic dimensions were also recognized (see the concept of environment Figure 5.3 Section 5.3.1.4) as interlinking with environment. In the analysis in Section 5.4.1 on text analysis one of the findings was that post 2002 the environmental centre embraced the discourse of sustainable development comprehensively. In the March 2004 Annual Report, the environmental centre placed emphasis on the social, economic and environmental dimensions.

"Environmental and social costs cannot be ignored. Economic efficiency must be based on a principle of *not wasting*, which basically implies living happily in a simple, sustainable way, rather than constantly focusing on making money."

(Annual Report 2004, page 2)

It is evident that the compatibility between the existing beliefs and that of the discourse of sustainable development influenced the conditions of production of the annual reports. According to Tilbury and Cooke (2005) the "doom" or "shock therapy" approach used in environmental education does not provide the expected response of society to environmental concerns. They advocate that there is need for development of a belief based on understanding alternates to present lifestyles and the process of change. The "doom" perception (which is not necessarily always the case for environmental education) is not advocated for the discourse of sustainable development. In this way sustainable development has relative advantage over environmental education. The quotation above also shows that the environmental centre places emphasis on an alternate lifestyle than on an outcome of "doom".

There is evidence of two key foci of the discourse of sustainable development viz. the generation focus and the emphasis on a participatory approach that influenced the conditions of production. The definition of sustainable development (see section 2.2.1) as stated in the *Brundtland Report* of 1987 focuses on both present and future generations. The environmental centre has also placed emphasis on the generational issue by using it as a constant philosophy, as evident in the quotation that follows. The emphasis on the generational issue could imply support for the Brundtland definition of sustainable development.

"Our constant guiding philosophy is to make a positive contribution to producing young South Africans who are empowered and motivated to live in a socially and environmentally responsible way in the future."

(Annual Report 2004, page 1)

The Johannesburg Plan of Implementation (JPOI) an agreement that resulted from the WSSD (2002) emphasized that the approach to sustainable development should be participatory. The centre in extending its function to community development within the context of the discourse of sustainable development, applied a functional participatory approach. A functional participatory approach is where groups are formed (such as community members coming together) to meet predetermined objectives of an organization (Tilbury and Cooke, 2005). In reporting on the community aspect, social factors also influenced the condition of production

of the report. The following quotation is evidence that the centre took the initiative of applying a key tenet of the discourse to encourage the participation of community members in a community development project. As mentioned previously there is evidence (Section 5.5.1) that post 2002 the centre embraced the discourse with greater depth.

"This particular project was the first where Delta Environmental Centre (a non-governmental organization) engaged directly with volunteers as active community members involved in the process of research."

(Annual Report 2004, page 10)

In earlier annual reports (March 1999 and March 2000) sustainable development (as a situational and institutional factor) was implicit. The quotation that follows shows the implicit concerns of the discourse of sustainable development, without emphasis on the discourse.

"Ordinary citizens are increasingly, albeit slowly, involving themselves in recycling, organic food production and consumption, the rescue of endangered species, environmental education, consumerism, ecotourism and the building of sustainable communities."

(Annual Report, March 2000, page 1)

In the more recent reports (March 2005 and March 2006) sustainable development as a situational and an institutional factor was more explicit in the use of a framework to guide activities in the centre. In both the Annual Reports of 2005 and of 2006 (refer to the two quotations which follow), it is acknowledged that the Decade of Education for Sustainable Development provides a framework to guide the functions of the centre in the years to come.

"DEC believes that this declaration will provide us with a very useful framework for all our work for the foreseeable future."

(Annual Report, March 2005, page 12)

"….The dynamic leadership will contribute to DEC remaining at the cutting edge of Environmental Education in South Africa. This is extremely important because South Africa is a key role player in UNESCO's Decade of Education for Sustainable Development: 2005-2104. DEC is using the principles that underpin the Decade as a guiding framework for the work being done in the field of Environmental Education and Training."

(Annual Report, March, 2006, page 16)

The previous two quotations with categorical emphasis on “DEC” (Delta Environmental Centre) show institutional support for the discourse within the context of education for sustainable development. However, it is also evident and a confirmation of findings in Sections 5.3 and 5.4 that the environmental education discourse is not perceived as categorically different from sustainable development discourse.

The post 2002 Annual Reports show that the centre puts into practice what is advocated in the discourse of sustainable development. One of the reasons is that there is compatibility in some areas of belief such as the interlinking of the three dimensions of the environment. This is also an example of an existing norm (antecedent) that serves to support and promote the discourse of sustainable development rather than contradict or hinder the diffusion process.

5.5 Concluding remarks

In responding to the research question: *How does an environmental centre in a South African context engage with the discourse of sustainable development?*, the analysis of key documents viz. the *EnviroTeach* Resource and the Annual Reports show that the discourse of sustainable development is positioned to change practice of both the environmental centre and of the beneficiaries. However, the change in practice does not take the form of a completely new practice. The emerging practice is a combination of the discourse of environmental education and the discourse of sustainable development.

According to the Annual Reports the discourse of sustainable development has three key areas of impact on the centre. Firstly, the situational context has been influenced by the Decade of Education for Sustainable Development. The centre has adopted the key principles of the discourse and has used them to underpin programmes of the centre. The second area of impact relates to the first. The discourse has been positioned to change practice as evident in the change to the three dimension corporate reporting style based on sustainable development. The third area is that environmental education and sustainable development are not perceived as separate. Sustainable development and environmental education are used interchangeably. The reporting style based on the three dimensions (economic/social/environmental) of sustainable development performance indicators firstly shows that the environmental centre fully supports sustainable development and secondly shows that sustainable development is embraced in a holistic way by including all dimensions. However, for a reader not associated with the centre, in the context of the Annual Reports the link of sustainable development in the reported activities is not made very clear other than being placed under a heading of one of the three dimensions.

Delta Environmental Centre has actively engaged with discourse with the discourse of sustainable development. The example of representatives of the centre serving on an advisory panel to develop a national strategy of action for the Department of Education in tandem with Decade of Education for Sustainable Development shows their proactive approach.

In the *EnviroTeach* and in the Annual Reports, the following are areas of compatibility (an attribute of innovations in the Diffusion Theory) evident between environmental education and sustainable development that can be considered as influence to support the discourse of sustainable development:

- The Active Learning Framework
- The Holistic Concept of environment
- The vision of sustainable development is similar to environmental education which is inclusive of values and attitude, and practice
- Response to sustainable development is in keeping with the approach of participation and stakeholder involvement advocated for environmental education
- Approach involves both citizenship and individual approach. However, with constant reference to the constitution and government, citizenship roles are emphasized more than the role of the individual.

Another attribute of innovations in the Diffusion Theory is relative advantage (Rogers, 2000). The following areas which are premises in environmental education are of relative advantage to the discourse of sustainable development:

- A focus on intergenerational and intra-generational concerns (i.e. the consideration of the needs of the present and future generations)
- A focus on related dimensions of the environment such as the socio-political and economic.

The Active Learning Framework and the focus of the related dimensions of the environment existed as part of the environmental education discourse. The Active Learning Framework and the focus of the related dimensions of environment can be considered as antecedents, within the framework of the Diffusion Theory. Both the Active Learning Framework and the focus of the related dimensions of environment however, as antecedents, do not provide hindrance to, but encourage support for the discourse of sustainable development.

Two trends emerge in the analysis of the key documents within the context of Critical Discourse Analysis. The first trend is that while the centre is of the belief that sustainable development is holistic in conception and affects all of society, the text has the potential of creating a perception of selectivity and isolation especially, with regard to the examples used. The examples used tend to focus on disadvantaged communities, and on schools which serve previously disadvantaged communities (i.e. from a political perspective). The implication is that a perception can be created where middle and higher socio-economic groups might be led to believe that sustainable development is more a strategy to address poverty, thus missing the bigger picture of the overuse of earth's resource by all earth's citizens.

The second trend is that the centre does not clearly position itself on the criticisms of the discourse (raised in the literature review in Chapter 2), nor has the reader been challenged on the discourse in *EnviroTeach.* However, the discourse is made legitimate. Legitimate refers to the structure or construction of a chain of reasoning based on legality of rules to justify a set of rules (Janks, 2005). In *EnviroTeach* resource, with letters of support and introductions in the foreword by government representatives (Ministers and Directors), sustainable development is legitimized and rationalized, and not set out as a challenged discourse. The implication is that a perception can be created (especially amongst the masses of people who are not in the critical loop as academics) that sustainable development is not radically challenged and is the solution to the environmental problems.

In reference to the analysis and findings of *EnviroTeach* and Annual reports the environmental centre portrays the role of an opinion leader in favour of the discourse of sustainable development. Opinion leaders are the mentors or role models who determine the spread and sustaining of innovations (Valente and Davis, 1999). In *EnviroTeach* and Annual reports the centre showed explicit support for the discourse. Reservations or criticisms of the discourse of the centre, if any, were not categorically raised or discussed in *EnviroTeach* and Annual reports.

It is evident that in support of the discourse of sustainable development, the centre focuses on two key situational factors. One is the dependency of humans on the environment and the other is the destruction of the environment caused by human activities. The approach is based on the emphasis on understanding the need to change lifestyles rather than on "doom".

In the next chapter (Chapter 6) the information provided by the staff of the environmental centre is analysed to explore the engagement of the centre with the discourse of sustainable development. The analysis and discussion of staff participant responses (to different aspects

of the discourse), are based on responses to interview questions and a questionnaire. In the next chapter cross reference will be also be made to the discussions and findings in the present chapter.

Chapter Six

Sustainable Development: Interpretation and Practice Staff perspective

…Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more…

The Earth Charter (2000, p.1)

6.1 Introduction

The staff of the environmental centre has provided valuable information through responses in the semi-structured interviews and in the questionnaire. The responses have been used to explore the engagement of the centre with the discourse of sustainable development. In chapter 6 the analysis of the responses of staff member interpretation of the discourse and translation of the discourse into practice are discussed.

Chapter 6 provides a response to the following research sub-questions, with focus on the staff of Delta Environmental Centre:

- *What are the views and understanding of staff and beneficiaries of the environmental centre of the sustainable development discourse as a way to address environmental concerns?*

- *How does the discourse of sustainable development feature in the practice (how things are done) and in activities (i.e. ways of engaging with the discourse, actual programme design and delivery) of the environmental centre?*

The analysis and discussion has drawn on both the interviews and the questionnaires. The approach to analysis was according to predetermined categories, and issues and themes that emerged during the analysis and was not necessarily confined to specific questions in the interviews and questionnaires (see Sections 4.4.1 and 4.4.2).

In the discussion some members of staff are quoted more often than others. The anonymity of the staff members was considered by deleting statements in quotations that specifically referred to their work responsibilities. The reason is that members of staff have different roles and functions. While some have a greater combination of roles (management, facilitation and the development of materials) others have roles with a more specific focus e.g. facilitation. An overview of the chapter is provided in Figure 6.1 (on the next page).

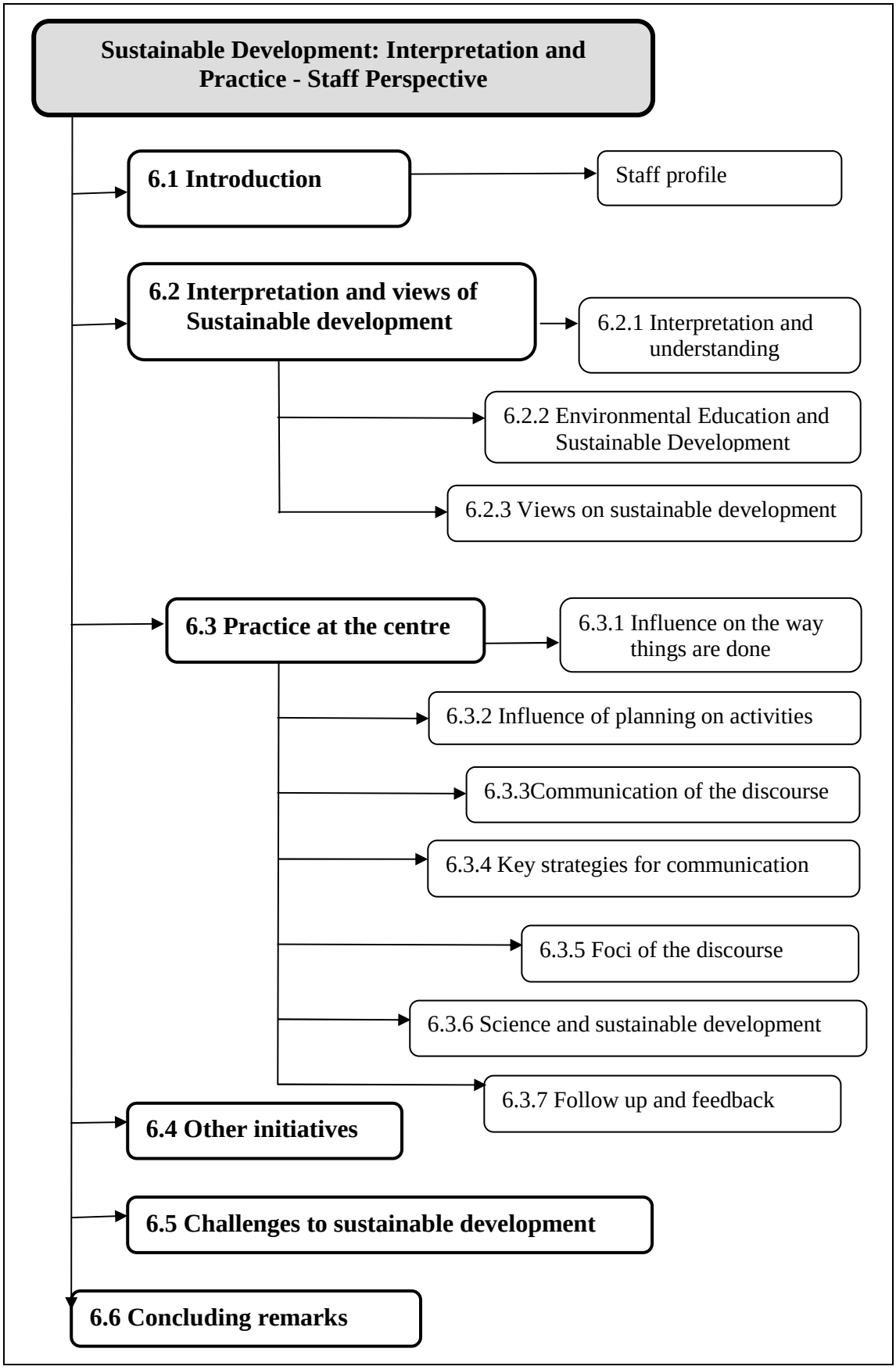


Figure 6.1 An overview of Chapter 6

Collectively, however, the staff response has contributed to the holistic understanding of the engagement of Delta Environmental Centre with the discourse of sustainable development. The key themes for analysis and discussion in the chapter are the interpretation and views of staff on the discourse of sustainable development, how the discourse is interpreted in practice, the initiatives the centre has taken within the context of the discourse and the challenges that are evident in engaging with discourse of sustainable development.

Interpretation of sustainable development in the context of the study refers to what staff members understand sustainable development to mean. Views of sustainable development refer to what the staff members think about sustainable development as a strategy to address environmental concerns. It was also the intention of the study to find out whether the interpretation of sustainable development is consistent with what the staff members actually do in their practice e.g. in planning activities and in conducting the activities with beneficiaries.

In Diffusion Theory, antecedents i.e. what exists within a context, can either provide a basis of support or provide challenges to a new idea. In the analysis antecedents which support and those which provide a challenge to the discourse of sustainable development are identified and discussed.

A profile of the staff members who provided information to understand how the discourse is interpreted and incorporated into practice is presented in Table 6.1 on the next page. The staff profile has been presented according to categories and not according to individual participants. The purpose of this is for ethical reasons to prevent the identification of individual staff members. The profiles show the range of qualification of staff members, the age range, the approximate number of years at the centre, roles at the centre and the beneficiaries with whom they generally interact.

The information in Table 6.1 (on the next page) shows that of the sixteen staff members, most are involved in responsibilities of facilitation of programmes (15 staff members), development of programmes (11 staff members) and development of resources (10 staff members). Facilitation of programmes, development of programmes and development of resources are focused contexts to understand how the centre engages with the discourse of sustainable development in practice.

Table 6.1 Staff participant profile of Delta Environmental Centre

Number of staff participants: 16		
Category	**Range**	**Number of staff members**
1. Age	Below 25	-
	Between 25 – 40	12
	Over 40	4
2. Highest Qualification	Certificate	2
	Diploma	3
	Degree	3
	Honours Degree	1
	Masters Degree	6
	Not disclosed	1
3. Approximate number of years at the centre	1-2 years	4
	3-4 years	6
	5-6 years	1
	7-8 years	1
	9-10 years	2
	11 years and more	2
4. Position at the centre	Executive Officer	1
	Manager	1
	Environmental Education Trainer	4
	Education Assistant	4
	Education Officer	3
	Other	3
5. Roles at the centre	Management	4
	Facilitation	15
	Development of programmes	11
	Development of resources	10
	Other: Human resources management	1
	Edutainment	1
6. Interaction with beneficiaries	School based learners	14
	Learners at tertiary institutions	11
	School based educators	13
	Other government employees	7
	Employees of corporate organizations	4
	Other (Funders)	2
NB. The figures in the last column are based on members of staff who have disclosed the information.		

The responses of staff from the interviews and the questionnaires have been quoted in the discussion to support the analysis. The researcher has provided where possible, many quotes to provide the reader with an opportunity to make his or her own deductions as well. The number that appears next to the word “staff” e.g. staff (3) is used to indicate a response of a different staff member and does not necessarily follow the order in which the interviews were conducted or in

which the questionnaires were received. Quotations of the responses of the staff members from the questionnaire will be preceded by a Q - followed by the number of the question e.g. (QA1) while the quotations from the interviews will have no precedent. Evidence from both the interviews and the questionnaires are provided in the discussion.

6.2 Interpretation and views of sustainable development

Discourses include representations of how things have been as well as how things should be (Fairclough, 2003). The intention of focusing on views and on the interpretation of the discourse of sustainable development in the interview and in the questionnaire was firstly, to understand what the staff members thought about the discourse within a local or global context and secondly, to understand their practice within the context of the discourse.

6.2.1 Interpretation of sustainable development

Since staff members are involved in planning and conducting programmes at the centre it was necessary to understand their interpretation of the discourse. There were various responses to questions on how staff had first come across the discourse, what they understood about the discourse, and their views on the discourse of sustainable development. The responses are discussed under sub-headings.

6.2.1.1 First interactions with sustainable development

There were different points in time that members of staff had first come across the discourse of sustainable development. The time line ranged from the eighties to the early millennium (i.e. 1980s to around 2003). The staff profile (Table 6.1) indicates that staff members joined the centre as employees at different points. First interaction with the discourse included different sources outside the centre, some before they joined the centre. The sources that exposed staff to the discourse varied from previous professions, academic studies and international events like the World Summit on Sustainable Development (convened in South Africa in 2002). The quotations that follow are examples of the different sources of first interaction with the discourse of sustainable development.

Staff (8): "…I think being a Geography teacher by profession, I've been involved or worked with the concept for quite a while…"

Staff (1): "I think I was doing a course at …(University) but it was, you know, just basic…"
Staff (10) : "during the World Summit that is when I heard about sustainable development…"

Staff (4): " The first time I heard about sustainable development is through my lecturer… at …University of Technology."

One staff member indicated that the first introduction to sustainable development was at the Delta Environmental Centre. University courses were another source of introduction to the discourse of sustainable development. During studies at university (for staff who indicated such) the level and the depth at which the participant engaged with discourse differed. The discourse was introduced at depth, as an incidental topic, at first year level or at honours level.

6.2.1.2 Understanding of sustainable development

In the literature it is widely acknowledged that there are different interpretations of sustainable development and the possibility of reaching consensus on meaning seems remote (Jickling, 2005). This also seems to be the case even within an environmental organization like Delta Environmental Centre which has a definite vision, mission and environmental focus. There is no single categorical definition that staff presented and the responses were not necessarily "stereotyped text book definition" responses. The responses were more of a discourse that is in the process of being internalized rather than a categorical understanding or definition as shown in the quotations that follow.

(i) Conflict in the notion of "development"

The responses of staff support views presented in the literature that sustainable development is open to interpretation. The point that emerged was that the two words sustainable and development (or philosophies as phrased by a staff member) do not seem compatible. Peters (2005) has alluded to the point that the word "development" has never been more open to question, especially in the context of modernization, where modernization as explained by Peters, put very simplistically, refers to a move towards convergence where societies become more like each other due to western influence.

Staff (12): "…sustainable development is an oxymoron, because you can't have sustainable development, it seems like the two are opposite sort of philosophies, but we've had a lot of discussion around that. But obviously in the more recent times the decade of education for sustainable development that came about as a result of the World Summit on Sustainable Development brought everything really out in the open as it were, and made everyone a lot more aware."

Staff (8): "My view is that it is quite a difficult concept to get your head around because there are conflicts in the two ideas, but I think we have to look at ways of and be creative and how you can look at sustainable development in whatever you do. I don't think it applies to big projects and cities, it actually applies to one's own life almost in the way you manage your life."

Staff members are still trying to understand how the two words (sustainable and development) in reality are compatible. The previous two quotations bring out two other points of view. The first is the belief that international events help in contributing to getting a "picture" of the discourse (Staff 12). The second is the belief that the sustainable development discourse does not only influence an organizational context but also influences one's personal context (Staff 8).

(ii) Consistency with ideas in the *Brundtland* definition

The responses of staff members (1, 4, 7 and 9 – refer to quotations that follow the paragraph) highlight aspects of the discourse evident in the *Brundtland* definition of sustainable development (see Section 2.2.1). Upon analysis three foci contained within the *Brundtland* definition recurred in the responses. These three foci were (i) the use and limitations of natural resources (ii) the intergenerational implications of sustainable development (iii) a way of living and doing things. The focus on the use and limitations of natural resources is not surprising. A reasonable assumption is that the centre is an environmental centre with a foundational and predominant point of departure being aspects of the environment related to natural resources e.g. energy and water.

Staff (4): "My understanding in a simple term its just a matter of using the resources that you have and also awakening people to use the resources that they have in a way that they can use it more and more often, rather than creating problems for the environment."

Staff (9): "It is like using the natural resources but don't deplete it, use it so that there will be enough, what you only need so that there is some left for the future"

Staff (7): "…we are going to grow as people and in our society and build our buildings and things like that, but in a way that takes into consideration our natural environment and all aspects of our environment…"

Staff (1): "I think it is all about the future relations…you must also think what is being used now."

With responses having much in common with the *Brundtland* definition, it is reasonable to assume with some caution that there is an influence of a "schooling paradigm". A schooling paradigm is where there is an influence of getting people to believe in proposed tenets as if the tenets were the norm (Callewaert, 1999). This could be interpreted as an influence of a power-coercive strategy (Bishop, 1986) in the context of diffusion of innovations.

(iii) Sustainable development is more than a theoretical construct

The focus of a *way of living and doing things* within the context of sustainable development is of particular interest. It shows that sustainable development is not only interpreted as a theoretical construct but a discourse that can be translated into action. However, what is not clear is what is the initiator or driving force of the action. The way of living and doing can come from outside the individual or the organization through legal or policy influence or it could be from within, through change in thought processes because of intrinsic belief of the importance of the environment. Initiative independent of external influence through intrinsic belief is (as referred to by Tilbury and Cooke, 2005) self–mobilization. In the responses of staff there was mention of sustainable development as a way of thinking and living but it was not dominant and only categorically put across by one respondent.

Staff (11) …it's a way of thinking and living, it's the way we start to conceptualize the way we coexist within the world, so its all the activities that we are involved in and how we use the resources and the impact that we have in all of the activities, and I mean, all because I would then put me existing within a social space within an economic space…

Rosenberg (2004) has pointed out in her critique on sustainable development that the discourse should be interpreted with a holistic view and not on the economic benefits of a few. The response of staff member (11) concurs with the holistic approach but also places emphasis on the point that there needs to be a commitment between thinking and living. The deduction is that for success in sustainable development acting (living) is just as important as thinking.

A key finding in the analysis is that the same difficulty that exists both nationally and internationally in finding consensus on the meaning of the discourse is also evident in the much more contained context of an organization that supports the discourse.

6.2.2 Interpretation: Environmental Education and Education for Sustainable Development

The literature shows a difference in opinion in respect to the relation between environmental education and education for sustainable development. In the literature review (Chapter 2) it was pointed out in the discussion documents on the Decade of Education for Sustainable Development that sustainable development cannot be equated with environmental education (UNESCO, 2004). The UNESCO (2004) discussion document then supports the view that sustainable development is different from environmental education. Jickling (2005), on the other hand, is of the opinion that sustainable development is not necessarily a better option to environmental education. Some environmental educators believe that sustainable development is not something new. According to Jickling (2005) it is a false claim that environmental education did not consider environmental and social issues while sustainable development does. Peters (2005) raised concern about the replacement of environmental education with sustainable development. His concern was that replacing environmental education with sustainable development has the potential of the world becoming trapped in models of economic development. "Development" has in society, been interpreted in economic terms. For example conventional economic accounting accepts the destruction of forests in the interest of increase of the Gross Domestic Product (Redclift and Sage, 1994),

Staff of Delta Environmental Centre had various views on the relation between environmental education and sustainable development. The four trends of thought that emanated from the analysis of the interviews, together with number of staff that responded are presented in Table 6.2.

Table 6.2 Relation between environmental education and sustainable development as analysed in staff interviews.

Trend	Number responded
Environmental education is the same as sustainable development	4
Environmental education and sustainable development are linked	5
There is some difference between environmental education and sustainable development	3
There is significant difference between environmental education and sustainable development depending on the history and context from which it is viewed.	2

These trends of thought are highlighted in the discussions that follow. Similar trends were reported by Hesselink, van Kempen and Wals (2000) in an international debate on education for sustainable development held in the Netherlands in 1999 (refer to Section 2.2.2 for the trends).

6.2.2.1 Environmental education is the same as sustainable development

There is a belief that there is no difference between environmental education and sustainable development. The implication is that both environmental education and sustainable development may be used interchangeably.

Staff (1): "I think that they are the same. Because if you talk about an environment, somebody's there, and it must be, be able to be used like in the future, so it goes hand in hand. You can't separate the two."

Staff (3): "Yes, because it's all…everything we do I think its working towards sustainable development in terms of environmental education and teaching people about saving water and electricity and things like that. I mean where do you draw the line, is such a big thing."

Staff (10): "They are like the heart and blood the heart cannot pump without the blood they are a marriage they go together."

There are potential difficulties in interpreting environmental education and sustainable development as one and the same. There could be a greater emphasis on nature conservation if the perception of environmental education is to conserve the environment or on economics if development is perceived as economic development. Robottom (2007) has raised the concern that to "re-badge" environmental education with sustainable development does not necessarily imply that there would be a change in practice.

6.2.2.2 Environmental education and sustainable development are linked.

A common point that emanated in the analysis is that environmental education and sustainable development are talked about as two separate discourses, with very close links of being recognized.

Staff (4): "It's part of environmental education because if I recall well, when I was doing an environmental education module at the university that was just a small part in the whole environmental education document"

Staff (8): "I think it's a big component of environmental education and I don't think you can educate around environmental matters without dealing with issues relating to sustainable development."

The response indicates that there is acknowledgement of close links, with a perception that sustainable development is part of environmental education. A source of this perception could be the way environmental education courses in universities were structured i.e. giving attention to sustainable development as a module or topic of an environmental education course and not as a course on its own (refer to the quotation of staff 4).

6.2.2.3 There is some difference between environmental education and sustainable development

There is a perception that while there are links between environmental education and sustainable development, there is a slight difference.

Staff (6): "I don't see a big difference because if you look at the concept of sustainable development, you are looking at …if you take Hattingh's definition for example. Hattingh sees the ecological, the economic and the social all in one. And if you look at the concept of environment, its also been like that except we've given also political aspects to it. And if you look at our work, I don't think we could ever say we separated environmental education and sustainable development."

The three dimensions of economic, social and environment are used as the overlap between sustainable development and environmental education. However, in the overlap, the difference pointed out is in reference to the dimension of politics which is not as distinct in sustainable development as compared to environmental education. The latter distinction appears to be a theoretical perception based on a concept model of the environment (refer to Section 5.3.1.4).

6.2.2.4 There is a significant difference between environmental education and sustainable development depending on the history and context from which it is viewed.

Two staff members were of the belief that a significant difference between environmental education and sustainable development exists based on the context and the geographical location of countries. The belief (as in the indicated in the quotations which follow) is that for some countries in the Northern hemisphere sustainable development might seem to be different from environmental education. Staff members who have the latter belief make this claim based on their opinion that the tendency of countries in the Northern Hemisphere is to focus on nature conservation ("green" issues) paying less attention to social and economic issues ("brown" issues). Earlier conceptions of environmental education focused on natural ecosystems (Chikunda, 2007). In the opinion of staff countries in the Southern Hemisphere (also referring to South Africa) is that environmental education and sustainable development are not viewed as different because all three dimensions

(social, economic and environmental) advocated in sustainable development were always included in environmental education.

Staff (11): "I think that a lot of that question is based on context and history… definitely something that maybe new for the North….we actually always seen environmental education as an approach to education….always been part of issues that we deal with as environmental educators we have never separated it."

Staff (11): "I think in the south the approach to environmental education has always had the kind of view to create a different society, it has never focused on greening as it may have been in the north…..we had a fairly holistic view on how to approach issues for sustainability…the discourse of sustainable development during the decade is not particularly new in the south. "

A point that was raised is that in reality there is no difference between environmental education and sustainable development. A difference was created through political interference. There is a belief that sustainable development is a political tool.

Staff (12) : "It should not be. It should not be but I think it often is yes because I think sustainable development is also a political tool and I would like to think that environmental education is not and anything that is a political tool is bound to be manipulated in some way."

In summary, it can be inferred from the responses that the belief among staff members is that there is more that links environmental education and sustainable development than sets them apart. Chikunda (2007) alludes to the belief that environmental education is an established vehicle for sustainable development. There is no evidence that staff members think that the two discourses are categorically different, which is contrary to what is stated in the UNESCO (2004) document on Education for Sustainable Development. However, there are contrary perspectives like that of Jickling (2005), Robottom (2007) and Peters (2005) based on views that sustainable development cannot easily substitute or necessarily be the best alternative to environmental education.

6.2.3 Views on sustainable development

Staff members of Delta Environmental Centre were asked their views about sustainable development as a response to environmental issues within the country. Generally, the staff participants of the environmental centre were in support of sustainable development.

Included in the reasons of support were that sustainable development does not go against the policies of the country and that it provides some direction to improving the state of the environment.

Staff (10): "It is a way forward and it is a positive approach"

Staff (11): "I think it is workable…it does not propose anything new to our policies to processes of development…in terms of social and economic development."

Some members of staff believe that sustainable development is a reminder to all environmental problems exists in reality, especially the limitations of natural resources. Sustainable development seems to provide a broader vision than just nature conservation or preservation of geographical areas or biological species within limited spaces. The belief is that sustainable development is inclusive of nature conservation and extends to all aspects of life as evident in the two quotes that follow.

Staff (9): "I am glad they are making it more of an issue…living sustainably is important because of the population growth so that people will know to use resources sustainably."

Staff (8): "I think it's the only way ..it is the only way that we can as a country look at environmental issues because if you look at environmental issues from a preservation point of view, if you think of game reserves or whatever they might be, that are fenced and absolutely exclusive and not taking into account what's happening outside them or on their borders…"

The vision of sustainable development is not constrained to individuals but involves consideration for others (evident in the next quote: staff 5). In raising this point a strong value base with emphasis on respect and concern for the self as well as others is brought out. In the United Nations Decade of Education for Sustainable Development (UNESCO, 2005) and in the National Framework for Sustainable Development of South Africa (2007) values viz. concern for others within diversity and equity, are emphasized.

Staff (5): "I am positive…When I look at it I just look at it in a bigger picture. Not like I'm doing it for my own sake."

In supporting sustainable development, staff raised caution on the potential difficulties to translate the discourse into a reality of practice. Diversity of cultures within a country (like South Africa) and oversimplification of the discourse were raised as possible antecedents that would make the

translation into practice complex. The point alluded to is that a "one-size" fits all approach (solution) is going to be problematic in a situation of diverse cultures. This is a valid point as in South Africa a diversity of cultures that include traditional and indigenous knowledge and culture is recognized in the Constitution and in the formal education curriculum.

Staff (12) "..if we talk on a practical level I think our country is immensely complex with an immense amount of diversity …what I see from sustainable development is that often the approaches look good but is often too simplistic for the problem is so immensely complex."

Staff (7): "But it's the odd factory, the odd company here and there, who are taking it on themselves. Where is the policing, where is stuff really happening?"

Some of the responses implicitly reiterated the need for research to find out how organizations (as in this study) were engaging with the discourse of sustainable development. Two points that staff raised supported the concern of the lack of reported research on engagement with the sustainable development discourse (refer to quotes 6 and 7 below). The first point was that it has been two years since the decade was declared and there is no tangible evidence of what has been implemented within the context of sustainable development. The other point is that there is a realization that humans will act to satisfy their needs, but the question is: how are these human needs to be satisfied within minimal environmental impact?

Staff (6): " It's a good concept, it's a good idea, because of course its broader than, you know, just looking at one or two aspects….but the problem is to what extent will government, to what extent will, you know, organizations respond to it. ..If you look at South Africa for example, the question is we are now in 2006 almost two years into the decade, and the question is what's actually happened?"

Staff (7): "Well I mean I think the basics of it, at least people are starting to think about, ok, we've got to build, we've got to have houses for people, schools…we've got to do everything that we are doing in society and keep our economy going and that, but how can we do it, looking at long term sustainability of us being able to survive in the environment."

The responses of staff show that there are concerns about how to implement sustainable development in practice, however, it is evident in the analysis of staff responses that there is no strong resistance to the discourse but support. There is compatibility (Rogers, 2000) in staff responses as to what exists in environmental education and the vision of sustainable development.

When there is greater support for an idea or innovation, the innovation is less likely to come to its demise (Bishop, 1986; Carlson, 1971). In the context of the support expressed by the staff the sustainable development discourse is likely to gain even more momentum within the centre. The centre, then as an 'opinion leader' (Valente and Davis, 1999) promote rather than resist the discourse of sustainable development. 'Opinion leaders' and 'compatibility' have been discussed in Section 3.2 under the heading Diffusion Theory.

The tenets of environmental education e.g. the three dimensions (of economic, social and environmental) and a holistic approach can be identified as antecedents within the framework of the Diffusion Theory. From the responses of the staff the tenets of environmental education as antecedents support sustainable development rather than provide a challenge to it.

6.3 Practice at the environmental centre

One of the ways in which discourse manifests is through practice i.e. part of doing a job or through a social activity (Fairclough, 2003). In the semi-structured interviews and the questionnaire (refer to Appendices 7 and 8 respectively) questions were posed to the staff members to gather information about the practice at the environmental centre within the context of the discourse of sustainable development. The questions, based on the influence of the discourse on practice at the environmental centre, focused on the way things were done at the environmental centre; on the activities of the environmental centre; on the focus/foci of the discourse; on how the discourse was communicated and how the environmental centre got feedback from the beneficiaries.

6.3.1 The influence of the discourse of sustainable development on the way things are done at the environmental centre

The responses show that at any one point there was no deliberate decision to adopt sustainable development but rather the discourse was integrally used to enhance the practice of the environmental centre. In the analysis it is evident that the World Summit on Sustainable Development (2002) and the more recent Decade of Education for Sustainable Development (2005) had significant influence on the discourse in the context of practice at the environmental centre. Staff responded that principles and priorities of the WSSD and the DESD (e.g. the focus on equitable access to energy and water to all communities) are considered in the practice of the centre, as well as greater effort to get acquainted with policies related to water and energy. In the responses of staff the reference to government frameworks show the political influence on the discourse.

(QC3.1) Staff (5): The entire staff, including the ground staff are now getting acquainted with the environmental policy around water, energy, waste management

Staff (2): "I think what we try to do very often is try to incorporate principles that which have been negotiated over many years….one of the examples is the Johannesburg summit. The principles that came out of that, we try to work that into what we try to achieve so that becomes part of our goals in order to achieve that…For example, the priorities that came out of the Johannesburg Summit became… often became our priorities…like focusing on things like water, sanitation and energy issues. So global initiatives, global priorities would certainly influence the way we think and the way we do things".

All except one member of staff believed that the discourse had some impact on the way things were being done at the environmental centre. The dissenting staff member believed that the centre had always functioned along the principles of sustainable development and that practice at the centre presently could not be credited to the discourse. An inference here is that the dissenting staff member is of the opinion the principles of environmental education and sustainable development are the same or that the emphasis on the "political" between the environmental education model and sustainable development model has not changed. According to Sterling (2007), authors of reports for example from the WWF, UNESCO and UNEP must have often thought about what is that needs to be said to get a reaction from policy-makers, and not just provide information. One of the ways was to focus on the ecological crises i.e. limits to natural resources (Huckle, 1991; Sterling, 2007). With focus on the ecological crises having its place in history (e.g. the meeting of governments in Tblisi, 1977) prior to the emphasis on sustainable development, organizations like environmental centres started to respond to issues such as the limitation of natural resources. The ecological crisis (limitation of resources) is still emphasized in sustainable development. The comments by the dissenting staff member could be interpreted as sustainable development being political advocacy to the ecological crisis just like environmental education, and therefore, the responses of the environmental centre to the ecological crisis is nothing "new".

The other staff members, to a larger extent, believed that the discourse had some influence in the way things were done at the centre, especially in the more recent years. In the previous chapter (Section 5.4.3) it was quoted that the environmental centre is using the Decade of Education for Sustainable Development to frame activities and programmes of the centre. The ways in which sustainable development is perceived to frame and influence the way things are done at the centre will be discussed in the subsections that follow.

6.3.1.1 Economic link

One of the responses linked the economic dimension of sustainable development to the environmental dimension, although the focus seemed to be more on the economic dimension than on the use of natural resources. The influence was for staff to use resources wisely at the centre due to financial constraints.

Staff (12): "Well we are an NGO there is not a lot of funds to be throwing around so I do get the sense that a careful look that we try and look after resources…trying not to overuse, try and use little as possible of whatever is available."

The emphasis on "NGO" in the quotations gives the impression that the sustaining of the organization is more important than the focus on natural resources. The last quotation raises a concern that sustainable development may lead to greater emphasis on the economic focus than on the limitations of natural resource.

6.3.1.2 Developing policies at the centre

The policies of the environmental centre seemed to be influenced by the discourse of sustainable development in three ways. One is a greater commitment to ensure that existing policies are implemented, two is to become reflexive i.e. to reflect on and change practice at the centre (e.g. how much paper is used) and three is the development of new policies (or the revisiting of existing policies) within the context of the discourse (e.g. the policy to guide the purchases of the centre).

Staff: (4): "…But I think Delta as an organization they have a lot things they are doing in order to incorporate sustainable development in as I've given the example of the of energy and also in terms of the waste policy, they have a waste policy that I know of. And also they are adhering to what they have on paper."

Staff (7): "Yes, I think its definitely influenced. We've had a team together that have been putting environmental policies in place…We were at one stage working on, but we haven't met for a while, like on a buying policy. So what kind of stuff are we buying? Can we recycle it, can't we recycle it? What can we reuse? What's healthy, what's not healthy?…"

Staff (8): "…From the centre's point of view we have developed policies… which we never had before around water use, energy use and waste management. Which I think is…also it's forced us to look at how much wastage we have now and how we can actually better manage our resources and that will contribute to sustaining our efforts financially as a centre…"

(QC3.3) Staff (3): I think they are trying to set up/or have set up an ethical purchasing policy. I am not sure to what extent they source printers that use vegetable inks and recycled paper.

(QC3.4) Staff (3): I think they try to avoid unnecessary traveling etc.

Many quotes have been included to emphasise the point of influence of the discourse in the development of policies at the centre. Another reason is to show the different areas that the discourse has influenced at the centre. The discourse has influenced the areas of waste management (staff 4, 7 and 8), purchasing (staff 7), and traveling and transport (QC3.4: staff 3).

6.3.1.3 Putting policy into practice at the centre: influence on the physical environment

In keeping with the principles of sustainable development the environmental centre has made changes to the physical environment to reduce the impact on the use of resources like water and energy. The centre also actively promotes recycling. A recycling site has been established within the close parameters of the centre, with demarcated containers for the different materials that can be recycled (e.g. plastic, paper and glass). The recycling station is for the centre as well as for the surrounding community. More recently vegetable garden patches have been established. The examples provided and the photographs which follow show that the centre puts into practice principles of sustainable development and is likely to gain credibility by showing to beneficiaries that practice is possible and that sustainable development is more than a theoretical concept.

Staff (7): "And we try and set an example for those people that come here, for students, for teachers, the people that use the place… And before we started doing the second revamp of the bathrooms we had posters and stuff up, please switch off the taps, we 've got aerators in the taps, we've got the dual flush toilets that kind of thing. So people come into the centre and that's like the norm. And a lot of people have asked about like where can we get this stuff, can we put it in our homes? We all try recycling, we emphasise that all over the place here…Like for an example, what we've been doing with like the all the light bulbs, those that are not energy saving light bulbs, what we've done is as they blow, they are replaced with an energy saving light bulb…"

(QC3.5) Staff (8): In all improvements/alterations/repairs/installations we look at the most sustainable option e.g. wall mounted instant hot water machine instead of a kettle and geyser.



Photo 6.1: Vegetable garden outside the centre



Photo 6.2: Dual flush toilet system in the centre



Photo 6.3: Plastic and paper recycling centre which is open to use for the surrounding community



Photo 6.4: Permanent recycling containers for glass which is also used by the surrounding community

An attribute of innovations is 'observability' i.e. the extent to which an innovation manifests in a noticeable result (Rogers, 2000). Observability can take different forms e.g. physical changes, the choice of resources and execution of programmes. The environmental centre has shown that the discourse has influenced policy development, changes in the physical environment as well as influenced decision-making (e.g. of the influence on decision making given in the quote of staff -7). The observability of results of the innovation has two areas of impact. One is that it shows the staff

that it is possible for the principles of the discourse to be put into practice. Two is that it shows the beneficiaries that it is possible for the principles of the discourse to be put into practice. This has been noticed by the beneficiaries. One of the beneficiary response (beneficiary 3 - discussed in section 7.7.1) was "… I feel Delta is also walking the talk, I go into their toilets, they've got the right flush toilets…" Gaining credibility with beneficiaries is significant to the diffusion of the innovation (Rogers, 2000).

6.3.2 The influence of the discourse of sustainable development on the planning of activities

The analysis shows that the discourse has influenced the planning of activities for the beneficiaries in different ways. The responses of staff show that sustainable development is considered when planning programmes. Sustainable development is not written as a categorical outcome for the activity, however, the discourse is integrated in the activities.

Staff (2): "Its probably not written down in name, but certainly in principle."
Staff (12): "…It forms a central theme in workshops …"
Staff (12): "Well in an integrated approach but my starting point will always be the curriculum but the thing about the curriculum is that the term (sustainable development) often appears in the learning outcomes, assessment standards, critical outcomes."

Staff (6): "… So its …we don't say this is sustainable development or something like that. Its every programme that we do can be part of it…"

The Decade of Education for Sustainable Development is used as a guiding framework to plan activities especially for beneficiaries within the formal education sector. This is a confirmation of the findings on the analysis of documents in the previous chapter.

Staff (8): "From a program point of view I think its given our work with teachers in particular quite an important framework and structure, that we've used that document and the principles that it contains to help us in putting our teacher's programme together…The UN document, yes. We've used it as an organizing framework, if I put it that way, on the teacher training side."

(QC3.2) Staff (8): DESD framework used as a guide. S.D elements built into programmes.
(QC6) Staff (8): Use DESD principles as a guide for programmes
(QC6) Staff (6): We do not treat SD as a separate aspect of our work. It is incorporated in all we do.

One staff member was of the opinion that the current activities need to be updated or redeveloped as there are programs that are outdated and do not necessarily integrate the discourse.

Staff (1): "Our programme like currently, they are outdated, they are old programmes that have been used like you now in the past, so I don't think that we are addressing them…we are trying to redevelop our programmes which are still in progress. So I think I our programmes are not like, I mean catering for sustainable development. We are still behind…That's why I'm saying at the centre there's not like those strong activities to promote sustainable development."

Although there is evidence that the centre has chosen to use the DESD to frame its activities (see Section 5.4.3), the DESD is not used as an end. The quote by staff (1) above shows that sustainable development can be regarded as a process and not an end. In the context of the Diffusion Theory, Rogers (2000) points out that a new idea is first adopted slowly and as it is perceived as having relative advantage and compatibility with what exists, the idea becomes more favourable. With sustainable development regarded as a process, the point at which the environmental centre is at present can still be regarded as in the stage of *trialability.* Within the Diffusion Theory, this means that the idea of sustainable development is also being experimented with.

6.3.3 Communication of the discourse to the beneficiaries

The environmental centre uses different strategies to communicate the discourse to the beneficiaries. While there have been activities with a categorical sustainable development focus, in most activities there is no deliberate indication to beneficiaries that the emphasis is on sustainable development.

Staff (7): "…so every activity that we do, some part of the meaning comes out…But we don't go into a program with learners or teachers and specifically say, sustainable living, sustainable development. We don't specifically use those words."

The environmental centre supports schools in other environmental related activities such as the Bontle-Ke-Botho competition (refer to section 2.4.2) a sustainable development initiative of the Gauteng Department of Agriculture, Culture and Environment. In supporting the schools the centre integrates the discourse for the schools to understand that the competition is not an end but rather a medium to get into a pattern of sustainable development practice.

Staff (5): "So in most cases that's where the concept of sustainability comes in because then we have to help them understand that whatever they are doing at the moment is not for the sake of them being part of the competition to win a prize."

The discourse is also communicated by way of example in practice. The resources and materials used in activities take into account sustainable development. Waste and recycled material are used as resources and there is a reusing of material as resources in activities. Through use of waste materials as resources the message of recycling and reusing of waste is communicated to the beneficiaries in an indirect way too.

(QC3.3) Staff 5: Making use of waste materials to develop resources for programmes and reusing office paper.

The discourse is communicated to the beneficiaries through a range of activities. Taylor and Janse van Rensburg (2002) are of the belief that rich learning experiences cannot be reduced to a "thing" or technique to facilitate change in others. Examples of the activities listed by staff members (QC9) are presented in Table 6.2. The activities include awareness activities with the use of role plays and discussions, to activities that involve taking action e.g. tree planting. In the previous chapter, using Critical Discourse Analysis, it was found that the Active Learning Framework was used often in the *EnviroTeach* publication. There is also evidence of the Active Learning Framework being applied in practice in the form of investigative activities (Table 6.3).

Table 6.3 Activities to communicate sustainable development

Pen and paper activities	Investigative Activities	Interactive Activities	Physical activities
- Sustainability footprint -Worksheets -Museum activities	-Air control monitoring -electricity audits with a view to developing energy saving audits	-Ice breakers -Role play -Group discussions -Discussions about choice -Games (Cookie mining game, interactive game that encourages them to debate issues relating to the use of land) - Museum activities	-Making of models -Tree planting

Other examples of communicating the discourse to the beneficiaries were the use of electronic media (like videos and DVDs), books and drama.

Staff (10): "..we do edutainment so that they can laugh to their problems, so that they can solve their problems… rather than standing informing like a priest that if you don't go to church you go to hell. We want them to laugh at their problems like we are doing at theatre entertainment and then by so doing they don't forget easily."

Staff (10): "After the drama we go outside we show them different organizations of different companies where they can sell their waste like for instance glass to Consol, papers to Nampak, or Sappi and cans to Collect-A-Can, plastic to Plastic Federation."

There is also a one way transmission of communicating the discourse (as shown in the next quotation). This is dependent on who is facilitating the activity, as it was not a common response, but noteworthy as a comparison for the beneficiary response.

Staff (1): "Yes, we just tell them. But only thing that we do encourage is for them when they come to the garden, because we've got the garden in the centre, that they must not pick up or cut off the flowers and the plants because we are trying to sustain those plants that are here in the centre for some children to come, so that they can be able to see that kind of plants."

Taylor and Janse van Rensburg (2002) point out that it is a poor assumption that educational material or activities is a cause of change, without consideration of the non-rational nature of humans. According to the Diffusion Theory, complexity - an attribute of innovations - is described as the extent to which the innovation or idea is perceived to be difficult. In Section 7.3.1.4 one of the beneficiaries questions whether sustainable development exists in reality. While the centre uses the different activities it does not guarantee any change in the behaviour of the beneficiaries to put the principles of sustainable development into practice. The beneficiary response to the centre programmes is discussed in the next chapter.

6.3.4 Key strategies underpinning communication to influence a change in beneficiaries

It is of concern for the success of the discourse how sustainable development literacy is diffused from those with high literacy to those with low or non-existent literacy of the discourse (Cairns, Jr., 2003). In the context of the DESD, transformative education is needed to bring about the basic changes to meet the challenges of sustainable development (UNESCO, 2004). The main goal of the DESD is to use education as the key agent for change towards sustainable living practices (Chikunda, 2007). In using education as the key agent two main considerations arise. The first is the motivation that underpins the effort to bring about change and the second is the key strategies to

realize the efforts. Table 6.4 shows responses to strategies identified by Bishop (1986) that can be used to get across innovations or ideas to beneficiaries. Most staff members are of the opinion that the rationale underpinning the programmes is to get the beneficiary to understand and practice the principles of sustainable development (refer to Table 6.4).

Table 6.4. (QDC 5.3) Responses to choices based on the rationale underpinning sustainable development programmes

Q 5.3 The motivation for the beneficiary programmes that involve sustainable development is to:	Number of responses n=13
A. To provide rational explanations about sustainable development	3
B. To try to get you to understand and practice principles of sustainable development	12
C. To strongly emphasize laws, policies and obligations about sustainable development	2

The centre has used key strategies underpinning communication to influence a change in beneficiaries. The analysis of the response of staff members shows that the points of departure to get beneficiaries to understand and practice principles of sustainable development are:

- through personal appeal
- through real life scenarios and case stories
- through the use of hypothetical scenarios
- through the use of the formal school curriculum

Each of these listed above is discussed in the sections which follow and substantiated with quotations from staff responses.

6.3.4.1 Personal appeal

One of the strategies to communicate the discourse to beneficiaries is get them to reflect and introspect into their own thinking, decision-making and practice concerning environmental issues. The belief is that getting the beneficiaries personally involved creates a context for understanding their impact on the environment and the need for lifestyle changes.

Staff (11): “Ja but, to me… its not get the concept across that is important it is actually to getting people to think about their decisions and their actions … that to me is the crux. As soon as people start to understand that they are part of something and the decisions that they making has impact… questioning the decisions that they take, questioning the lifestyle choices that they make and to me that’s the only way of trying to mobilize into the

> discourse…becomes very difficult to actually teach people about creating sustainable community if they are making unsustainable lifestyle choices."

One of the (ways of) personal appeal methods was to get beneficiaries to do a sustainability footprint task (listed by Staff 8 as a response to question C9) to calculate their personal impact on the environment. The response of staff (11) highlights the point that the focus of sustainable development is not only about assessing one's footprint on the environment, about taking action or getting information. According to the response of Staff (11), sustainable development is also questioning the decisions to be taken and that have been taken to contribute to sustaining life on earth i.e. through making well informed lifestyle choices. Jickling (2002) is of a similar opinion. Jickling (2002) is of the belief that it is not about educating the beneficiary for sustainability but about providing the context to decide on the merits of different views (and contradictions) to make judgement.

Sterling (2007) is also of the opinion that to achieve a genuine sustainable future the deep habits of thought (in individuals and communities) that work against sustainable societies have to be recognized first. The comment of Sterling (2007) can be interpreted within the Diffusion Theory that it is important to first consider the antecedents that would provide a challenge and address them to make sustainable development a reality.

The response of Staff (11) supports a view that providing definitions on the discourse without getting the beneficiaries personally involved is theoretical and isolates the beneficiary from the reality of environmental issues and threats facing humankind. The response alludes to the attribute of observability of innovations within the Diffusion Theory. Observability refers to the extent to which the idea is observable to others. It is when the beneficiaries are able to become involved that they are more likely to support an innovation. In Section 7.7.3 one of the responses on what to include in future programmes was the need for programmes to be more practical and hands on.

6.3.4.2 Real life scenarios (case studies) and success stories

The environmental centre uses the reality of environmental issues as a point of departure to communicate the discourse to beneficiaries. The reality is brought across to the beneficiaries through the use of case studies of both sustainable and unsustainable practice. The case studies are used to generate discussion amongst beneficiaries. The case studies also involve using the life patterns of plants and animals to bring across the need for humans to revisit their present practice and at the same time to learn from nature (i.e. strategies used by plants and animals to survive). In the context of the strategies identified by Bishop (1986), interacting with case stories can be

classified as a way of participation rather than a power-coercive strategy. In other words the rationale for change is motivated by the need to understand a situation rather than being forced to change. The response of staff (2) is an example of the use of case stories to generate discussion amongst the beneficiaries and the response of staff (7) is an example of using nature to understand patterns of sustainability.

Staff (2) "Yes, that's right, not to be too theoretical, but to look at actual scenarios where people are living, and working and getting them to analyse what's happening there…It would often include interactive discussions to get the principles across. There would obviously be times of exploration, case studies would be used, of both examples of sustainable development and development which is not sustainable. So depending on the level of the group, also in materials development, our case studies are a very good way of doing that."

Staff(7): "And what we do is we look at plants and animals and how they are adapted to their specific environments. And then we compare that to man, and how man has actually changed his environment to suit himself. And then what impact that has on our natural environment. How the animals and that can't suddenly adjust like that to get to now be able to survive in this new world that we are busy producing. Then after we've like looked at those kind of things, then we're saying like, OK, the impala's got this kind of strategy, the aloe's got that kind of strategy, whatever the case is, what are our strategies? What are we doing? What are we looking at? Our current way of things."

Success stories of sustainable development in practice, is another way of communicating the discourse to show beneficiaries that the discourse can be translated into practice.

Staff (8): "Well what we find works the best is to find case stories of good examples that are working and show a change in a way a school functions or the way a community functions and actually promote that story either in say the editorial of an *EnviroTeach* or put the story up on our website or… if we get an award for our sustainability reporting which is on display in the foyer… so you try and make as many people aware of what you're doing as an organisation, or what other people are doing, even if it's a fairly simple project in a school. I think a good example was in the energy *EnviroTeach* the story of in (*school name*) they had money to build a new classroom, and they were influenced through their contact with Delta to build a classroom in a way that it was energy efficient."

The success stories are based on examples from both within the organization i.e. how the environmental centre is achieving the principles of sustainable development, and as well as from outside the organization. The focus of the success stories varies from reporting on sustainable development to physical changes, planning for sustainable development and the use of resources to cascade the discourse to other intended beneficiaries (like school based learners). Success stories is a strategy within the Diffusion Theory that conveys the value of an innovation but it has to be structured in ways that would create the impact needed (Bishop, 1986).

The use of success stories addresses a point of critique raised by Gonzalēz-Gaudiano (2007) that there is a difficulty in communicating the discourse of sustainable development in a simple understandable way. Success stories could be useful to provide a vision for change. Envisioning has the potential to provide direction, meaningful interpretation, provide a meaningful orientation to change and to see change as a series of steps (Tilbury and Cooke, 2005). However, the use of success stories could be perceived as a blueprint with genuine criticisms being ignored, if success stories focus on the outcome only and not on the process.

6.4.3.3 The use of hypothetical scenarios

While the environmental centre does use mainly case studies and success stories (which are believed to work best - refer to previous quote staff 8), hypothetical scenarios are also used to communicate the discourse to beneficiaries. Examples of hypothetical scenarios used are:

(QC9) Staff (8): Role playing based on dilemma cards.

(QC9) Staff (9): “Cookie game” – “mining” chocolate, then rehabilitate ..

While the responses of both staff (8) and (9) may appear brief, the responses are significant. The responses show that even if hypothetical examples are used the beneficiary can be an active participant. Both examples bring out the point that sustainable development involves decision-making (and decisions may not always be straight forward, as in a dilemma) and that action is required (as in the case of rehabilitation, after mining activities).

6.3.3.4 The use of the formal school curriculum

The formal school curriculum is also a key medium of communicating the discourse. A similar finding was evident in Chapter 5 (see Sections 5.3.3.3 and 5.3.3.4). The way in which the discourse is communicated is through locating the discourse within the language of the National Curriculum

Statement policy (e.g. learning outcomes and assessment standards). The implication of the approach is twofold. Firstly, the educator is exposed to the discourse and secondly, within the context of teaching the educator is not given the perception that the discourse means additional work but rather is integral to teaching and learning.

Staff(12): "OK! OK! The way I see it is that you have to you absolutely have to bring the learning outcome the assessment standards and that concepts in line so you have to show teachers how these concepts… how the learning outcome…the assessment standards… the concepts of sustainable development… how it fits together and how environment fits and very importantly how environment fits into the curriculum, other wise they won't see the relevance….Ehh Example well, we did the development of a plan today."

The analysis reveals that the environmental centre places emphasis on using a mixed strategy approach to communicating the discourse to beneficiaries. The mixed strategy approach, within the framework of the Diffusion Theory is a combination of the social interaction, participation and power-coercive strategies (Bishop, 1986). However, in the use of the mixed strategy approach by staff there is less or no emphasis on legislation or constitutional obligations to the discourse. This is different from the findings in the *EnviroTeach* document analysis, where there was frequent reference to legislation (refer to Section 5.3.3.2). One of the reasons for less emphasis on legislation could be that staff prefer that change should be intrinsically motivated rather than extrinsically motivated.

The analysis in Table 6.4 shows that twelve staff members selected option B as the rationale that underpins sustainable development programmes. Option B was: To try to get you to understand and practise principles of sustainable development. Two staff members selected option C which was based on the strong emphasis on laws and policies. According to the literature although boundary organizations connect activities of related systems with the community, there are challenges within their own realm of interests (Agrawala, Broad and Guston, 2001). A greater focus on the use of a power-cohesive strategy i.e. emphasis on laws and policies could project the environmental centre as agent of authority rather than a facilitator of sustainable development.

6.3.5 Focus / foci of the discourse

The perception of environmental problems over time has changed from a focus on natural ecosystems to include social and economic dimensions i.e. the relationship of people with ecosystems (Chikunda, 2007). In South Africa an integrated systems approach of the socio-political system and the economic system embedded in the ecologic system has been adopted for sustainable

development (Department of Environmental Affairs and Tourism, 2007). The literature alludes to the point that the three dimensions viz. environmental, economic and socio-political are related and in reality impact on each other. While the integration is advocated and appears to be ideal, it is what happens in actual practice that is of concern. In the discussion that follows the focus of sustainable development, with respect to the three dimensions and themes in the context of sustainable development, in practice at the environmental centre, is highlighted.

6.3.5.1 Dimensions of the discourse

According to the responses of staff members all dimensions seem to be considered, however it seems that the greater emphasis is more on the biophysical environment and on social issues (refer to Table 6.5) than on economic or political issues.

Table 6.5 (QDC 5.1) Responses to the focus of sustainable development activities

Q5.1 The focus/foci the programmes at the centre is/are:	Number of responses n=13
A. mainly political issues	4
B. mainly biophysical environment/scientific issues	11
C. mainly social issues	10
D. mainly economic issues	8

According to the claims made in the interview responses by staff, the approach taken is of integration of the three dimensions of sustainable development. A holistic perspective is communicated to engage the beneficiary with the discourse (refer to the following quotes):

Staff (2): “We try to give a balanced view as far as possible, so, in the analysis of issues in the analysis of problem situations for example we try to open up thinking and when we look at cause and effects for example just to open it wider, not just to have the stereotype kind of things which often come up, the old causes and effects that people are familiar with, but to look at political causes of environmental degradation. To look at social problems which arise out of environmental degradation, as examples.”

Staff (4): “We try to look at the whole thing where we do have social issues and the environmental issues and all other kind of issues they are also involved.”

Staff (5): “Yes, firstly they’ll have to look at it from the physical point of view and try to understand that if…because solving the environmental issues, you can’t do it like…you can’t solve any environmental problems in isolation. There are a number of things that you need to consider when solving the problem…”

The interview responses of the staff of the environmental centre concur with what is suggested in the literature. Bruwer (2004) is of the view that a key indicator of sustainable development practice is the integrated process. It is suggested in the literature that a holistic and integrated approach be adopted to prevent the perception that sustainable development is only about economic development. de Wit (2004) alludes to the point that failure to adopt an integrated approach, especially in the context of sustainable development may imply that the "profit makers" i.e. economic systems have the liberty to destroy the planet. However, while the responses of staff concur with the literature, the integrated and holistic approach cannot be solely attributed to the influence of the sustainable development discourse. The concept of the environment (refer to Section 5.3.1.4) which emphasized an integrated approach to the environment had been adopted by the centre before the popularization of the discourse of sustainable development in the WSSD in 2002.

6.3.5.2 Topics / themes within the discourse

The United Nations Commission on Sustainable Development has made it a political priority to focus on the themes of the WSSD viz. water, sanitation and human settlements which also link to key goals in areas of biodiversity, health and equity (Brende, 2004). According to the Millennium Ecosystem Assessment report (2005) there is need for governments to focus on the provision of basic human needs that includes water and food, as well as on the planet's natural biodiversity assets. The literature shows that internationally the themes of focus are mainly poverty, water, sanitation, and biodiversity. The themes cover the different dimensions of sustainable development. Delta Environmental Centre also includes some of the main international foci but with greater focus on water, energy and sustainable consumption (related to waste generation and management) and ecology.

Staff (1): "Normally focus on water and plants…I think it's only water and plants and ecology."

Staff (8): "Well I think most of our work we look around water and energy and here in particular we focus a lot on waste."

However, while the themes of water and sustainable consumption are key foci of the centre, the responses of the staff did not categorically allude to poverty. This does not mean that the environmental centre does not focus on poverty. Although this was not investigated, it could mean that the environmental centre does not highlight the issue of poverty but addresses poverty in an integrated manner.

6.3.6 Science and sustainable development

The role of science is acknowledged as important in sustainable development as a way in which people understand their world and their role in the world (UNESCO, 2004). Science is often brought to the attention of the public in times of crises (Gregory and Miller, 1998). Two points are raised by UNESCO (2004) with regard to science and sustainable development. One is that there must be access to science with local input into how science should be used. The second point is that the misapplication of science can erode efforts to protect the environment impacting on the social and economic needs of humans.

Science cannot provide all the answers and skills since science also contributes (and has contributed) to some of the world's environmental problems and there is a gap between scientific knowledge and pro-environmental behavior (Barker, 2007). There has been a trend in some environmental education programmes to erase the focus on science because traditional science-orientated approaches to environmental problems are considered disempowering (Korfiatis, 2005). This disempowerment manifest when the cultural aspects of society is ignored and science is presented in a dominant way, as having the answers to environmental issues. However, the leaving out of science has the downside of creating citizens that may not have a complete understanding of the modern world (Gregory and Miller, 1998), as well the natural world.

There is a dire need to respond to major environmental challenges, therefore there is a need to reconceptualise science (Barker, 2007), from traditional, dominating and isolated approaches to integrated and multidisciplinary approaches. Education for sustainable development is broadly concerned with values and facilitating a change in behaviour and contrary to ignoring science, includes the working out of how science can contribute to a sustainable future (Barker, 2007). There is increased acknowledgement that the knowledge and perspectives of citizens should also be taken seriously when scientific interventions are planned or implemented (Leach, Scoones and Wynne, 2005).

According to the responses of staff members there is a focus on scientific knowledge where there is need for such a focus. The context and way in which the scientific knowledge is brought across to the beneficiaries differ in programmes. Activities involving the use of science are sometimes done outside in the field, at specific sites (like at rivers and dams) and sometimes done indoors as shown in the quotes that follow.

(QC7.1.1) Staff (8): “Outdoor classroom” activities e.g. audit sheets, checklists etc.

(QC7.1.1) Staff (10): We take them to visit purification sites and we use our dam to do water quality and water quantity tests.

(QC7.1.1) Staff (7): We use quiz competitions, play games, sometimes use slide shows, when doing audits, water testing in the laboratory or at the river, making use of the natural history museum, plant investigations and water wise gardening.

Barker (2007) supports fieldwork and outdoor activities in a context where most people seem to be disconnected with environment and nature around them. Outdoor activities have the potential to promote individual growth reinforcing both the affective and cognitive domain (Barker, 2007). Education that connects learners with their place and each other through experience and critical reflection can result progressively in deeper and more practical knowledge about sustainability (Wooltorton, 2007).

In responses staff has claimed that there is an attempt to develop basic scientific skills like investigation, observation, data collection, interpretation and analysis.

(QC7.1.1) Staff (5): Give them activities that engage them in critical thinking, seeking information from different sources in different ways. Solving problems from holistic point of view.

(Q7.2.2) Staff (7): We do this in water quality and quantity audits mostly.

(Q7.2.1) Staff (8): Investigation; discovery, observation, data collection, analyses, interpretation, evaluation.

(Q7.2.2)Staff (12): The scientific method of investigation

(Q7.2.2)Staff (14): Investigation and report writing

Traditionally, science focused on only getting the learner to understand scientific knowledge and concepts but now there is a need for the learner to be involved in a problem solving context where they have an interest e.g. eco-crises (Hassard, 2005). The responses of the staff indicate that scientific skills are developed in beneficiaries as part of activities. The approach of developing skills as part of activities seems to be by practically providing the beneficiaries access to scientific skills and knowledge in a relevant and integrated way. A shift from an absolutist science to a more

relativist perspective is in keeping with and seeking to address principles of education for sustainable development (Barker, 2007) like reorienting education with a holistic approach.

Staff (6): "Very much through their activities. So the scientific knowledge part goes together with the skills. You can't really separate them."

An active/ interactive learning approach is advocated for sustainable development rather than a one-way transfer of knowledge (UNESCO, 2004). The active learning approach which frequently appeared in the *EnviroTeach* resource (refer to Section 5.3.1.5 for a scheme on the Active Learning Approach) is claimed by staff of the environmental centre as the popular framework used in activities to develop scientific knowledge and skills.

Staff (6): "As in a science kind of way. There is knowledge that people gain. We never tell people this is what you are…this is it. Basically it's through…we use that concept of active learning....you know, it's giving them the resources and the tools to be able to do that. And then they have to investigate that a little bit more, to find out more about it, and then they basically have to come up with action."

Staff (8): "Well at the centre we use a lot of very creative ways. And mainly through our association with Rand Water, we've developed puppet shows and a song and dance routine and all kinds of games and activities that really promote active learning. So I think we steer away from the lecture type and sort of giving the learners written information or the sort of more old fashioned show and tell approach. So there's a much more interactive way of dealing with the learners."

(QC7.1.1) Staff (3): Active learning approach

The response of staff (the use of the Active Learning Approach) concurs with the literature on the points of relevance and the focus on real issues. Getting learners (beneficiaries) to explore real issues not only provides a context for science learning but increases participation and the chances for taking action in relevant issues (Hassard, 2005). Relevance is considered as a useful way to understand the problems of society in contrast to the content specific traditional approach of science (Hassard, 2005). Within a context of science, critical thinking is also fostered through active learning (Hassard, 2005). The quotation of staff (6) is an example of how the active learning approach is used in the theme of energy consumption to develop scientific knowledge and skills (like auditing and data collection) in a way that is relevant to the beneficiary. The quotation has been divided into parts to show the steps in the active learning framework.

Step 1: Find information

Staff (6): "Give you one example, is let's take energy for an example, there are many scientific knowledge and concepts and things that would come up. One of the things that the children would do is for example, first they'll find out about the particular issue. So they'll gather information, so they may read newspapers. So we'll have for example, a number of different articles for the children to read and look at what are the issues, etc. around energy..."

Step 2: Explore and question

Staff (6): "And then from that they may go and conduct an audit to look at how energy is being consumed. If for example the issue is around consumption of energy. So then the children will conduct an audit to look at which are the hungry appliances, for example, and work out mathematically what the wattage is and all of that. They'll have to do all that and then after they've done that they convert it and then they look at…I don't know if you're familiar with the energy audit?"

Step 3: Act and report

Staff (6): "So they'll do that and then from that they'll come back and then they have to look at what can they do now to decrease, which appliances are they using, how can they decrease that, how can they substitute. Then they have to find ways to actually do that. So they have to propose solutions and then they have to actually design it. So for example, I think the one school we worked with the kids, and identified the urn as a big consumer of energy in their school, and what they did is they designed an insulation for the urn. The kids designed it in a technology lesson and they came with what they actually, you know. They had various designs and they check…"

The response of staff (5) shows that a critical thinking and a holistic problem solving approach is considered in programmes of sustainable development. Critical thinking is essential when issues about sustainability and the physical environment are addressed (Balcaen, 2007).

(QC7.1.1) Staff (5): Give them activities that engage them in critical thinking, seeking information from different sources in different ways..like solving problems from a holistic point of view.

Critical thinking is about the quality of the thinking and responses and not about the learner providing a correct response/answer (Balcaen, 2007). Critical thinking involves the use of a

multidisciplinary approach (Balcaen, 2007) i.e. using both scientific knowledge and knowledge from other subjects, engaging learners in complex situations of which global problems (e.g. waste management, diminishing biodiversity and climate changes) that relate to sustainability are included. According to the Active Learning Framework, the beneficiaries are exposed to real situations which are not straightforward but require investigation before possible and relevant solutions can be proposed.

The interdisciplinary approach gets the intended beneficiary to see the relevance of science to everyday life (Hassard, 2005). The implication of the integrated and interdisciplinary approach (not a complete focus on science) and the active learning approach taken by the environmental centre to develop scientific knowledge and skills is that the science in sustainable development practice is demystified and made accessible in a relevant, integrated and practical way.

6.3.7 Follow up and feedback on practice

Monitoring and evaluation are advocated in the Decade of Education for Sustainable Development to know and understand the impact of the Decade (UNSECO, 2005). The data gathered from monitoring and evaluation should be used to assess and reorient programmes should there be a need (UNESCO, 2004). However, measuring environmental action or a change to a more environmental responsible behaviour is difficult (Johnson, 2007).

The response of staff shows that there is system in place of getting feedback on activities. The system of getting feedback, however, is not specifically designed for sustainable development but is used for all programmes. The key approach seems to be the use of evaluation forms immediately after programmes. There is a limitation of relying too much on self-response evaluation forms. The participants may respond to please the program facilitator to the extent of exaggerating their responses (Johnson, 2007).

Staff (6): “We have evaluation forms... feedback comes from different levels. …sometimes the kids have filled in a form or commented or written up what they felt or what they thought. And then we have a form that the teachers fill in. .. So the facilitators have a form that they fill in and they comment on the programs and they talk about…though I can’t say that has been very successful as yet, because I think they’re still getting into it. Then we have a self evaluation that the staff do on themselves and how they facilitate and the activities… then we have like a formal evaluation where they…like you get some people that go around and look at how the programs are being facilitated and that type of thing.”

Staff (8): "For every group that comes there's an evaluation questionnaire that has to be completed. It's in two parts. The one part is about the facilitation…it's an assessment of the facilitator's skills. And then the other half is about the actual program itself…"

(QC10) Staff (9): The teachers complete an evaluation form and also add comments.

According to the responses of staff, feedback is on the focus of the programmes, activities within programme, resources and on how the programme was conducted. The limitation is that there is no in-depth feedback to follow-up on lifestyle changes or in the practice after beneficiaries leave the centre. There is no evidence of in-depth feedback on the actual long- term impact of the programmes on addressing environmental concerns. There is a strategy in specific programmes to determine impact before supporting the beneficiaries (within institutions) and after support has been given (see quote QC10 – staff 15). The latter strategy is the one that is more likely to indicate changes that have been made in practice.

(QC10) Staff (15): Some of the schools are visited before programmes and visited after the school has been programmes and then an evaluation is done.

While the evaluation forms, and the before and after strategies, are the more structured means of getting some feedback, the environmental centre also relies on informal ways of determining whether an impact has been made. The success of beneficiaries (that were supported by the centre) in participating in competitions and the level of achievement in the competitions are examples of informal ways of getting feedback. An example of a competition (the Bontle-ke-Botho competition) as a South African response to sustainable development was discussed in Section 2.4.2.

(QC10) Staff (8):.. Schools experience success in competitions…awards that focus on sustainable development.

The responses show that staff, in general, do not have an idea of the impact of the environmental centre on the beneficiaries within the context of sustainable development.

(QC10) Staff (7): In terms of developing people who will put into action sustainable development we have no idea!

(QC10) Staff (3): Ideally more opportunities for follow up work would help.

The Millennium Ecosystem Assessment Report (2005) has shown that human activity has placed strain on the planet's ecosystem impacting on issues of poverty and on the natural infrastructure needed to support human lifestyles. With sustainable development being supported by Delta

Environmental Centre there is need for in-depth feedback to see whether sustainable development programmes are really making a difference in society.

6.4 Other initiatives of the environmental centre to engage with the discourse

The environmental centre has engaged with discourse in other ways than through activities and programmes at the centre. The initiatives include active participation through representatives of the centre being part of an advisory board to develop a national strategy for the Decade of Education for Sustainable Development in South Africa, and the introduction of the Decade of Education for Sustainable Development to other organisations through presentations and discussion.

Staff (6): "We are engaging with the documents on the Decade for Sustainable Development. We are engaging in processes…in national processes with the national department of education …to put together a framework for the decade…We introduced the decade to our staff. We've introduced the decade to other NGOs."

The centre has also made a proposal and has received provisional accreditation to offer environment and related courses. One of the strategies is that the discourse of sustainable development will permeate the accredited course but will not be offered as an independent course or module. It appears that while the centre has shown evidence of support for the discourse of sustainable development the preference is still environmental education.

Staff (8): "It won't be a whole course…So the thread of sustainable development and sustainability and sustainable use is going to come through in all the unit standards and also in the activities or the case stories that we include in the manual."

The discourse is also used as an underpinning rationale for the conceptualization of some projects. The environmental centre has engaged and engages with major projects using the discourse as a key focus or point of departure.

Staff (11): "…I think that the ideology of building more sustainable communities is certainly foundational to the conceptualization of the project."

Examples of two of these projects are the *EnviroTeach*: *Financial Literacy and Sustainable Living project* and the *Urban Environmental Management Project*. It is evident in the analysis that Delta Environmental Centre uses different initiatives to engage with the discourse of sustainable development.

6.5 Challenges to sustainable development

In the discussion on the theoretical framework in Section 3.2.4, it was pointed out that there are antecedents (norms that exist prior to an innovation) that may present barriers to innovations. The staff have articulated some issues that they perceive as challenges to sustainable development.

6.5.1 Background knowledge of the beneficiaries

Not all beneficiaries have the background to sustainable development and therefore programmes have to be adapted. The discourse seems to have different meanings and interpretations for different sectors of people and therefore negotiating the meaning of the discourse is identified as a barrieror challenge.

(QE1) Staff (8): Some groups have a lack of background knowledge of sustainable development and the programme has to be modified to bring participants up to speed.

Staff (2): “And obviously the beginning with new groups of people one has to go through different cycles and stages of development within that program. So, yes… so different people are at different stages, and even staff members are at different stages, different levels of understanding of sustainable practice and development.”

Staff (11): “I think one of the biggest challenges that you have with the term especially the idea of sustainable development is that it means so many different things to so many different people …One of the biggest challenges is to try to build understanding and then come to negotiate meaning the of the term. So we have really struggled around working with the ideas of sustainability in creating a sustainable society and not engaging in the debate around the terminology itself because there is too much of debate around it anyway and that’s a huge challenge.”

The last sentence of the quotation of Staff (11) shows that understanding concepts and related concepts within the discourse is a challenge. According to the quotation, it appears that there is insufficient debate (if none at all) in a structured way taking place amongst staff at the centre.

6.5.2 Varying levels of commitment

The level of commitment from other stakeholders outside the centre is not always the same as the environmental centre. The point has been raised that in some organizations (names or types have

not been mentioned for ethical reasons) environmental concerns are not given the priority they deserve. The low level of commitment to environmental issues in organizations presents a barrier to communicating the discourse.

(QE1) Staff (12): Low level of commitment and no knowledge and appreciation and work ethic for environmental issues from *(other organizations - names deleted)*

The extent of commitment of organizations to environmental issues has not been investigated in this study, however it can be noted as one of the challenges to sustainable development.

6.5.3 Greater influence of material needs

The responses indicate a belief that many people are caught up in a materialistic world that is encouraged through vigorous and influential marketing strategies. Influential marketing of material products seems to be more appealing and poses a possible barrier to get beneficiaries to see the importance of sustainable development and to make life style changes.

Staff (2): "Well I think one of the chief hindrances that comes across again and again is materialism. That's one of the greatest influences that I can see from…on a personal level. So people would want…would understand the concepts of sustainable development …however each one still wants for themselves what they see around them… and so the kind of a marketing that goes around us is saying one thing.. we're saying another message and quite frankly the message of the marketers is far more appealing."

Staff (11): "I think the other big challenge in SA at the moment is of course in the idea of a developing society there is so many discourses and there is strong economic discourse in some parts of our society and actually mediating the idea of want with idea of what I need is very difficult in a society that is aspiring to develop…OK! When people and everything they concentrate is on doing better in life."

The quotations show that there is need to clarify the connotation of "development" in the discourse of sustainable development. The possibility of an interpretation of material and economic growth seems more likely than an interpretation of environmental balance. The responses confirm the criticisms of Rosenberg (2004) and de Wit (2004) that sustainable development has the potential of being misinterpreted as economic growth.

6.5.4 Making lifestyle changes

It was indicated in the responses that not everybody within the centre itself has completely bought into the practices of sustainable development. Not everyone within the centre challenges his or her personal practices and lifestyles, especially at the centre.

Staff (2): "Some of the internal challenges of course is to create an organisation which is sustainable in itself, so challenging our own practices and we have started to do that. So putting policies into place, really getting everyone to buy into those kind of policies, getting everyone to function, getting people to see more sustainable ways of doing things, I think are some of the challenges."

Staff (8): " But, that will always be quite difficult to get everyone to see the things in the same sort of way. And to also treat the organization as if it were their own, because some people see their work place as being something else and not really…they don't see the need to conserve or to treasure it to the same extent as they would maybe their own home. I don't say that happens a lot but you do get examples of that."

Staff (13): "One of the biggest challenges is understanding the concept…and for everybody people at the centre to come to grips with concept because it is a very different way of thinking…if you have your more older people more just into wild life, its a difficult thing for them to understand… even for me being a younger person when the concept first came…the concept made sense but it is quite a different way of thinking…"

One of the objectives of the DESD is for collective ownership of the discourse (UNESCO, 2005). The previous three quotations show that getting people to take genuine interest in the discourse, not only as part of their job is a key barrier to sustainable development.

6.5.5 Limitations of financial resources

Delta Environmental Centre is a non-profit making organization. Financial resources are limited. The belief is that to make some initial changes to become an example *par excellence* implementing principles of sustainable development requires financial resources which the centre does not have. Seeking funding from the corporate sector is just as challenging because corporate organizations are also grappling with principles of sustainable development. Tilbury and Cooke (2005) allude to the point that both large and small business enterprises are struggling with the agenda for sustainable development.

Staff (8): "I think there's always a tension in a non profit organization between the financial resources that you have and what you are able to do with those, and what you would really like to do. Because obviously to make this centre…or to develop it in a sustainable way…and everything that we did was absolutely perfect example of sustainable organization …would really require quite a bit of money. We know what we want to do and we know how we can do it, but it's to have the means to do that… it's also quite difficult to go out to the corporate sector and persuade them to support you to do that, because they're grappling with their own sustainability …"

6.5.6 Inadequate feedback on the success of programme

Another challenge that has been identified as previously pointed in the Subsection 6.3.6 (follow up and feedback on practice) is not being able get a sense of the impact of the programmes i.e. whether what is intended is being achieved.

Staff (4): "challenge number one will be to make sure that whether…are we trying to bring this message or this concept of sustainable development to link or to be the driving seat towards our programs, each and every programmes that we run? And also to make sure that…to look at whether did we achieve that whatever that we are trying to achieve?"

(QE1) Staff (16): Assessing it (sustainable development) amongst clients whether there is behaviour change or not.

6.5.7 Language as a barrier

Language is perceived as a barrier to communicating the discourse. In the South African Constitution eleven official languages are recognized. This is because of the diversity of communities that use the vernacular as the medium of communication. Communicating sustainable development in English is a challenge on its own. The vernacular seems to make the communication of the much challenged discourse more complex.

Staff (8): "I am not aware of a translation that will capture their essence as it's understood in English or I don't even know if it's always understood in English but I don't even know if it would make sense if in some vernacular if you just took the word sustainable and you just took the word development and put them together, it might be more of an oxymoron than it is in English even."

According to the researcher's knowledge, the environmental centre has not to date translated any of the editions of its key publication the *EnviroTeach* resource into another language.

6.5.8 Threats to the sustainability of the centre

Ironically the environmental centre which has engaged with discourse on sustainable development faces the challenge of its own sustainability.

> Staff (8): "And then of course as far as the centre is concerned, the building is leased from the council and that 30 year lease has now expired. So we are in limbo right now. So, you could almost say we're actually carrying out something of a mockery talking about sustainable development because we could actually get a letter tomorrow saying that the lease has been cancelled."

The lease for the premises on which the environmental centre is based has expired. For some time now there has been no response from the leaser about the terms for any future lease. This is an example of how an organizational issue could become a barrier to sustainable development.

6.6. Concluding remarks

The responses of the staff members show that the centre engages with the discourse on sustainable development in different ways (e.g. through programmes and activities at the centre, through the careful use of resources, through engaging with initiatives like projects and competitions). There was no categorical meeting to take a specific decision to integrate sustainable development into the environmental centre's activities even in the context of the Decade of Education for Sustainable Development. It appears that the integration of the sustainable development discourse and the use of the principles of the Decade of Education for Sustainable development to frame activities of the environmental centre became an unchallenged norm. The latter is not surprising in that most staff members have responded that they see little difference but more links between environmental education (which is the core business of the environmental centre) and the sustainable development discourse. All the staff participants have responded that they believe that sustainable development has worth as a strategy to address environmental issues, although some have raised concerns about the interpretation of the discourse.

The discourse of sustainable development in recent years has had an impact on the environmental centre. It seems that there is greater awareness and some action has been taken to change practice at the centre. It has been mentioned by one staff member that the priorities of the World Summit on

Sustainable Development have also become the priorities of centre. The centre has revisited existing policies and has developed new policies within the context of sustainable development. Physical changes contributing to sustainable development included the changing of the traditional electrical bulbs to energy saving ones, the upgrading of the toilets to align to water-wise practice and the establishment of a recycling centre.

Sustainable development is not a categorical outcome planned for in activities. However, the principles of the Decade of Education for Sustainable Development are used as an underpinning framework to plan activities. Themes of the programmes of the centre (like water and energy) overlap with the themes of the decade. One staff member raised the concern that some of the programmes or activities are outdated and need to be updated with a greater focus on sustainable development.

The responses have shown that there are multiple ways to communicate the discourse to the beneficiaries. Communication of the discourse can be through specifically designed activities like games, through support given to beneficiaries during programmes, and by being an example of an organisation that shows the principles of the discourse in practice. A great emphasis is placed on the use of real examples of sustainable practice (including success stories) and unsustainable practice than on the use of hypothetical examples.

An integrated approach is taken in the development of scientific knowledge and skills in beneficiaries. The active learning framework is quoted as the key framework to develop scientific knowledge and skills in beneficiaries. The involvement of beneficiaries in activities is preferred and used rather than a traditional lecture-method. The active learning framework is a way of providing access for the beneficiaries to basic science to understand environmental issues in a relevant and hands-on way.

It is evident that the intention of the environmental centre is not just to promote the discourse or raise awareness in beneficiaries but rather to hope to bring about a change in thinking and in life style choices. However, the success of this intention needs to be determined. Although the centre has strategies in place to get feedback from the beneficiaries, there is no comprehensive way to follow up or get feedback in terms of actual change in lifestyle or practice within the context of the discourse. This also seems to present a barrier to knowing the actual impact on the beneficiaries to be able to reassess programmes to facilitate change.

The adoption of the discourse by the environmental centre (although not through a categorical decision at a staff meeting) has met with challenges. Antecedents that have presented a barrier to

communicating the discourse include the greater appeal of economic wants of the beneficiaries which “clouds” the environmental concerns, the diversity of languages, the difficulty of translating the discourse without creating misconceptions, and limited financial resources to support plans to implement principles of sustainable development. The diversity of views (discussed in the literature in Chapter 2) presents a challenge to the communication of the sustainable development as beneficiaries come from diverse backgrounds and may also come with prior conceptions or ideas of the discourse. One of the difficulties internal to the centre is that although staff have indicated support for the discourse, in reality, the effort and willingness to change practice does not seem to be at the same level of commitment.

In the next chapter (Chapter 7) the views of the beneficiaries of the centre who attend or have attended the activities and the programmes related to the discourse are discussed. The views of the beneficiaries provide a response to also see whether the beneficiaries feel the same way as what the staff believes they are doing to communicate the discourse. The views of the beneficiaries are also important to identify other challenges in the engagement with the discourse that may have not been evident in the responses of staff.

Chapter Seven

Sustainable Development: Beneficiary response

"…many unsustainable practices are increasing exponentially while social adjustments lag far behind. Possibly it will require a major collapse of one of the planet's life support systems to change the mood from complacency to serious concern."

Cairns, Jr. (2003, p6)

7.1 Introduction

In Chapter 7 the responses of beneficiaries to a questionnaire and to individual interviews are analysed and discussed. Beneficiaries in the context of the study are those people who have attended workshops/programmes of Delta Environmental Centre or who have engaged with the centre at some point. The identification of beneficiaries as participants in the research has been discussed in Section 4.2. Chapter 7 provides a response to the research sub-questions, with focus on the beneficiaries of Delta Environmental Centre:

- *What are the views and understanding of staff and beneficiaries of the environmental centre of the sustainable development discourse as a way to address environmental concerns?*

- *How do the sustainable development activities and programmes of the environmental centre as way of addressing environmental concerns impact on the beneficiaries of the centre?*

An overview of Chapter 7 is provided in Figure 7.1. In the rest of the chapter the key themes similar to those used in the analysis of the staff responses are discussed. In using similar themes the researcher has cross referenced the responses of staff and beneficiaries for similarities and differences. The cross referencing contributes to the trustworthiness of the study. In the following paragraphs the key themes for analysis are briefly discussed.

The beneficiary's first encounter with the discourse of sustainable development is a focus in this research to get an idea of the background of the beneficiary in the context of the discourse. The background of the beneficiary is useful to understand the role that the centre plays in the diffusion of the discourse. The beneficiary understanding and views of sustainable development is one of the foci of discussion. Janse van Rensburg and du Toit (2000) found that concepts related to sustainable development such as 'sustainability' are also not easy to define and are linked to socio-economic and local contexts. It has been evident in the previous chapter there are a different views on the on the discourse. Another focus in the discussion on the analysis of the beneficiary response is the kind

of influence of the discourse on the beneficiaries e.g. the raising of awareness, lifestyle changes or resistance.

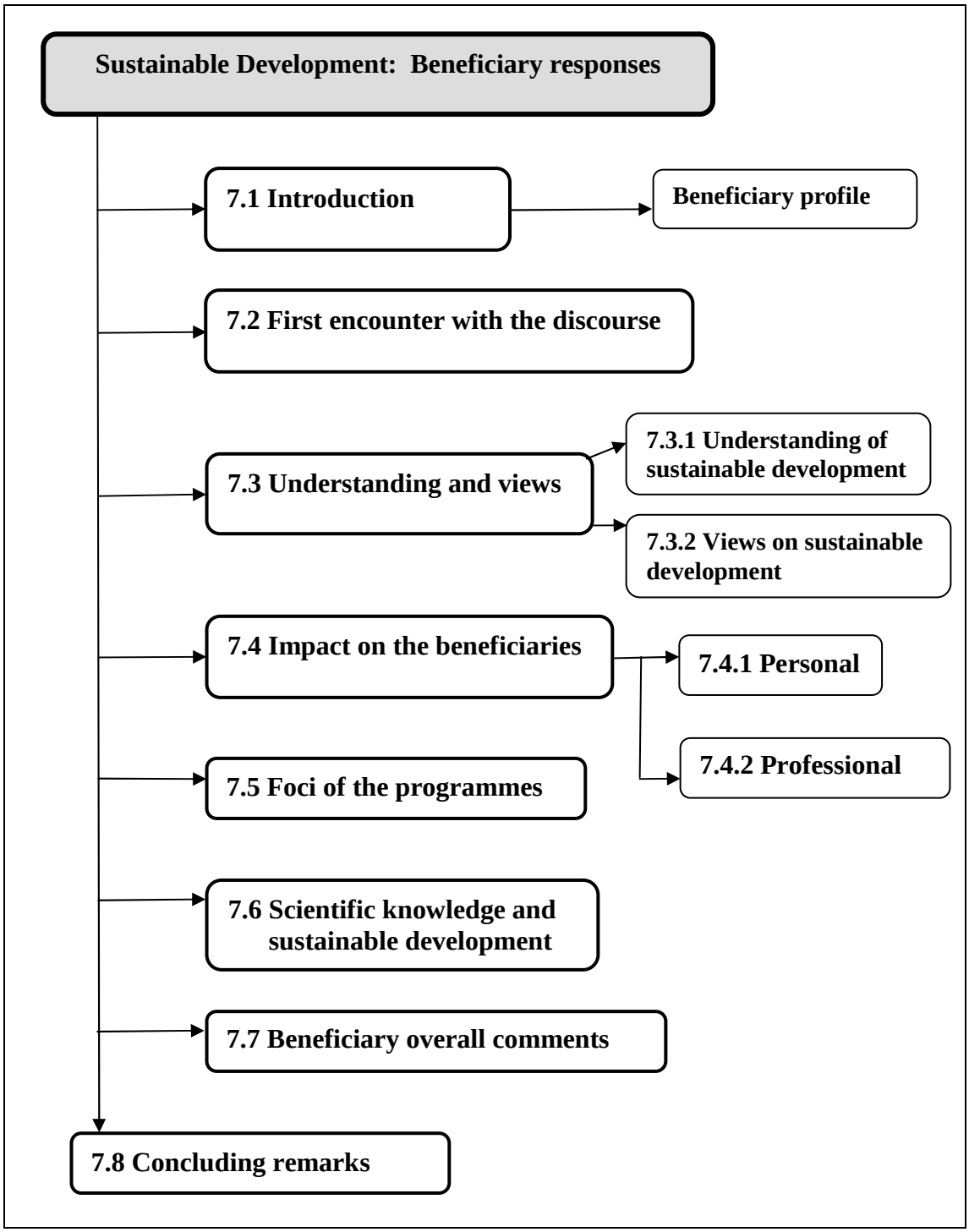


Figure 7.1 An overview of Chapter 7

The actual focus of the programmes is a theme that was also used in the analysis of the staff responses. The focus of programmes is important as the National Strategy for South Africa and the International Implementation Scheme (UNESCO, 2005) advocate an integrated approach.

Beneficiary responses also provide cross reference to see whether responses of the beneficiary concur with what the staff believed is the focus of programmes.

'Scientific knowledge and skills' is a theme for analysis for beneficiary response as scientific knowledge is acknowledged as having a role in sustainable development (refer to Section 6.3.5). The last theme for analysis – the overall comments - was to get a general idea on what beneficiaries thought of the engagement of the centre with the discourse of sustainable development and to provide the beneficiary with the space to raise any other concerns in the context of the discourse.

A composite profile was developed for the beneficiaries from the details they provided (Table 7.1).

Table 7.1 Profile of the beneficiary participants

Beneficiary	Qualification	Background	Professional / Work Context	Role
1	Honours	Education / Arts and Culture	Department of Education	Policy implementation
2	Not provided	Youth and Culture	Environmental Centre	Environmental educator
3	Not provided	Biology	Parastatal Organization	Manager
4	Honours Degree	Education	Department of Education	Policy implementation
5	Honours Degree	Geography	Non- Governmental Organization	Environmental Educator
6	Honours Degree	Science	Local Government	Environmental Educator
7	Diploma	Nature Conservation	Local Government	Manager
8	Masters Degree	Education and Commerce	Department of Education	Policy implementation
9	Masters Degree	Environmental Education	Local Government	Environmental Educator
10	Certificate	Commerce and Environment	Independent	Co-ordinator and facilitator
11	Certificate/Diploma	Game Ranger	Non- Governmental Organization	Environmental Educator
12	Honours	Education	Department of Education	Policy implementation
13	Masters Degree	Geography	Department of Environment	Management
Based on the responses in the questionnaire, from 2004 cumulatively the beneficiaries have attended twenty five (25) workshops/programmes conducted by the centre that involved the discourse on sustainable development.				

The information to compile the composite profile was extracted from the first part of the beneficiary questionnaire that asked for biographical details. The composite profile shows a diversity of beneficiary participants in respect of background, qualification, type of organization and the focus in their field of work. Six of the participants do not have a professional background related to the field of environment. It was a deliberate decision to include participants with unrelated

environmental backgrounds as sustainable development is not confined to any field, which is supported by the integrated approach advocated nationally and internationally.

In the discussions that follow the researcher has, where possible, provided the reader with many quotations to give him or her opportunity to make his/ her own deductions. Quotations of the responses of the beneficiaries from the questionnaire will be preceded by a Q - followed by the number of the question e.g. (QA1) while the quotations from the interviews will have no precedent.

7.2 First encounter with the discourse on sustainable development

In the interview and in the questionnaire one of the questions was directed at finding out how the beneficiary first came to hear about sustainable development. The responses to when the beneficiaries first encountered sustainable development varied. The varied responses could be attributed to the background and experiences of the beneficiaries. The profile in Table 7.1 shows that seven of the beneficiaries are directly or in a related way involved in the field of environment and/or environmental education.

The ways in which the beneficiaries indicated that they first came across sustainable development were:

- through the awareness campaigns around the World Summit on Sustainable Development which took place in 2002
- through academic studies
- through informal means
- through the media
- through the work environment
- through engagement with environmental organizations.

The following quotation indicates that the World Summit on Sustainable Development in 2002 was cited as one of the initial points of encounter with the discourse.

Beneficiary 1: “Yes, I would think so. More…when was it?... When we had the sustainable development thing in Johannesburg.”

Academic study was also a point of introduction to the discourse. The response to the first encounter with the discourse through the academic field related to different contexts. Three of the beneficiaries indicated first encounter with the discourse through pure academic courses. The years in which they encountered the discourse differed.

Beneficiary 6: “I’ve learned about it in my environmental education course at (deleted) University. 2004.”

(QB1) Beneficiary 6: Sustainable development was a topic that I studied in my environmental education course at (university name).

Beneficiary 7: “The first time I heard about the word I was doing my national diploma in nature conservation. I think within conservation development one. That was about in 1995, 1994.”

One of the beneficiaries indicated that the first encounter with the discourse was a combination of both academic study and the awareness around the World Summit on Sustainable Development.

Beneficiary 9: “Yes, I was a student at the university of (deleted) doing my masters and there was…people did presentations. I can’t remember it clearly. But that’s when I first realised the World Summit and the concept sustainable development...and of course also during my studies because I was involved in environmental education…did a bit of work on sustainable development.”

(QB1) Beneficiary 9: When enrolling for my masters degree and during the World Summit on Sustainable Development

One of the beneficiaries said that the discourse of sustainable development was first heard through a friend (through informal means) and another said that the media played a role in introducing the discourse.

Beneficiary 4: “Yes, when the conference took place and it was something totally new to me, he was the one that was very hyped up about it and told us about it and that’s the first time I heard about it and also at the forum meetings that we attended with him. It was the buzz word at the time because of the things taking place?”

Beneficiary 11: “On the media..eh..tv and the newspaper of course.”

The work environment of the beneficiaries also provided a point of initial encounter with the discourse of sustainable development as evident in the next quotation.

Beneficiary 2: "I think it was quite a long time ago. I think it was after that 1992, that people started to talk about sustainable development, and I used to be part of an organization called (deleted) …something that time, it actually became…the word became known. I can't remember exactly how but it became known in the circles that I was moving around."

Delta Environmental Centre has played a role in introducing the beneficiaries to the discourse of sustainable development. This role can be interpreted as a function of a boundary organization to mediate between two systems i.e. between an innovation (sustainable development) and the community (beneficiaries).

Beneficiary 8: "Through my involvement with different entities in the environment sector. Through Delta , ...through media and through attending the conference which was held about two or three years ago..."

It is reasonable to assume from the comment of beneficiary 5 that people have engaged with the discourse of sustainable development at various depths and with different sources of influence. The response also shows that some people believe that they understand the discourse, not from the notions presented in the new millennium but long before. However, one of the difficulties that arises is determining what paradigm underpins the understanding of the discourse. Lotz-Sisitka (2006) and Rosenberg (2004), for example, have raised concern about the notion of development as economic growth as such a construction would further decrease the limits and equitable sharing of earth's resources.

Beneficiary 5: "…I actually…understood sustainable development before the word arose. It made common sense. And that was because of my academic background. Again had the privilege of being at the University (name deleted) in the geography department, had a major in geography with some of the two in particular of the most foremost geographers that this country has had."

The responses of the beneficiaries show that most of the beneficiaries involved in the study encountered the discourse before attending workshops related to the discourse at the environmental centre. While one beneficiary from the sample responded that the centre has played a role in contributing to the initial encounter, it does not mean that the centre does not have a key role to introduce the discourse to beneficiaries. There could have been other beneficiaries who were not included in the study but who were first introduced to sustainable development at the centre.

The analysis shows that the discourse of sustainable development had gained momentum especially around the WSSD in a variety of contexts. A key point is that beneficiaries come to the

environmental centre's programmes with some ideas and perceptions of sustainable development (either their own or in tandem with other reference points like the WSSD). The prior ideas of the beneficiaries of the discourse of sustainable development confirm one of the challenges expressed by staff (refer to Section 6.5) that people have different ideas of the discourse. Staff of the centre felt it was a huge challenge to negotiate meaning of sustainable development especially with beneficiaries having their own ideas and perceptions about the discourse. The prior ideas of beneficiaries can be identified as an antecedent within the framework of the Diffusion Theory that poses a challenge to sustainable development in programmes of the centre. The differing prior ideas of the beneficiaries also show the *complexity* (Diffusion Theory) of the discourse of sustainable development. Complexity refers to the extent to which the innovation is difficult to understand or may have "grey areas".

7.3 Beneficiary understanding and views of sustainable development

To get a sense of how Delta Environmental Centre contributed to the beneficiary understanding of the discourse two lead-in questions were first posed in the interview. The questions were*: What is your understanding of sustainable development?* (repeated in the questionnaire) and *What is your opinion about sustainable development as a way to approach environmental issues in our country?* The response of the beneficiaries to the questions is discussed in the sections that follow.

7.3.1 Understanding of sustainable development

The response of beneficiaries in the analysis as to what they understood by sustainable development was separated into five categories: social and material progress inclusive of nature conservation; use of resources; meeting the needs of generations; uncertainty of the meaning; and a focus on economy. The categories that emerged during the analysis concur with the literature about the variety of ideas about the meaning of sustainable development. Even after 20 years since the *Brundtland Report* of 1987, both in theory and in practice, there is no one perception of what sustainable development actually means (Wals, 2007).

7.3.1.1 Category: Social and material progress

Beneficiaries articulated that sustainable development needs to be interpreted holistically i.e. taking both people and the environment into account. Social and material progress (development) is just as important and should be considered with nature conservation and environmental protection in mind.

Beneficiary 2: “Ok, the thing was…if I can take it back to that time, it was umm, you know that people were always caring about nature and then they realised it can’t only be about nature. It can’t only be nature conservation. It has to be…it has to also take people and development into consideration, and can the two exist side by side, and…so that people can develop and we can also conserve the environment.”

The literature shows that sustainable development is about considering all three dimensions of sustainable development. With a move towards sustainable development there is a shift in emphasis from ecology to an emphasis on economic, social and civil systems (Barker, 2007).

7.3.1.2 Category: The use of resources

Beneficiaries indicated that sustainable development is about the use of resources. The focus was more on the biophysical environment than on the socio-political or economic dimensions.

Beneficiary 5: “Very simply, there are so many resources on earth. They need to be extracted, we’ve got to use the natural resources for humans to live, for human development, for human growth, for human existence, and that only so much needs to be extracted from the environment to live a basic life.”

Beneficiary 7: “I think maybe this is a definition that I’ve been carrying with me when the term was introduced to me, that you use the resources in a sustainable manner …the resources are not exploited so that they can meet the generations to come. They can be able to use the same resources.”

Beneficiary 9: “Understanding of sustainable development, I can say it includes the whole concept of conservation because you conserve the natural resources not only for now but for future generations. So that’s sustainable development, you’re sustaining the environment for the present and the future generation.”

While the focus is on resources, the responses of both beneficiary 7 and 9 show that the concern of the way resources are used is linked to a generational issue (present and future generations).

7.3.1.3 Category: Meeting the needs of generations

The beneficiary responses show that there is a belief that sustainable development is about meeting the needs of present and future generations. The emphasis on needs of both the present and the

future generations were articulated in the definition of sustainable development given in the *Brundtland Report* of 1987 (see section 2.2.1).

Beneficiary 6: "My understanding is that sustainable development is development that takes into consideration the needs of future generations without compromising the environmental needs of present generation."

Beneficiary 8: "Preservation of the environment to ensure that future generations can benefit from it, and be part of it, and that the environment is not destroyed for future generations."

(QB2) Beneficiary 7: Development that meets the needs of the present generation without compromising the ability of the future generations to meet their needs

While the focus in this category is on the generational issue linked to needs, the beneficiaries tended to focus on environmental needs. In the context of environmental needs the emphasis was more on the biophysical environment rather than on a holistic view that is inclusive of the three dimensions of environment, economic and social. In the previous section (7.3.1.3) it was pointed out that there is need for a shift from a focus on just the environmental dimension to all dimensions of sustainable development.

7. 3.1.4 Category: Uncertainty of the meaning

In the previous chapters concerns about sustainable development have been highlighted. One of the concerns about sustainable development is whether it is achievable in reality.

Beneficiary 10: "That's the way I try by making the least impact. For me…well the development part I just think is still a bit of an issue. Because I don't know that if there is such a thing as sustainable development. We've actually got to control the development."

The dictionary defines sustainable as "something that can be kept going continuously" (Jickling, 2002). Sustainable and development present a tension as they are more opposite than congruent (Judson, 2007). Judson (2007) is of the belief that sustainable development is an "oxymoron". Jickling (2002) raises concern against the discourse of sustainable development pointing out that many ecological processes are not sustained (e.g. many species are extinct or are at the danger of extinction). The point is that even without human influence there are limitations in ecological processes. Biotic and abiotic factors are in a state of continuous flux as long as there is natural influence (ten Kate, 2007). The last part of the quotation of beneficiary 10 is suggesting a way out

the oxymoron of sustainable development by placing emphasis on the control of development rather than on what can be sustained.

7.3.1.5 Category: Focus on economy

There are beneficiaries who believe that sustainable development is more about economic development. The reference, however, to “future” generations (beneficiary - 3) is also an indication that the beneficiary is of the belief that sustainable development has a focus on generations as well.

Beneficiary 1: “It’s about the projects and how to keep them on, running profitably or positively.”

Beneficiary 3: “I can give you an old phrase. Sustainable development - I see it more in the economic sense. I believe sustainable development is the development of using resources in the environment such as wood, fuel, air and land, in such a way that it will not damage the decision making for the future. But I see it’s a problem, because whose decision?”

Since the industrial revolution human behaviour has impacted on the environment in the process of meeting human consumptive needs, precipitating urgency to change and not to just slow down (ten Kate, 2007). The development as economic-growth perception is limited in that it excludes the majority of the population and while there may be economic growth other issues like poverty persist (Rosenberg, 2004). However, the economic view is not all “doom”. There is an emerging group of ecological economists who are exploring how the value and benefits of nature can be incorporated into economic activities and analysis (de Wit, 2004).

The responses show that although beneficiaries attended programmes at Delta Environmental Centre related to sustainable development they do not have a common understanding of sustainable development. The responses of the staff members in Section 6.3.2 shows that the environmental centre is not putting forward a definite definition and is cautious when facilitating the discourse to the beneficiaries. The diverse conceptions and understanding are an indication of the difficulty of achieving sustainable development in reality amongst other beliefs e.g. sustainable development demands more resources (Rosenberg, 2004).

7.3.2 Sustainable development: a strategy to address environmental issues?

The beneficiaries had differing opinions about sustainable development as a way to approach environmental issues in South Africa. The differing opinions fell into three categories viz. full

endorsement of sustainable development; endorsement with caution; and the need for more thinking on the discourse of sustainable development. The categories together with number that responded are presented in Table 7.2.

Table 7.2 Response to sustainable development as a strategy to address environmental issues

Trend	Number responded
Full endorsement of sustainable development	4
Endorsement with caution	5
The need for more thinking on the discourse of sustainable development	3

7.3.2.1 Category: Full endorsement of sustainable development

The responses of four of the beneficiaries show that there is full support for sustainable development as a strategy to approach environmental issues in South Africa. The view of support of the beneficiaries for sustainable development concurs with staff responses. The following quotations show full endorsement of sustainable development.

Beneficiary 2: "I think as far as possible we have to…it is the way to go…that you know, that people and the environment must be…must develop in a balanced way."

Beneficiary 3: "I totally agree with sustainable development…there's not a single moment of doubt."

Beneficiary 4: "In my opinion that is very, very important because we realise that so many people think they are doing something to enhance the environment or to support the environment, but in the long run they are actually depleting resources that in future we might not be able to do whatever they are trying to do at the moment…A hundred percent I agree with it fully."

Beneficiary 7: "I think it's working because I think people in the past, they were thinking that natural resources are always going to be there. But they didn't understand that if…they are not renewable. You know like, if we don't use water wisely, there's no factory that makes water. There's no factory that makes air… use of natural resources is important."

The literature shows that there are international, regional and national initiatives that fully endorse sustainable development. The WSSD convened in Johannesburg in 2002 and the United Nations

DESD launched in New York in 2005 are examples of full international endorsement of sustainable development. The United Nations Economic Commission for Europe (UNECE) developed a strategy as a regional initiative to support ESD (Tilbury and Cooke, 2005) and a draft document has been put together for a regional strategy in Sub-Saharan Africa (UNESCO/BREDA, 2006). In 2005 over 15 regional or sub-regional launches took place worldwide in support of the discourse in the context of the Decade of Education for Sustainable Development (Calder, 2005). The National Framework for Sustainable Development was released in South Africa in 2007 (Department of Environment and Tourism, 2007). With both national and international support, it is not unusual that beneficiaries fully endorse sustainable development as a strategy to address environmental issues. The point, however, that is raised in the responses of the beneficiaries is that while sustainable development has been recognized, there is no realization by the mass of people that they are using resources in an unsustainable way or what is it that they should do.

7.3.2.2 Category: Endorsement for sustainable development with caution

There were responses that showed support for sustainable development. However two key concerns were raised viz. how the discourse is brought across to the mass of the population (see quotes of beneficiaries 5 and 8) and the lack of categorical examples of practice in the context of the discourse (see quote of beneficiary 6).

Beneficiary 5: “I’ve probably deviated slightly to say, yes, I agree with the concept of sustainable development. But my deviation in a sense has been, that there’s going to be great difficulty for people to get involved with sustainable development to understand the concepts, to appreciate the concepts…Yes, I believe in sustainable development, that it must be there, but the amount of work to do…to get people to be actively involved is going to be tremendous.”

Beneficiary 8: “Provided it’s understood in a simplistic basis it will definitely be of benefit to the majority of the population. But the concept has to be made simple and practical.”

There is a belief that, while the discourse is promoted not many actually implement change in their lifestyles or practice.

Beneficiary 6: “I agree with it, but I also think that many people talk about sustainable development but it’s not being implemented. There’s a lot of talk about it. But in terms of my field, environmental education, we talk about education for sustainability, but I don’t see it being done in our everyday practice.”

The comments about the difficulty of getting the discourse of sustainable development across to people, the lack of examples of practice and, in a way, the lack of commitment to effect belief into practice emphasize the complexity of sustainable development. Complexity in the context of the Theory of Innovation and Diffusion is the extent to which a "new idea" is found to be difficult or concerns around the idea are raised or challenged (Rogers, 2000).

Issues of complexity of the discourse of sustainable development have been repeatedly raised in the literature. The common examples of complexities within the context of sustainable development relate to conceptual challenges (Wals, 2007; Gonzalēz-Gaudiano, 2007), the potential of economic biases (Rosenberg, 2004; de Wit, 2004), the failure of efficient governance (Cullinan, 2004) and the re-naming or creation of slogans which support many interpretations (Robottom, 2007).

The endorsement of sustainable development with caution by the beneficiary is also a challenge to Delta Environmental Centre. While the environmental centre may show support for the discourse of sustainable development, the communication needs to take into account the critics who may not fully support the discourse. It can be inferred from the responses of staff members in Section 6.3.3 on communication of the discourse that the centre places greater emphasis on gaining support for the discourse than on providing a platform for critical engagement with discourse.

7.3.2.3 Category: The need for in-depth thinking on the discourse of sustainable development.

There were beneficiaries who felt that there is need for more in-depth thinking on the discourse of sustainable development and the need for more research on environmental issues. One of the concerns that was raised in the responses (refer to the quote of beneficiary 10) is that there is need for resources (such as financial resources) to develop the sustainable development strategy further. Rosenberg (2004) has also stated that one of the challenges to sustainable development is that it is resource-intensive.

Beneficiary 1: "It needs further thinking… Yes, I think it needs thorough thinking, thorough investigation before they get involved in such processes."

Beneficiary 9: "My opinion is that, I can say it's conservation or education for future and present generation but with the approach I think there is a need for more research into methods for environmental issues, because it's sustainable development, sustaining, but how you sustain that you need to find a strategy into incorporating it into environmental awareness issues."

Beneficiary 10: “Oh it needs a whole lot more money put into it, it needs a whole lot more thought, it needs a whole lot more practitioners educating people about how to go about sustainable development.”

In summary, none of the beneficiary responses categorically opposed or disagreed with sustainable development. This was also the finding in responses of staff. However, there is evidence in the quotations of the beneficiaries that there is need for further thinking and evidence of hints of doubt of the success of sustainable development in attempts to implement it as a strategy to address environmental issues in South Africa. Staff also raised concerns of the success of sustainable development.

7.4 Impact of the sustainable development programmes on beneficiaries

In the analysis two categories of impact on the beneficiaries emerged. One is a personal perspective and the other a professional perspective. The personal perspective is related to how the centre (in whatever way) influenced the beneficiaries to change their practice in their personal lives. The professional perspective related to the work context of the beneficiaries. In the professional perspective five sub-categories emerged in the analysis. In Figure 7.2 the different categories and sub-categories that emerged during the analysis are represented. The discussions on the environmental centre’s impact on the beneficiaries are based on the categories and sub-categories of analysis.

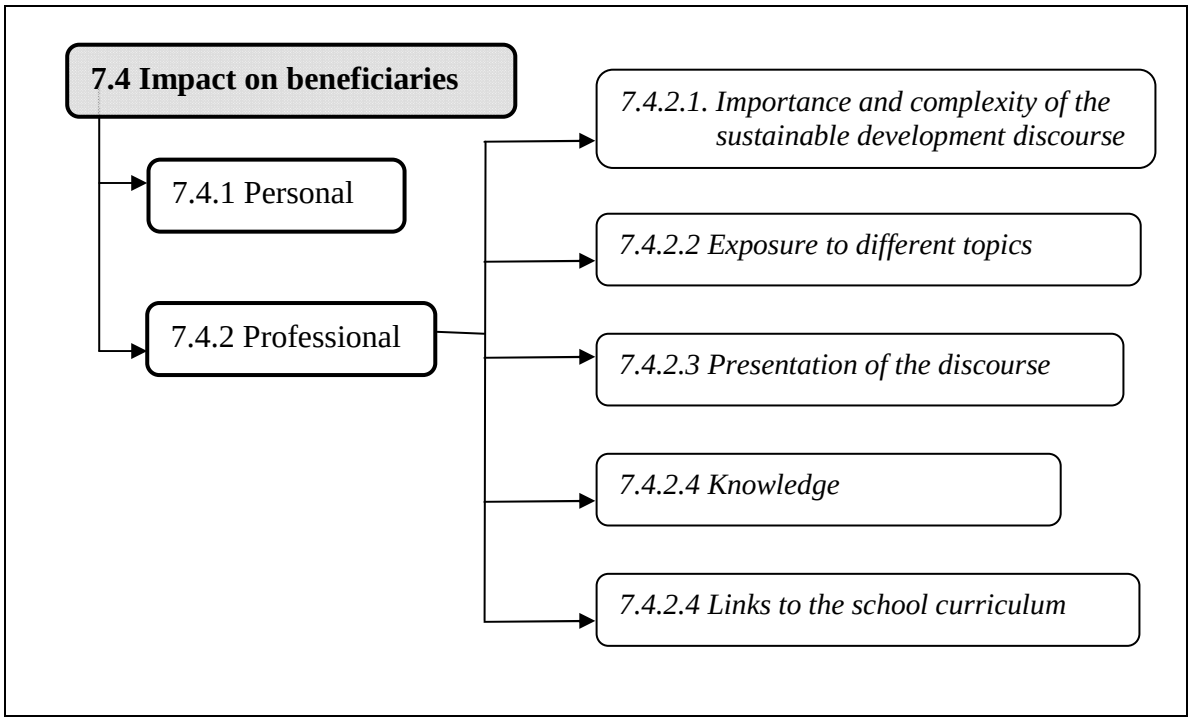


Figure 7.2 Impact on beneficiaries

7.4.1 Personal perspective

Response to the interview question on the environmental centre's impact on the personal life of the beneficiaries in the context of sustainable development programmes even after probing was limited. The impression created is that the centre programmes focus more on the professional development practice related to sustainable development than on the personal practice of beneficiaries. The following is a response to the questionnaire.

(QD4) Beneficiary 5: Embarrassingly little…I drive a 4x4. Our swimming pool and fishpond use a considerable amount of water.

The response of one of the beneficiaries is a good example of the beneficiary shifting responsibility onto others rather than to be personally included in the discourse. In the quotation there is constant reference to "they".

Beneficiary 1: "Well it sort of made you realise that something needs to be done and whatever they do will have to carry on, otherwise they will just fall back into the same mess…"

With the exception of two beneficiaries who participated in the interviews all the other beneficiaries focused on impact on their professional practice. One of the beneficiaries indicated that there was nothing new in the programmes as sustainable development was already part of daily practice.

Beneficiary 10: "Not really, except that I needed to understand about the NCS and I needed to understand about the decade. But it hasn't actually changed anything I do. Because I actually do that stuff and have done for years. *Laughs* And you know, one keeps refining it and getting better at it, but I can't think of anything particular that I came across there that has had a significant impact on the way I do anything."

One of the beneficiaries felt that the programmes related to sustainable development had a great impact both in terms of personal awareness and personal practice.

Beneficiary 8: "Absolutely. It has an impact on my personal life in that it has heightened my awareness of my personal responsibilities and it also to encourage all those with whom I come into contact to be aware with regard to promoting sustainable development in all its spheres…Without a doubt. Because of the awareness of the need to protect water I'm using it more sparingly in all aspects, and every time I even turn on a tap I realise now, don't waste, be careful, try and recycle and re-use it."

The responses in the questionnaire indicate that most of the beneficiaries felt that the basis of the workshops was to get them as participants in the workshops, to understand and practice the principles of sustainable development (refer to Table 7.3). However, the interview response shows that in reality, impact on the personal life of beneficiaries in relation to change in practice is not as great as intended by the environmental centre. The responses of the beneficiaries concur with responses of staff in the previous chapter that the basis of sustainable development programmes is to get the beneficiaries to understand sustainable development. Nine beneficiaries selected this option and in the staff questionnaire twelve selected the same option. In the table 13 responses are shown and do not correspond to the total of twelve beneficiary participants. One beneficiary had ticked two of the three statements.

Table 7.3 (QD1) Responses to choices based on sustainable development programmes

1. What do you think was the basis for the programmes that involved sustainable development?	Number of responses n=13
A. To provide rational explanations about sustainable development	3
B. To try to get you to understand and practice principles of sustainable development	9
C. To strongly emphasize laws, policies and obligations about sustainable development	1

There are difficulties to successfully changing practice to accord with the practices of sustainable development (Jepson, Jr., 2004). Amongst the reasons given is that there are unanswered questions of human needs, there are competing worldviews of economy and ecology that have not been resolved and that the discourse is open to interpretation. There are unresolved issues inherent in the discourse of sustainable development that contributes to barriers to translate the discourse into personal practice. A study on curriculum change in South Africa has concluded that there are barriers to implementing ideas that seem “new” (Pillay, 2003). There are barriers such as personal and professional beliefs, the downplaying of ideas of those who are expected to change and the negative influence of forcing change. Given the points raised by Jepson, Jr. (2004) and by Pillay (2003), it would be unreasonable to assume that the environmental centre is not making the effort to impact on the personal lives of the beneficiaries.

7.4.2 Professional perspective

The beneficiaries provided different responses to how the programmes with a focus on sustainable development helped them in understanding sustainable development and how it impacted on their professional lives. The discussion is presented under different categories that were developed through the analysis of beneficiary responses.

7.4.2.1 Category: Awareness of the complex nature of sustainable development

There is a realisation that projects and topics within the context of sustainable development are important but at the same time not as straightforward. Throughout previous sections of the report the literature and the analysis have confirmed that the sustainable development discourse is not straightforward but open to interpretation.

Beneficiary 1: "Well then when we started the wetlands project and those sort of things, how important the wetlands are. And also yes, how complicated the waste management project really is."

Beneficiary 2: "…like a thread you know, GM food, is it sustainable or not?...bringing you the different sides of the story. And then you have to sort of make up your own mind whether it's sustainable or not. It's not like there's always clear cut answers for everything."

Beneficiary 4: "We often take many things for granted and I think a lot of what we've learned through that program is they've given you food for thought and you know, small things like for instance …we talk about sustainable development as we're trying to support our schools in being water wise for instance. So, what happened is a lot of our schools try to save water but they created yet another monster. For instance they're letting all the kids wash their hands from the same bucket - which has its pros and its cons."

The responses indicate that programmes of the centre have stimulated more in-depth thinking on sustainable development when beneficiaries engage in their professional work (e.g. the waste management project – beneficiary 1 and the support of schools – beneficiary 4). This also confirms the point that staff believed that the rationale underpinning the programmes was to get the beneficiaries to understand the discourse of sustainable development.

7.4.2.2 Category: Exposure to different themes

One of the influences of the centre is that it provided exposure to a greater number and variety of themes. In the Decade of Education for Sustainable Development (UNESCO, 2005) various themes covering social issues (e.g. HIV/AIDS and urbanization) economic issues (e.g. poverty and corporate responsibility) and environmental issues (e.g. water and waste) have been pointed as complex but key themes that need to be addressed to respond to the threats faced by humanity. The

responses of the staff have also shown that Delta Environmental Centre does cover a variety of themes and topics in the context of the discourse.

Beneficiary 2: "…they expose you to more topics on environment, and sustainable development. It's like looking at different topics, exposing you to more of these topics...GM. Yes, and there was something about sanitation and water, and also about energy, and…they also did a program on waste…"

Beneficiary 7: "Sustainable development, yes, because I think their emphasis was more that it's an integrated topic. It's inclusive, yes, I think that was the term the facilitator emphasised."

The advantage of exposing beneficiaries to various topics is that firstly, it shows that sustainable development is not restricted to one aspect of life. Secondly, it shows that sustainable development is complex and confirms that a holistic and integrated approach is probably the more appropriate way forward. As mentioned before, Rosenberg (2004) has stated that the dimensions of sustainable development (economic, social and environmental) should not be interpreted in isolation to one another but should rather be integrated.

7.4.2.3 Category: Presentation of the discourse

According to the analysis the way in which the discourse of sustainable development was presented influenced the professional work of the beneficiaries in different ways. The discourse in some programmes was presented in a practical and integrated way.

Beneficiary 3: "Simplified it in a way in my mind so that I could use that simplified ways in explaining it in my work in training staff who has to deal with sustainable living matters…Biodiversity and sustainability..."

Beneficiary 5: "We had to work together towards the sustainable development and assist in ideas and concept development of how to get the awareness across, the concepts across. And I was looking at this particularly from the point of view of an educator. And I think from an educator who's working with teachers and young people, is a different way of gaining that information which could be very similarly presented to an engineer whom you might be sitting next to. So one extracts from the courses what is particularly relevant to your interest area and to your passion…Yes, sustainable development has been an element in the work of DELTA environmental centre.."

Beneficiary 8: "Their programs generally are focused on the basic premise of sustainable development. They have attempted in them to ensure that they are presented in a practical manner, and definitely it has enhanced my understanding of the concept of sustainable development."

According to the beneficiary responses the practical and simplified way in which sustainable development was presented by the environmental centre assisted them when they had to engage in programmes that involved the discourse of sustainable development. However, while a simplified presentation may be useful in helping beneficiaries to facilitate the discourse in their professional work there are two key concerns that arise. Firstly, is that in simplifying the discourse the importance of key criticisms could be overlooked leaving the impression that there are blueprints for implementation. Secondly, there is a potential of creating the perception that sustainable development may be made to appear as being easy to implement. Jickling (2002) has raised concerns about the discourse of sustainable development and has also questioned whether sustainable development is possible in reality.

There is evidence that the programmes, activities and examples used by the environmental centre helped beneficiaries to facilitate principles of sustainable development (like the need for wise use of resources) in their own professional contexts. The response of staff in Table 6.3 has also shown that staff indicated that they use different activities to communicate the discourse of sustainable development. Two relevant examples given are the *chocolate cookie game* and a specific activity that was conducted on site at a power station to discuss energy.

Beneficiary 3: "Blatantly I've copied the chocolate cookie game…*Laughs.*… And I now use it in a training program. I've also used one of the other examples in one of our workshops… So yes, I've blatantly used some of the examples."

Participants had to "mine" the chocolate cookie for the chocolate chips. The "cookie" represented earth and the chocolate chips represented the natural resource that had to be mined. Those who did not consider principles of sustainable development would have mined the entire "cookie" for the chocolate chips and would not have considered rehabilitation as well.

Beneficiary 2: "But for me what was…it empowered…I can't say that there was one thing but I can say it empowered me more to help teachers here in our district, to come back here and to develop here, and also I can remember one of the things they did on energy…he went with us to Rooiwal station with that group of teachers that we were working at the time with…we went and looked at how the whats its name works…the power station. So yes, it did empower me to try and do things with the teachers."

The activities and the examples used did not only assist the beneficiary in understanding the discourse better but also became useful for the beneficiary to use in training programmes within their own organizations.

The key point that arises from the responses of beneficiaries 2 and 3 is that the way the discourse is presented can help to build the capacity of the beneficiary in a professional context. Capacity building and training is recognized as one of the key strategies of ESD (UNESCO, 2005).

The support materials used in sustainable development programmes of the centre were also found to be useful by the beneficiaries. Examples of support material provided by the centre listed by the beneficiaries in response to question E1 in the questionnaire are:

- Policy documents on the National Curriculum Statement (NCS)
- Explanatory presentation of the United Nations Decade of Education for Sustainable Development
- Copies of Environmental Education programmes
- *EnviroTeach* publications

The materials helped beneficiaries in two key ways in their professional contexts. One is that the support materials filled in a gap within the beneficiary organization. The other was that the support materials developed by the environmental centre provided assistance to support the beneficiary in areas where they were not too confident (e.g. links between sustainable development and the curriculum).

Beneficiary 7: "I think it helped because they also gave us some handouts on how to enhance the program development. In our own organization we're developing our activity sheets or our programs for the…I'm not sure whether to say customers that we interact with. I think in a way it helped."

Beneficiary 9: “What I can say the materials that were there were unpacking the RNCS …curriculum… that was more helpful. Because it was something that although we’re implementing environmental education but we were neglecting a bit more of the RNCS into the curriculum, so that I think it helped a lot.”

Beneficiary 9: “That the materials that was provided and given to us it was good because there was something that we took away and we sat on our own and we look at it. That’s why I’m saying it was something that we neglected as we’re developing our programs, but then we’re able to see what curriculum issues you can focus on, what environmental issues you can focus on and link that to the curriculum and to what kids are doing at school as an environmental education officer.”

The provision of support materials for the beneficiaries is a useful example of how in getting across an innovation a top-down approach (refer to Section 3.2.5 for a discussion on top-down approaches) in relation to sustainable development and use of support materials has worked. There are criticisms of the top-down approach e.g. it discourages ownership by the beneficiaries and is instructive (Havelock, 1971; Rogan, 2000). However, the top-down approach, when used in a synergistic way with bottom-up approaches can be useful (Tilbury and Cooke, 2005). Although the beneficiaries were not involved in the development of the materials (top-down) to be used in the Delta Programme, they were still able to adapt the support materials in their own programmes (bottom-up). The top–down approach in materials development for supporting the sustainable development discourse has some use but according to Taylor (1997) a better approach would be to get beneficiaries to be equally involved in developing materials that they could use later. The inclusion of beneficiaries in the process would give them ownership of the process and of the materials that they develop.

7.4.2.4 Category: Knowledge and the professional context

Two aspects related to knowledge emerged from the analysis of beneficiary responses within a professional context. One was that the environmental centre was able to provide appropriate background information on sustainable development which the beneficiaries found useful.

Beneficiary 5: “ … And it was this necessary information which influenced me…. and what I so enjoyed influenced so many other people that you needed that background information to become aware of the concept of sustainable development, which is a pretty advanced concept.”

The other aspect related to knowledge is that the centre is perceived to be a source of knowledge in sustainable development linked to the formal national curriculum.

Beneficiary 4: "...What impresses the most of the programs at Delta is the fact that you realise that they're very knowledgeable and that in any way they link everything to the curriculum. And coming from an educational background we sort of tend to…even if the program was not intended…where the intention was not on promoting sustainable development, but you see in their programs that it's integrated in everything they do."

Beneficiary 6: "They looked at the school curriculum and topics that you would deal with a certain age group. And then how you can take that back into the classroom. Say you're doing a thing on water quality… I mean it doesn't stop there. They showed us how you can develop an audit for the school, and implement at school."

Making links to the school curriculum was of benefit to the beneficiaries. Beneficiaries were able to use what was presented to them to develop their own school programmes. The approach of supporting the integration of sustainable development in the formal school curriculum is in tandem with what is advocated by the DESD. One of the four thrusts of the DESD is that there is a need to reorient existing education programmes (UNESCO, 2005). The reorientation is in line with principles of the national curriculum of South Africa viz. holistic education and integration. In other words, education programmes should show that the systems of the world are related and not necessarily confined within subjects.

The examples given so far in this Section (7.4.2) on the impact on the beneficiaries from a professional perspective has shown the positive impact on the beneficiaries of the centre. However, one beneficiary has raised a few points that are worth consideration, which if not considered, could lead to misunderstanding, confusion and the possible demise of the sustainable development discourse. As shown in Figure 3.5 one of the paths in the life-cycle of innovations is that which can result in its demise.

Beneficiary 9: "I can say that the Delta workshop, it was a direction into sustainable development, but it wasn't that much practical in terms of understanding the sustainable development issues...more time was needed because I believe that more things were done in a rush, but maybe if it was given three or four days then we could have understood it more better because it was sustainable development and curriculum issues, which were somehow not that much practical to a person who (does not) understand or who was just attending it for the first time."

It seems that not all programmes took the practical approach to presenting the sustainable development discourse. Trying to accomplish too much in a short space of time on a debatable and complex discourse does not give the beneficiary a fair advantage of engaging with the discourse especially for someone new to the discourse. It becomes more complex to try to link two seemingly different areas (sustainable development and curriculum structure) when sustainable development appears as new to the beneficiary. The point of importance is that there needs to be some consideration of the level of the background knowledge of the beneficiary when engaging the beneficiary in the contested discourse of sustainable development. To create a world that is more sustainable than the present, there is a need to address the limitations that pose a barrier to people's ability to participate (Wals, 2007). However, staff responses (refer to section 6.5.1) show that the background knowledge of beneficiaries has been identified as a challenge to facilitating sustainable development.

7.5 Foci of the programmes

Through the analysis of the responses of the beneficiaries the main categories identified for the foci of the programmes were the dimensions of sustainable development, the integration of the sustainable development discourse into the curriculum and creating awareness on the discourse.

7.5.1 Category: Focus on the three dimensions of sustainable development

The categorization in this section may be interpreted as simplistic and may have consequences of simplistic data reading. However, the categorization was done on the basis of the following arguments related to the dimensions of the environment and their inter-relationships in approaching environmental issues within the context of sustainable development.

Rosenberg (2004) has pointed out that the dimensions of the economic, social and environmental need to be interpreted as having inter-relationships rather than as separate "pillars". Bias to any one of the dimensions has the potential of oversight of the influence or impact of the other dimensions on the issue or solutions to the issue. Janse van Rensburg and du Toit (2000), found in a sustainability project that the participants responded in the context of economics and job creation. Janse van Rensburg and du Toit (2000) in citing other authors allude to the point that the participants' responses were based on their own contextual experiences and that this was a limited view of environmental issues. Scott and Gough (2003) argue that the problem is not so much with the reductionist categories but more with insisting that a single way of thinking about complex and uncertain issues will be adequate for their resolution.

The responses of the beneficiaries show that they thought that the programmes included the different dimensions (economic, social and environmental) of sustainable development with varying emphasis on the dimensions. The responses in the questionnaire show that most beneficiaries felt that there was integration of the three dimensions of sustainable development (refer to Table 7.4).

Table 7.4 Responses to choices given in the questionnaire based on the foci of sustainable development programmes (QD2)

2. What was the focus/foci of the sustainable development programmes?	Number of responses n=10
A. mainly political issues	-
B. mainly biophysical environment/scientific issues	2
C. mainly social issues	1
D. mainly economic issues	-
E. the above foci were mainly integrated (the links between the above were made often)	7

While question QD2 shows that the foci were mainly integrated, the response to question QB3 (refer to Table 7.5 on the next page) and the interview responses show that there is a tendency to place greater emphasis on the environmental (biophysical) focus with less emphasis on the other two dimensions. Sustainable development is linked to change that involves a transition in social and other systems which respect and minimize threats to natural and social limits (Csobod, 2002). This statement advocates that in the change required for a sustainable future there is need for awareness (respect) and change (i.e. to minimize threats). The statement alludes to a focus on all systems related to human activity (i.e. social, economic, and environmental) that are required for awareness and change.

Table 7.5 shows the examples of sustainable development practice stated by the beneficiaries. With the exception of three of the nineteen examples listed, all the others focused on the environmental (biophysical) dimension. In Table 6.4 the response show that staff also focused mainly on the biophysical and scientific issues. There are different ways of interpreting the results in Table 7.5.

One possibility is that the dimensions could have been integrated but not in a balanced way. Another possibility is that, given the backgrounds of the beneficiaries on sustainable development, it was easier to identify the environmental focus in comparison to the economic and social foci. On face value the environmental focus stands out as the dominant focus of programmes of the environmental centre. One might argue that it is better that the dominant focus is on environment than on economy. A dominant focus on economy is likely to create the impression amongst beneficiaries that sustainable development is about economic growth, a view which is opposed by Rosenberg (2004) and de Wit (2004). The analysis of the interviews shows that there is no consistent balance in presenting the three dimensions of sustainable development.

Table 7.5 Examples of sustainable development practices listed by beneficiaries (QB3)

Beneficiary	*Example/s*	*Dimension*
1	Electricity	Environmental/Economic/Social
4	Communities working together to eradicate poverty / Schools starting food gardens to feed orphans	Social, Economic Environmental
5	Permaculture / Using environmentally friendly technology	Environmental/Economic Environmental/Economic
6	Conservation of natural resources / Conserving biodiversity	Environmental Environmental
7	Permaculture / Recycling	Environmental/Economic Environmental/Economic
8	Protection of trees / Using water sparingly	Environmental Environmental/Economic
9	Greening / Training and capacitating communities to be able to deal with or solve environmental issues	Environmental Environmental/Social
10	Capturing and reusing bath water/ Buying an existing home rather than building a new one	Environmental Environmental
11	Water practice / Job creation	Environmental Economic
12	Recycle / Save water	Environmental/Economic Environmental

It is also evident in the responses in the interviews as shown in Table 7.5 that there is a strong focus on the environmental dimensions in sustainable development programmes of the centre.

Beneficiary 1: "No, it was mostly on the physical aspects. I don't think we (focused on) all those other things. We had programs on leaves where we went into the field there and gathered a lot of different types of leaves at Delta… We had a program on eco systems. We had programs on the fish…"

Beneficiary 2: Oh yes, the social ones we also did, yes. Always of course Delta would bring in that side of things. Yes, social side. …Anyway the social goal, I think she called it, the social goal, from the national curriculum statements. Yes, but always they would put those things in context...the social, economic, and the biophysical. For me I don't go into all that detail, for me it's basically about people and the environment. (*Laughs)* On the one side is people to survive, on the other side it's the environment that must survive."

Beneficiary 7: "Yes, waste management, recycling, water conservation, sanitation as well... …water wise gardening, the topics that you can cover under water, green and even brown you can bring it in. And that people must use grey water as well…"

The implication is that depending on their background, beneficiaries could possibly miss the importance of the all the dimensions of sustainable development and how they integrally link to one

another. A point to consider in the engagement with sustainable development discourse is to emphasise the interrelationships between the dimensions and not take for granted that the beneficiaries would make the links on their own.

7.5.2 Category: Integration of sustainable development discourse into the national curriculum

The analysis of beneficiary responses concur with the analysis of the *EnviroTeach* (refer to Sections 5.3.3.3 and 5.3.3.4) that there is a great emphasis on the sustainable development discourse in the context of the national curriculum of South Africa.

Beneficiary 6: "They looked at sustainable education for the decade of sustainability. And they looked at the new curriculum and how we can link the new curriculum to developing environmental education programs."

Beneficiary 7: "I think it focused on the integration. I think it must be not…sustainable development must not be seen as something outside the curriculum."

Beneficiary 9: "What aspects? I think the workshop was focusing more on sustainable development into the environment and how to incorporate that into the curriculum. So linking what aspects…I can say curriculum aspects…of the concept environment, sustainable development and the curriculum."

Through a focus on the national school curriculum the environmental centre places lot of emphasis on the generational aspect of sustainable development i.e. focusing on the future generations through educating the school-going population of the present generation. The definition of sustainable development provided in the *Brundtland Report* (refer to Section 2.2.1) has a strong focus on future generations.

However, the approach of Delta Environmental Centre to sustainable development shows emphasis on two points. The first is that the centre places very strong emphasis on the formal school curriculum. In this respect it takes on the responsibility of educating beneficiaries on the formal curriculum. This, according to the literature on boundary organizations, can also be an example where the environmental centre is *blurring its boundaries*. In other words, the environmental centre cuts across its role as environmental organization into education in the formal education sector. The responses of the staff in Section 6.3.3.4 have shown that the formal curriculum is used as a medium to communicate the discourse of sustainable development.

The second focus is not on abstract knowledge but on empowering the beneficiaries (who are educators) to develop contextual programmes on sustainable development within the formal national curriculum (refer to the quote of beneficiary 6). Stevenson (2002) points out that a common problem with formal school curriculum is that there is a tendency to focus on abstract knowledge of global environmental issues like pollution. Consequently educators focus on distinct parts of knowledge without relevance to the experiences and challenges in the local contexts of the beneficiaries (Stevenson, 2002).

7.5.3 Category: Focus on creating awareness

Beneficiaries articulated through their responses that the programmes were creating awareness of the discourse of sustainable development and environmental issues. Linked to the creating of awareness is the focus on policy. Policies that were referred to were the National Curriculum Statement (NCS – the policy guiding the implementation of the curriculum in South Africa) and the guidelines for the implementation of the Decade of Education for Sustainable Development (UNESCO, 2004). The discourse of sustainable development and the programmes are authenticated by the use of policy language similar to the finding in section 5.3.1.2.

Beneficiary 5: "As I recall, and as I can remember, it was the contribution of the body politic towards creating a policy for the implementation for the decade of sustainable development in South Africa. So it was a policy formation which in itself meant that one had to go to the core of so many different aspects of education…such as the awareness creation, the development of particular programs…the knowledge base which would be required for awareness to take place."

Beneficiary 8: "Mainly on the conservation, preservation, recycling, re-using…heightened awareness, the importance of involving everybody in the community, all members of the community to be involved in it. Mainly from a heightened awareness related to all aspects of preservation."

However, while awareness has its place, more is needed for a sustainable future. Csobod's (2002) belief, based on a study on an education initiative for a sustainable future in Hungary, is there is need for a focus on the development of critical thinking and the ability to question, plan, act, participate and reflect within the context of sustainable development.

7.6 Scientific knowledge and sustainable development

The Decade of Education for Sustainable Development (UNESCO, 2004) stated that science, together with indigenous knowledge, has a role in sustainable development, especially in a contemporary world. According to Schreuder, Reddy and Le Grange (2002), an anthropocentric view of sustainability is evident in most materials they analysed. The focus on ecological sustainability, however, is an important principle to sustainability and the intrinsic worth of nature is just as significant as the focus on the consumption of natural resources (Schreuder, Reddy and Le Grange, 2002).

Given that beneficiaries do not all have a science background (refer to the beneficiary profile in Table 7.1), that science is acknowledged as important in addressing environmental issues, and that the dimension of environment is part of sustainable development, it was necessary to find out how the environmental centre approached scientific knowledge and skills from a beneficiary perspective. The depth of knowledge of the beneficiaries was not the main concern but rather the basic literacy related to the scientific aspects of issues within the context of sustainable development. According to the beneficiary responses there is no set strategy in bringing across scientific knowledge and skills to the beneficiaries but there are a variety of strategies that the centre uses. This was also a finding in the staff responses that there is no set strategy to facilitate scientific knowledge and skills in beneficiaries (refer to Section 6.3.5).

Beneficiary 8: “They certainly did, by way of demonstrations, by way of power point presentations, by way of issuing of brochures, pamphlets, *EnviroTeach* magazines…certainly charts.”

Three key points based on the analysis of the responses of the beneficiaries in the context of science and sustainable development viz. a practical approach, a transmission approach and the focus of the knowledge are discussed in the paragraphs that follow. Figure 7.3 (on the next page) shows the key points of discussion related to science and sustainable development.

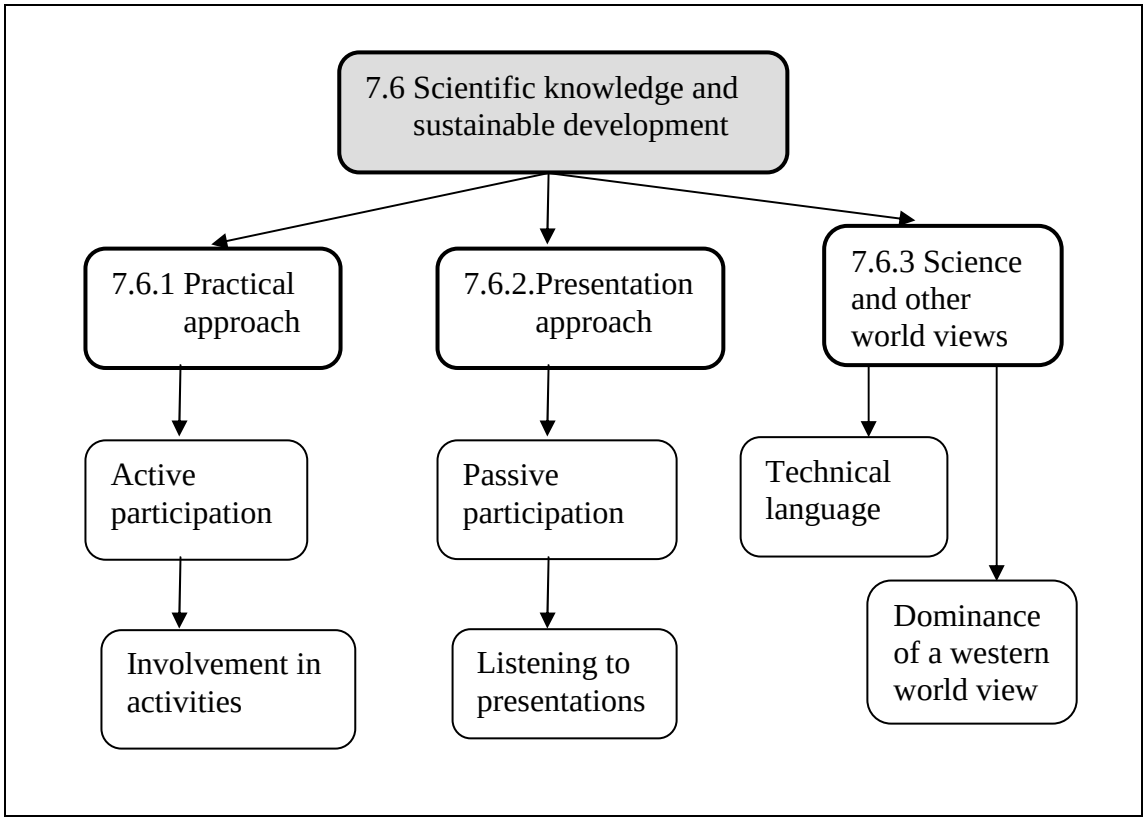


Figure 7.3 Scientific knowledge and sustainable development

7.6.1 Category: A practical approach to science

One of the intentions of science communication is to develop knowledge and skills in a form that can be assimilated by the intended beneficiaries (Gregory and Miller, 1998). The practical approach of participation through doing things through scientific experiments and activities was shown to be of value to the beneficiaries.

Beneficiary 2: "Uhh…yeah…yes they did it in a practical way, you know the energy one, they did it…I can remember they had a solar cooker there and they had different kinds of energy methods to cook food or whatever. And then we explored the whole thing. And looked how much do we use. How much coal, how much carbon dioxide do you use when we use specific electrical appliances and how much carbon dioxide does it put into the atmosphere."

Beneficiary 8: “Through practical demonstrations, and in engaging with the presenters in these practical demonstrations one is able to experience it, witness it, and then one realises that this is definitely based on scientific principles. ..I felt that all the practical aspects that you were involved in were participatory. In other words everyone that was involved in the experiment was asked to participate and their input was always acknowledged and always considered and always taken into account in coming to a final conclusion.

According to the respondents the practical approach brings out the reality of sustainable development issues, as well as makes them a part of the solutions. One of the dominant ways of describing issues between modern discourses and interventions has the interventions were purely cognitive (Leach, Scoones and Wynne, 2005). The responses show that if science has to be used as one of the interventions to support the discourse of sustainable development then a practical approach, not just a purely cognitive approach, needs to be considered.

7.6.2 Category: Presentation approach to science

The beneficiary responses show that while in some cases a practical approach was used to get across both the scientific knowledge and skills, in others the approach was more in the form of a presentation. The responses show that a practical approach is preferred especially to help those who do not have the necessary scientific background.

Beneficiary 4: “Sometimes you have to sort of take in what they are saying and read more into what they are saying, and sometimes it’s more of a transmission where they give you information, feed you information and again.”

Beneficiary 6: “Now we spoke about it. There was no actual hands-on doing things. I would have preferred that we’ve got the actual thing and we actually did it, but I guess it was due to time constraints. It was just a three hour workshop, it wasn’t an entire day.”

Beneficiary 7: “Yes…I think the interaction was more on them presenting the resource material and just making people aware that these resource materials are there for your use, to enhance your knowledge, to share… It was more a presentation of what we have.”

Beneficiary 11: “I would say it was of the transmission way where somebody presented and you just have to listen and stuff like that....”

It is evident in the responses of the beneficiaries that there are disadvantages of using the presentation approach in the context of a complex discourse of sustainable development. The presentation approach in the context of the response of the beneficiaries shows that the beneficiaries were passive participants i.e. through attending presentations “no actual hands- on doing” (refer to the response of beneficiary 6). The disadvantage of passive participation is it becomes a unilateral announcement and has the potential to give a message that the information shared belongs to the professionals or the presenter (Tilbury and Cooke, 2005). Resources, textbooks and educators (presenters) are viewed as authority and their formative power (Chambers and Rowell, 2007) should not be underestimated in the context of science and sustainable development. In the context of sustainable development science is not the only strategy, as is discussed in the next category.

7.6.3 Category: Science and other worldviews

The worldwide participation of nations in the WSSD shows that sustainable development is not confined to a particular nation or sector of a community. It is acknowledged that sustainable development involves interdisciplinary issues which are complex in nature (Hassard, 2005). Hassard’s (2005) view shows that science cannot be portrayed as the only option to address environmental problems. In the analysis of the beneficiary responses the dominance of the western scientific knowledge and the technical level of the scientific knowledge were the key aspects identified in the context of sustainable development. Other ‘ways of knowing’ were not highlighted, as pointed out by beneficiary 11.

Beneficiary 11: “...But I would think…was not done…considering indigenous knowledge and background.”

The concept of a worldview provides a challenge to the positivist idea that scientific explanations for the world are more important than non-scientific explanations (Hassard, 2005). In getting across the use of western scientific knowledge in positivist way, the use of indigenous knowledge to address sustainability issues is downplayed. The implication is that a perception is created that western scientific knowledge is going to be more powerful to address sustainable development issues. More especially in environmental issues, with environmental groups proffering different views, claims of scientific impartiality and authority become feeble (Gregory and Miller, 1998). McDonald (2002) has raised the point that environmental justice is about the cultural values. Cultural values would include the use of indigenous knowledge.

In the twentieth century there has been a belief that science has a sort of neutral objectivity especially in formal curricula, a point that has been adopted by some science educators as well

(Gunstone, Corrigan and Dillon, 2007). In reality not all scientific technology and inventions contribute to reducing the damage to earth. It is believed that some scientific technology pose a threat to the environment. Dr. Vladmir Chernousenko (former head of the Ukranian Academy of Science and lead investigator of the Chernobyl Nuclear spillage clean up) questioned whether the nuclear industry has a right to exist (Freedman *et al*., 2006).

Scientific knowledge presented as highly specialized and technical knowledge in the context of sustainable development does not suit all beneficiaries, especially where the scientific background is limited (refer to the quotations of beneficiary 11). Scientific knowledge, if it has to be understood and used meaningfully in sustainable development issues by the masses of people who do not have a high level of scientific literacy, needs to be made more accessible.

Beneficiary 11: "Not really … but I discussed it with few of my colleagues and they also see it in that way - too technical for our standard…"

Beneficiary 11: "I think the issue of what I can do or learn from the SD…is to breakdown what is more scientific…into a leisurely way for everybody… can actually be able to understand it."

(QD5) Beneficiary 9: I think this was lacking as it did not come clear to me. It touched to a limited extent without examples to illustrate how to apply it in practice. (*reference made* to *science*).

(QE2) Beneficiary 11: Too scientific for previously disadvantaged learners.

Industrialization seems to have created a belief that indigenous knowledge is not scientific (Stiles, 2002). In South Africa there is a diversity of cultures and this has been recognized in the national constitution. The focus on a dominant western scientific world view in South Africa would imply a disregard for the connections between cultural practices and sustainable development. Malcolm (2007) alludes to the point that science has to be redefined if it has to be accessible and valuable to different cultures e.g. African culture.

While the responses of beneficiaries 9 and 11 raise the point about the difficulties they experienced in regard to the level of the scientific knowledge, other responses concur with responses of staff in Section 6.3.5. Staff responses have indicated that outdoor activities and practical activities are used to communicate science within the context of sustainable development to the beneficiaries.

7.7 Beneficiary response: overall comments on the environmental centre's programmes on sustainable development

The overall comments on the environmental centre's programme on sustainable development provided both comments that were in praise of the programmes and that which showed strengths, concerns, limitations and future inclusion categories in the programme.

7.7.1 Category: Strengths of the sustainable development programmes

The strengths articulated by the beneficiaries relate to the interactive nature of some of the programmes and the integrity of the programme. The interactive nature of programmes seems to have great impact on the beneficiary's understanding of the bigger picture of sustainable development.

Beneficiary 4: "What I find very interesting is that they not only focusing on book knowledge. They have quite interesting activities. I've experienced for instance, games that they played with. I remember specifically one that (*name deleted*) presented a game at the Delta recently. Basically the bottom line was also to bring in sustainable development but not only sitting there in a lecture type of setting where they're sitting and they're talking to you, but you're experiencing it personally and they're making you see the bigger picture through activities."

Beneficiary 6: "OK, the strengths were that the workshops are always very interactive…"

The integrity of the programme was linked to what was visible in the physical environment of the environmental centre. Sustainable development was not just theoretically advocated by the centre but was being implemented in practice at the centre.

Beneficiary 3: "Yes, the program has integrity...I feel that Delta is also walking the talk, I go into their toilets, they've got the right flush toilets. They're not going to sit in a meeting just now telling me about water conservation, and out there the taps are leaking. So the hidden parts, the link between their programs and their centre is very tight."

Beneficiary 6: "…The people that are facilitating the workshops they are very competent…they have a good understanding of the knowledge and skills that they need to impart."

The comments of the beneficiaries concur with findings in Section 6.3.1.3 that the environmental centre has made changes to the physical environment. The response of beneficiary 3 is an example 'observability' .i.e. the centre puts a policy into practice in the context of sustainable development. The visibility of changes to the physical environment provides evidence to the beneficiaries that sustainable development has the potential to be applied in to reality and is more than a theoretical idea.

7.7.2 Category: Concerns about the sustainable development programmes

Keeping in mind that the profile presented at the beginning of this chapter shows a heterogeneous group of beneficiaries and that all the beneficiaries have not necessarily attended the same workshops, some concerns contrary to what was stated by beneficiary 6 (in subsection 7.7.1) on the inter-activeness of the programmes were raised. The point is that all programmes or related programmes are not necessarily following a consistent approach for impact in favour of the beneficiary.

Beneficiary 7: "It was very theoretical…. But I've learned that maybe when you're running programs on sustainable development, people actually need to see because sometimes they think that is a big term and sustainable development is just the things that we do on a daily basis."

Another of the concerns raised is the insecurity of not having even a basic consensus about sustainable development. It seems that too much on sustainable development was left open to interpretation.

Beneficiary 6: "And at the end of the day it was everybody's ideas seemed to be right…There is no right and there is no wrong. It left me feeling as, I don't know, there's some things that they believed was education for sustainability but maybe I didn't believe that was education for sustainability."

Beneficiary 7: "It was not to the point as I said, the support, it must be like in your face. This is what I must do…like you know when you're driving on the road and you see that sign saying 60, you know that you must…it's 60, it's something that we have to do. You can't skip a red robot you know it's a no-no."

The differing responses show that the discourse of sustainable development is challenging when engaging with beneficiaries. The response of beneficiaries 6 and 7 show that some beneficiaries prefer the top-down approach in the context of the contested nature of the discourse of sustainable

development. In Section 6.5.1 staff have also indicated that the background of the beneficiaries makes it difficult to negotiate the communication of the discourse of sustainable development. The point to be considered is whether (in the context of the sustainable development discourse) engaging with groups of beneficiaries from a common background in workshops is better than engaging with mixed groups in the same workshop. Scott and Gough (2003) are of the belief that a collective, interdisciplinary approach is useful to learning in the context of the discourse. This research shows that there are challenges associated with the interdisciplinary approach.

Another concern that emanated from the analysis of the beneficiary response relates to the amount of information that is brought across to the beneficiary and at what level to pitch the information. It was felt that sometimes too much of information is presented, leaving insufficient time for the beneficiary to engage with the discourse. The practice of congesting programmes with information does not help the beneficiaries to adequately unpack the complex nature of the discourse of sustainable development. The congesting of information can also be interpreted as a top-down approach. This top-down approach can be considered as a simplistic metaphor that reflects the power relations of the discourse. An inference with reference to beneficiary 5 is that large amounts of information presented in short space of time does not provide the space to engage with discourse. Insufficient time to engage with the discourse has the potential of creating confusion and could result in beneficiaries becoming disinterested or developing a negative attitude to the discourse.

Beneficiary 5: "…the content was excellent, but I think that on occasions there was too much information given at the same time… a single page of flip chart paper where one concept after another were placed it just became a haze…and on occasions it became a blur to me, even with the background I've got. So folk who haven't got the background, I should imagine it became very confusing…"

Beneficiary 9: "What I can say in that workshop, maybe as I've mentioned, the first one could have been the time. They could have focused on one aspect in a particular period of time and then break it into sessions, for example, if they focus on curriculum issues it's curriculum issues today is something else tomorrow. Not congesting the whole workshop into one…But then if you get somebody who was not more deeply involved into curriculum issues and environmental education issues, that person could have been lost on the way for following up the workshop issues."

(QF2) Beneficiary 7: the programme focused more on education in a classroom setting and practicals were limited

The response of beneficiary 9 (last interview quotation) and of beneficiary 7 (QF2) also emphasise the difficulty of working with heterogeneous groups of beneficiaries in the context of sustainable development. The level at which the information is pitched for different people and the greater focus on the classroom setting does not necessarily suit the needs of all beneficiaries. Making links between sustainable development and the school curriculum is easier for beneficiaries with a background in the formal school curriculum as compared to someone who does not have such a background but attends the same programme.

7.7.3 Category: What should be included in future programmes on sustainable development?

Table 7.6 indicates various aspects that beneficiaries would like to see included in future programmes on sustainable development. Some of the issues have been alluded to in other parts of the chapter like the practical aspect of activities (beneficiary - 6).

Table 7.6 Responses to the question: What needs to be included in future sustainable development programmes? (QD6)

Beneficiary	Response
1	How to help yourself
5	Meaningful ways of effectively addressing the value systems and moral codes
6	More practical and “hands on”
7	The link between social dimensions, political and biophysical dimensions and how the above cannot be separated in implementing sustainable development
9	More focus on how to address environmental issues in a way that will reduce poverty and unemployment in communities using the environment as a resource to sustain
8 10	A policy that investigates how to make the programme known to a wide audience Taking the info beyond schools and communities and into business
11	Level of teaching must also contain indigenous knowledge

The response of beneficiary 1 is a valuable consideration for future programmes. The analysis has shown that the impact on the personal life of the beneficiaries is not great although beneficiaries felt that the intention of the programme was to bring about some change (refer to Table 7.3). The implication is that change is not an easy process and needs to be facilitated in a way that beneficiaries are able to make or attempt to make the change in practice if sustainable development is to be taken beyond a clichéd discourse.

There is a link in the responses of beneficiaries 7 and 9. While the environmental centre may be approaching the dimensions of sustainable development in an integrated way, the integration needs to be balanced and meaningful for the beneficiary to understand and put into practice. In integrating the dimensions the social dimension of sustainable development also needs to be made clear.

The comment of beneficiary 5 is of importance, although the point is not a key objective of this study. The DESD does clearly state that “Understanding your own values, the values of society you live in, and the values of those around the world is a central part of educating for a sustainable future” (UNESCO, 2005, p 7). The focus on values is a point for consideration for any organization engaging with the discourse of sustainable development. In respect to indigenous knowledge the comment of beneficiary 11 in Table 7.6 has been covered in section 7.6.3.

7.8 Concluding remarks

Delta Environmental Centre has played a role in introducing the discourse of sustainable development to the beneficiary sector and in providing opportunities for the beneficiaries to engage with the discourse. The analysis of the responses of the beneficiaries to the interviews and questionnaire confirms the literature that the sustainable development discourse is complex and challenging to engage with, especially with a heterogeneous group of beneficiaries. The responses show that in engaging with beneficiaries there are a number of aspects to consider to make the discourse more accessible to the beneficiaries.

In the environmental centre’s engagement with the discourse there is a greater focus on the professional context of the beneficiary for example educators, than on appeal to the personal context. The evidence is in the responses of the beneficiaries. Beneficiaries were unable to articulate even the most basic of changes that they made in their personal lives or attempted to make as an impact of the centre programmes. However, beneficiaries were able to give examples of how the programmes on the discourse contributed to their professional context. Amongst the contributions to their professional context was the realization that sustainable development is complex, the discourse needs to be approached holistically and be integrated especially when working within the policy of the national curriculum. The support materials provided by the environmental centre were useful to adapt for programmes of their own organizations and the examples were useful to engage participants in their own work contexts.

The literature in Chapter 2 (Section 2.2.1) as stated previously has shown that sustainable development needs to be perceived as holistic rather than isolated pillars of economic, social and environmental dimensions. While the environmental centre considers the dimensions in an integrated and holistic way, there seems to be a dominance of the environmental dimension. The dominance of the environmental dimensions is evident in the responses of the beneficiaries. The beneficiaries provided more examples from the environmental dimension (like energy, water and wetlands) than examples from the economic and the social dimensions.

The environmental centre uses different strategies when engaging with the discourse of sustainable development. The strategies include interactive approaches as well as approaches that involve presentations. The analysis shows that beneficiaries find the interactive approach more useful to understand and explore the discourse than the presentation approach. Most beneficiaries preferred to be active participants through being involved in doing than being passive participants through listening to presentations.

While scientific knowledge and skills have a role to play in the sustainable development discourse, the way the scientific knowledge and skills are developed within beneficiaries is a point to be taken into account when planning activities. Beneficiaries have expressed that a practical approach to the science underpinning sustainable development issues was preferred especially where beneficiaries do not have that scientific background. Making the scientific knowledge more accessible through less use of highly technical language would probably help to demystify the discourse, the environmental issues that are linked to the discourse and the scientific knowledge linked to the environmental issues. Another point is that there should be a balance between a western world view of scientific knowledge and cultural knowledge to address sustainable development. A dominant western worldview of science ignores the contributions of cultural solutions to the environmental problems of humanity. In South Africa indigenous culture and knowledge is being revived and has been constitutionally recognized.

One of the key challenging aspects with the engagement with the discourse is how to deal with the contested aspect of the discourse without creating the perception of the discourse as a blueprint or presenting a dominant view of the environmental centre. While beneficiaries were given the opportunity to explore the discourse, some felt that they were left not knowing exactly whether their views were appropriate to warrant implementation of the discourse, while others felt that the environmental centre's views came across as dominant. The implication is that there needs to be careful consideration of how to bring the discourse to beneficiaries without being dominant or presenting it as a blueprint while not leaving beneficiaries insecure. Perhaps as Graaf (2007) and Hopkins and McKeown (2002) have pointed out that less focus should be on reaching a consensus on defining sustainable development. The greater focus should be on how such an organizing discourse can make a useful contribution to a change in practice to address environmental issues.

In the next chapter (Chapter 8) a summary of the key findings of the study is presented and the conclusions are discussed. Emanating from the research, Chapter 8 also provides a theoretical integrated framework of suggested criteria for other environmental centres engaging with the discourse of sustainable development to consider. The suggested framework of criteria were

developed using a combination of Critical Discourse Analysis, the Diffusion Theory, and the theory on Boundary Organizations. Areas for further research are also suggested.

Chapter Eight

Engagement with Sustainable Development: Multiple expressions

We should not chide ourselves if we do not have a clear definition of concepts, as valuable concepts in the human world may be hard to define but have multiple expressions in cultures and activities all over the world.

(Hopkins and McKeown, 2002, p13)

8.1 Introduction

Chapter 8 has three foci viz. a discussion of the findings, the limitations of the study and recommendations emanating from the analysis, discussion and limitations. The recommendations are subdivided into two sections: the recommendations for organizations which are engaging with (or possibly intending to engage with) the discourse; and then recommendations for further research within the context of the sustainable development discourse (Figure 8.1 on the next page).

The research question, sub-questions and the aims of the study provide the context for the discussions in this chapter. The key research question for this study was:

How does an environmental centre in a South African context engage with the discourse of sustainable development?

The sub-questions associated with key research questions were:

1. What are the views and understanding of staff and beneficiaries of the environmental centre of the sustainable development discourse as a way to address environmental concerns?

2. How does the discourse of sustainable development feature in the practice (how things are done) and in activities (i.e. ways of engaging with the discourse, actual programme design and delivery) of the environmental centre?

3. How do the sustainable development activities and programmes of the environmental centre as way of addressing environmental concerns impact on the beneficiaries of the centre?

The key aim of the study was to explore the engagement of an environmental centre with the discourse of sustainable development. Within this key aim the intention was:

- to explore, analyze and understand the discourse of sustainable development with reference to views of the participants
- to critically explore the engagement of an environmental centre with the discourse of sustainable development by researching activities within their organizational framework
- to understand the impact of the discourse of sustainable development on the beneficiaries of the environmental centre
- to explore the antecedents (norms) of an environmental centre that impact on the engagement with the discourse of sustainable development
- to develop a broad framework for the environmental centre in the case study (and organizations with similar interests) that can be used in a reflexive way to engage with sustainable development.

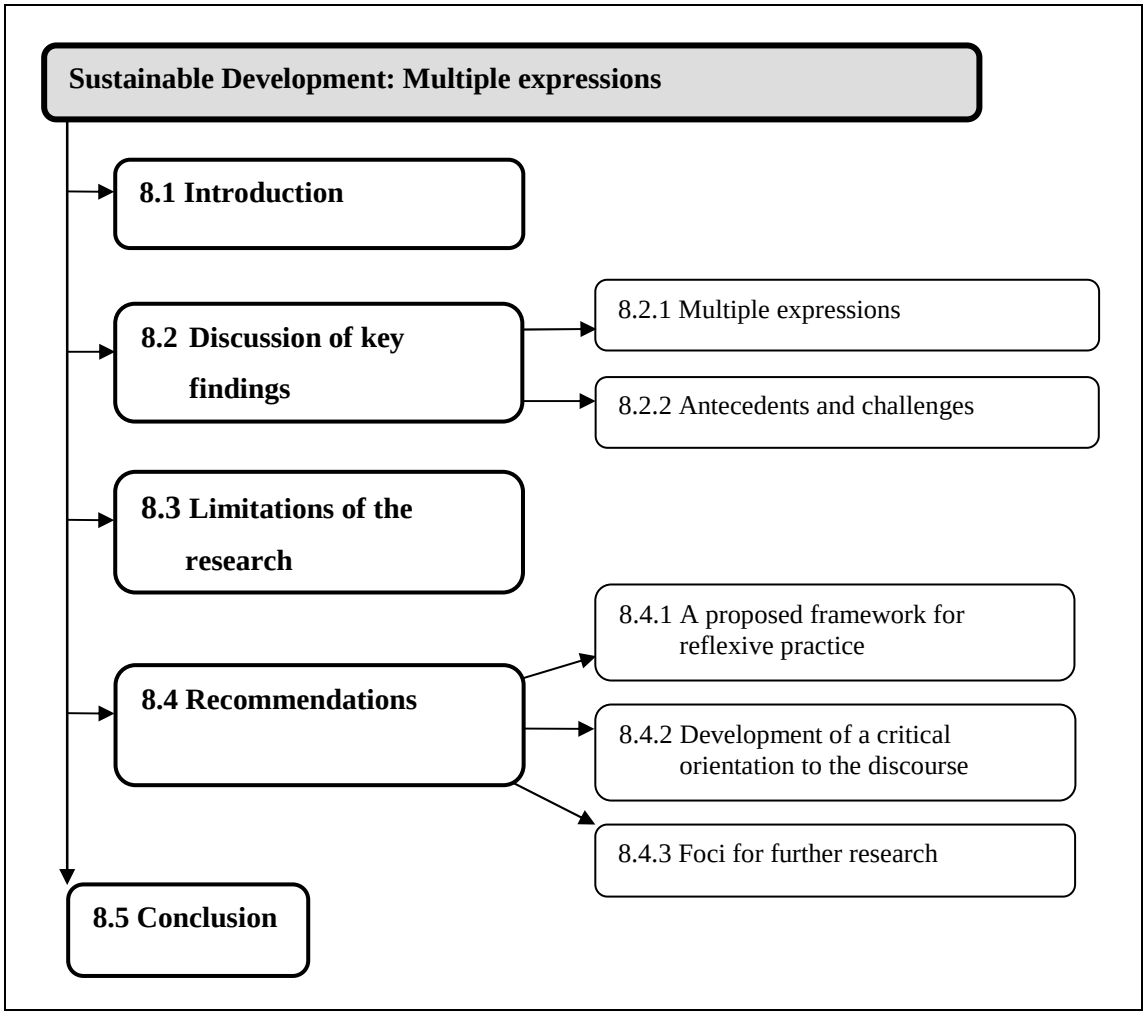


Figure 8.1 An overview of Chapter 8

To explore the engagement of an environmental centre with the discourse of sustainable development key documents of the centre (viz. the *EnviroTeach* Publications and Annual Reports), the responses of staff members, and the responses of beneficiaries, were analysed. Different factors

and foci related to the discourse were explored. A discussion of the findings follows in the next section.

8.2 Discussion of findings

The research analysis showed that Delta Environmental Centre's engagement with the discourse of sustainable development has multiple expressions. The multiple expressions manifested in the documents viz. the *EnviroTeach* publication and the annual reports, in the interpretation of the discourse, in the views of participants, and in the planning and conducting of workshops. In the context of Diffusion Theory there are usually antecedents which may present challenges, while others may support or encourage an idea or innovation. In this study both antecedents which provide challenges and which support the engagement with the discourse of sustainable development have been identified. The discussion of the findings is presented under two sub-sections. The first includes multiple expressions in the engagement with the discourse of sustainable development, and the second includes antecedents.

8.2.1 Multiple expressions

The finding in response to the research question, *How does an environmental centre in a South African context engage with the discourse of sustainable development?* is, that there is no categorical way in which Delta Environmental Centre engaged with the discourse of sustainable development. Instead, there are multiple expressions of how the centre engaged with the discourse of sustainable development. Hopkins and McKeown (2002) note that just as there is no single worldview that is viable in the world, the same applies to issues associated with sustainable development. According to Ashe *et al.* (2007) sustainable development programs must consider the local environmental, social and economic conditions and consequently will take many forms as a result of unique conditions around the world. Scott and Gough (2003) have also alluded to the contested nature of sustainable development. Based on the three views presented, in synthesis, the finding of multiple expression of the discourse, is justifiable.

8.2.1.1 Documents: *EnviroTeach* publication and the annual reports

The discourse of sustainable development had several expressions as articulated in, through and by the Centre. The Critical Discourse Analysis framework was the main framework used to analyse editions of the *EnviroTeach* Publication and the annual reports using three dimensions viz. text analysis, process of production and conditions of production. The multiple expressions in the engagement with the discourse are evident in trends in the documents.

National and International Influence: Conservation and a focus on the environment was the focus that prevailed through all editions of the *EnviroTeach*. While conservation was the key discourse in the 1990s, however, from 2002 sustainable development also became a key discourse alongside conservation, the use of natural resources and human conditions. This could be interpreted in the context of an ethical perspective to sustainable development. Hattingh (2002) raises the point that the transformational agenda of sustainable development includes the focus on questioning the risks and injustices of the world. The increase in the focus on the sustainable development discourse at the centre can be attributed to national and international influence on the activities of the environmental centre.

The *EnviroTeach* editions were usually underpinned or linked to national or international events. Some publications, especially from 2002, were underpinned by international events like the World Summit on Sustainable Development. The links to national or international events took various forms such as focus articles dedicated to the World Summit on Sustainable Development; references to the summit; titles of articles or the edition; or in quotations used in the editorial or foreword section of the edition. Some editions coincided with significant national environmental days on the calendar. This shows that the environmental centre is 'engaging with' the discourse of sustainable development in a supportive way especially where the discourse is used as a title of an article or an edition.

A similar trend was evident in the annual reports. The key discourse in reports of 1999 up to 2001 was environmental education. In reports from 2002 there was textual hybridity (i.e. a drawing from more than one discourse). The discourses of environmental education and sustainable development featured in reports from 2002. Sustainable development, however, was a focus in the annual reports of the years ending 2005 and 2006.

The discourse of sustainable development also influenced a change in the reporting style of the centre. The reporting style was aligned to the three-dimension corporate reporting framework based on economic performance indicators, environmental performance indicators and social performance indicators within the context of the environmental centre. One of the objectives achieved by the World Summit on Sustainable Development was the creation of a balance between the social, economic and natural environment with a definite shift from a perspective that sustainable development equals environmental protection (Moosa, 2004). The three dimension framework is also advocated by UNESCO for the DESD (UNESCO, 2005).

A noticeable trend is that in both documents the discourse of sustainable development became more focused and anchored within the context of events like the World Summit on Sustainable

Development (2002). It can be inferred, based on the timeline of events, that international and national events had an influence on the production of documents. The centre engages with the discourse in line with international events by basing or categorically including in texts (in the *EnviroTeach* publications and annual reports) the discourse of sustainable development.

Within the context of Critical Discourse Analysis it is evident that socio-political power also shapes the discourse of sustainable development with reference to a nation. The use of extracts from the South African Constitution that make a direct reference to sustainable development in the *EnviroTeach* publications show there is appeal to citizenship roles and emphasis on citizenship obligations. While it maybe argued that the use of the constitution in the context of sustainable development is related to the power-politics associated with the discourse, an environmental justice argument can be equally justified. The values that underpin environmental justice are so pronounced and can be easily recognised in the South African Constitution (Bond and Hallowes, 2002). These values include equitable access to health care, well being and the sustainable use of resources.

The interchangeable use of terms: In the dimension of text analysis of Critical Discourse Analysis it was found that sustainable development, sustainability, sustainable living and environmental education have frequently been used interchangeably in the text. Redclift and Sage (1994) pointed out that links are made between sustainable development and sustainability. This link is on the basis that sustainable development draws on progress but in relation to natural limits, and natural limits is expressed in sustainability (Redclift and Sage, 1994). The ecological footprint idea as a conception of sustainability expressed by Vanderheiden (2008) can be likened to the connection made by Redclift and Sage (1994) about the links between sustainability and sustainable development.

There are two comments on this finding of the interchangeable use of terms. One is that the centre is aware of the different terms. The second is that whether deliberately or not, the focus was not more on the meaning of the discourse but rather on presenting the discourse in ways that can be used to address environmental issues. Sustainable development and sustainability have been used synonymously by Hopkins and McKeown (2002). Hopkins and McKeown (2002) believe that some influential concepts are hard to define but have multiple expressions in cultures in the world.

The impression created, however, in using the terms interchangeably is that sustainable living and sustainable development are interchangeable concepts if not the same thing. Some critics believe that there is a difference. There is a belief, for example, that sustainable development may be supported by economists based on the notion that earth is an exploitable resource for economic growth (Judson, 2007) while sustainable living is about dialogue to reshape lifestyle choices (Wals, 2007).

External sources for authenticity of the discourse: Every edition of the *EnviroTeach* resource had some form of external support to authenticate and fund the publication. In the four editions that focused on sustainable development (refer to Chapter 5) the authenticity of discourse lay in sources external to the centre. The external support took different forms like significant letters or messages by persons with status of authority (like Ministers and Chief Executive Officers), photographs of Ministers, and /or letters or messages from the sponsor of the edition. There is no disclaimer in the resource that the opinions or messages of the external sources represent or do not represent the belief of the environmental centre. The impression that could be created by such an omission is that the environmental centre supports the views of these external sources of authenticity. The other impression created is that the discourse of sustainable development is widely accepted. This is contrary to the many concerns of sustainable development raised in the literature e.g. the imprecision in the conceptualisation of sustainable development (Jickling, 1999 and Ashe *et al.*, 2007), that there is a need for a deep discourse that ranges beyond possibilities of the slogan of sustainability that seems unassailable (Jickling, 2002) and the questioning whether there is such a thing as sustainable development in reality (Judson, 2007).

Approach to controversial issues: The centre does not categorically take a stance on controversial issues (e.g. the use of nuclear energy as an alternate source which appeared in the November 2005 edition). Wals (2007) has alluded to the point that creating a world more sustainable than the present one has more to do with overcoming power imbalances that limit peoples' participation. In a "National Park" sustainability project in Wales, for example, participants were introduced to problems with conflicts of interest, to show the complexity of environmental issues, to encourage participation and show that solutions are not straightforward (Brinn and Wright, 2002).

Delta Environmental Centre, however, does not exploit its influential position to convince the reader to take a particular stance on sustainability issues. Scott and Gough (2003) have suggested a collective approach to learning in sustainable development without dominance by any one stakeholder. The role of the centre may be interpreted as contributing to the collective approach by creating awareness about controversial issues. The downside of remaining neutral is that the editorial inputs seem to be biased in favour of the upside of the controversial issues (e.g. the use of nuclear energy as an alternate energy source). Part of this reluctance to take a specific stance, could also lie in the funding relations of a particular issue, and not wanting to digress too far from the funder's own discourse on a particular issue. Rationalisation that is a chain reasoning (Janks, 1998) is used in the editorials to justify or legitimate the upside of the controversial issues. The reader however, is still influenced by an external source with a belief that alternative energy sources, like nuclear energy, may be the best possible environmental solution rather than truly considering the possible dangers of the alternates.

While there are no attempts to openly challenge the discourse of sustainable development in the publications, underlying contradictions do make the discourse more complex. Human dependency (e.g. on the chemical industry) is emphasised by shifting focus to meeting human demands rather than on reducing demands, which in the long-term could be contrary to sustainable development. One of the criticisms raised in the literature is that sustainable development can be considered an oxymoron (Judson, 2007) and therefore will not work in reality. The environmental centre, however, in some editions does bring out the message that environmental concerns, within the context of sustainable development, is not necessarily about meeting demands but about balancing human needs and reducing demands on the environment. This message is brought out in the water wise education, financial literacy and energy usage editions that specifically focused on sustainable development.

In the approach to controversial issues, Delta Environmental Centre 'frames' the institutional power in its role of a boundary organization. A study of the International Research Institute, however, has shown that boundary organizations are faced with numerous challenges (Agrawala, Broad and Guston, 2001). One of the challenges is to what extent should the boundaries be "protected or blurred". The centre takes a more neutral position by not presenting a categorical view on controversial issues. The centre sometimes presents both the pros and cons of controversial issues and also does not contest other viewpoints (especially the views expressed in the foreword by people outside of the centre). This may be interpreted as the centre taking the precaution not to project its own identity as a boundary organization and to influence the beneficiaries but provide them with the space to make their decisions. One of the sustainability challenges is that the space for individuals to make their own choices to take responsibility and to act seems to vary tremendously (Wals, 2007).

Intertextual references and influence on the beneficiaries: Intertextual references were always evident in editions of *EnviroTeach* that focused on sustainable development, as well as in other editions. Some of the intertextual references were used repeatedly within the context of the discourse of sustainable development (in the same or in different editions). Examples of the more common intertextual references include: The South African Constitution, with special reference to the section on environment; The National Curriculum Statement (NCS); National Environmental Education Programme (NEEP); The World Summit on Sustainable Development (WSSD); The Johannesburg Plan of Implementation; The Earth Charter and *Agenda 21*.

The influence of the intertextual references was found to be multiple in the context of the discourse of sustainable development. According to Hopkins and McKeown (2002) there is a need for concerted, integrated and trans-disciplinary approaches as a diverse contribution (rather than one

policy, profession or sector) to accomplish a shared vision of sustainable development. The South African Constitution makes reference to sustainable development and citizenship. The beneficiary is influenced as a citizen to uphold the constitution within the context of the discourse. This influence of the centre on the beneficiaries may be interpreted within an environmental justice perspective. McDonald (2002) alludes to the point that environmental justice is not about rights but of about human accountability as well.

The intertextual reference of the World Summit on Sustainable Development informs about the international concern for environmental issues while the reference to *The Johannesburg Plan of Implementation* arising from the World Summit on Sustainable Development shows that the world has mobilized to take action on environmental issues. *Agenda 21* and the Earth Charter raised attention to the point that sustainable development is not a new discourse. The intertextual references provide legitimation for the discourse and puts pressure on the beneficiary to engage with the discourse.

8.2.1.2 Interpretation of and views on the discourse

There are different schools of thought about sustainable development (Treurnicht, 2000). It was found that staff of the environmental centre did not always share the same interpretation or views on the discourse of sustainable development. The same applied to the beneficiaries. In their responses all the staff members were in support of sustainable development. The support seemed to be based on two points. The first is that sustainable development does not go against the policies of South Africa and secondly, the discourse raises awareness and provides some direction to improve the state of the environment. The responses however, showed that while there was support, there was acknowledgement that there are potential difficulties to translate the discourse into practice. Examples of the potential difficulties to translate the discourse into practice were diversity of cultures within a country (like in South Africa), oversimplification of the discourse, and that there seems to be no tangible evidence of what has been successfully translated into practice.

It can be inferred from the variety of responses of staff that although it is evident that the environmental centre supports sustainable development (like adopting the corporate reporting style of sustainable development), a particular definition has not been imposed on staff. The implication is that in the interaction with beneficiaries, staff are articulating their own interpretation of sustainable development.

The responses of staff members, by raising some of the criticisms to sustainable development, concur with the views expressed by others e.g. Ashe *et al*. (2007); Judson (2007) and Wals (2007)

that sustainable development is a complex discourse. While the views of the staff and of the beneficiaries have shown there are also concerns about the discourse of sustainable development, there is no evidence of opportunities for the discourse of sustainable development to be challenged either in the editions of *EnviroTeach* or in the workshops held by the centre. The perception created in the publication is that sustainable development is widely accepted without much contest when in reality staff and the beneficiaries have raised concerns.

The institutional power of the environmental centre, however, is controlled in its function of a boundary organization. The centre takes a neutral position through not taking a categorical view, by sometimes presenting both the pros and cons of controversial issues and by not categorically contesting other viewpoints (especially the views expressed in the foreword by people outside of the centre). The consequence is similar to the finding under external sources for the authenticity of the discourse (discussed earlier in this chapter). The beneficiary may sometimes be more likely to accept the rational views put forward for the controversial issue by people outside the centre without critical consideration of the issue.

8.2.1.3 Sustainable Development and Environmental Education

There were differences in perspectives with respect to the relation between environmental education and education for sustainable development. A similar finding was reported in an international debate on education for sustainable development in the Netherlands in 1999 (Hesselink, van Kempen and Wals, 2000). Four trends of thought were identified in the analysis in this case study of Delta Environmental Centre:

- *Environmental education is the same as sustainable development*
- *Environmental education and sustainable development are linked*
- *There is some difference between environmental education and sustainable development*
- *There is significant difference between environmental education and sustainable development depending on the history and context from which it is viewed*

With only two of the staff members viewing sustainable development as captured in the fourth trend, it can be inferred that staff perceive that there is much in common between environmental education and sustainable development. This also seems to be the overall trend in the centre because in the annual reports, environmental education and sustainable development have been used interchangeably, as mentioned in Section 8.2.1.1.

In editions of *EnviroTeach*, environmental education and sustainable development are not shown as being separate issues. The same model used to provide a conception of the environment (see Figure 5.3, Section 5.3.1.4) is used in editions that make reference to sustainable development. The dimensions of sustainable development (environment, socio-political and economic) are also represented in the model. Robottom (2007, p90) has questioned whether sustainable development is the mere "rebadging" of environmental education. The engagement with the discourse, as is done by the centre, by using the model and the terms interchangeably, creates the perception that sustainable development is the "rebadging" of environmental education. In other words the centre continues with focus on environmental education but instead uses sustainable development as the 'new badge'. The two examples that could be used to support the perception of "rebadging" are the use of the model of the environment (mentioned previously in this paragraph) and the 'Active Learning Framework', both of which have been widely used in environmental education way before sustainable development became popularized.

8.2.1.4 Sustainable development: a process

The active-learning framework (Figure 5.4 in Chapter 5), often used in environmental education, has also been used in the discourse of sustainable development. It can therefore be inferred that learning within the context of sustainable development can also be process oriented i.e. finding information, exploring, questioning, acting and reporting. There is also a need to develop knowledge, skills and values to guide people into sustainable livelihoods, implying that sustainable development is not an outcome but a process (Hopkins and McKeown, 2002). The cyclic nature of the active learning framework provides the context to develop skills, knowledge and to out bring values. The cyclic presentation of the active-learning framework also shows that a reflexive approach can be applied to sustainable development. Reflexive would refer to reviewing the processes of finding information, exploring, questioning, acting and reporting and then responding by making appropriate changes in whatever form it may require (e.g. decision-making or finding a new solution to the environmental issue). It is the reflexive perception that brings focus to environmental concerns, like the use of natural resources, within the context of development.

The active learning framework is not limited to an individual but to a collective approach as well. For people to have a sustainable place in which to live and work, a process of collective creative thinking and action is needed (Clover, 1996). Scott and Gough (2003) have proposed that learning in the context of sustainable development needs be a process of exchange where everyone contributes and is willing to learn. The findings show that the centre perceives sustainable development as a process rather than an outcome.

In using Critical Discourse Analysis (with specific reference to the conditions of production), it is evident that the environmental centre, while placing great emphasis on the dimension of environment within the context sustainable development, also considers the social dimension as important. The belief that nature will self-compensate for human impact on and destruction of the environment is contested. The evidence of the contestation comes in the form of constant emphasis of an integrated relationship amongst the economic, socio-political and environment dimensions of sustainable development. The key finding is that sustainable development is not a discourse that is "standalone" but is influenced by other events locally and nationally e.g. social or economic stability. Fien and Tilbury (2002) have pointed out that from a systemic view sustainable development is about a process of change guided by interdependent principles of the ecological (natural environment) and the social dimension (human activities). This also contributes to the notion that sustainable development is not an outcome but a process.

8.2.1.5 Education: The Formal Education Curriculum

Within the framework of Critical Discourse Analysis, education emerged as the key institutional power that influenced the engagement with the discourse of sustainable development. The institutional power in the conditions of production is evident in the dominance of the formal education system in documents of the centre and in workshops. The comment that appeared in the June 2005 edition of *EnviroTeach* (page 30) sums up the strong supportive stance taken by Delta Environmental Centre on the role of the formal curriculum: *South Africa has a tailor-made curriculum and is a trendsetter in education for sustainable development*.

There is evidence that Delta Environmental Centre has, at times, "blurred" its boundaries as a boundary environmental organization. The centre uses the formal education system to communicate sustainable development to beneficiaries. In doing this the implication is that sustainable development is not necessarily confined to a sector but can be applied across sectors. Studies in Australia for example as reported by Wooltorton (2007) in a case study which focused on school-based learners, and Scott (2007) in a study on professional learning organized by the Department of Environment and Conservation, provide evidence that the context of the formal education curriculum can be used to communicate the discourse of sustainable development. The responses of the beneficiaries and the activities in *EnviroTeach* are evidence that the formal education curriculum is a medium that the centre uses to a large extent to communicate the discourse of sustainable development. The evidence is in the use of the curriculum policy and terminology to frame activities for sustainable development. This is where the blurring of the boundaries becomes evident. While the centre uses the formal education curriculum to communicate the discourse of

sustainable development it is also educating the beneficiaries on the policy of the formal education system, some of whom have little or no previous knowledge.

One of the key foci that influenced the conditions of production within the context of sustainable development was curriculum change. Curriculum change in South Africa has incorporated the discourse of sustainable development. For example, sustainable development is a part of one of the Learning Outcomes of the subject Life Sciences. One may argue that the centre has chosen the formal school curriculum because it makes reference to the discourse. This could be true. The point, however, is that as with the formal school curriculum, there may be other opportunities to communicate the discourse to beneficiaries. These opportunities need to be identified and used to engage with and communicate the discourse of sustainable development. Other opportunities include the use of modern technology e.g. an interactive website. An interactive website is a dynamic and evolving knowledge space to update information as well as to create a sustainable on-line learning environment (Quinton *et al*., 2007).

8.2.1.6 Initiatives of change

It is evident that there was no deliberate decision to adopt sustainable development but rather the discourse was gradually used to support and enhance the activities of the centre. International events like the World Summit on Sustainable Development and the Decade of Education for Sustainable Development had significant influence on the context of practice at the environmental centre. There was one opinion that the discourse had no real impact on practice of the environmental centre because that was the way things were always done at the centre. This was not a view held by those who had been active in the centre for more than ten years.

There is evidence within the context of sustainable development that the discourse has influenced the centre to engage in different aspects related to change. Hattingh (2002) pointed out that the sustainable development discourse has always been related rather than excluded from the social, institutional and intellectual transformational agenda. The analysis shows evidence that there is a belief in Delta Environmental Centre that sustainable development is more than just a discourse and that the discourse has the potential to be translated into practice through initiative. Evidence of this is discussed in the paragraphs that follow.

Change to a corporate reporting style: The centre changed from a conventional reporting style to a corporate reporting style (i.e. from a reporting style that did not include all of the economic, social and environmental dimensions in an integrated way to one that did) as advocated for the discourse of sustainable development by the NSSD. In Australia, although still struggling with issues of

sustainability, a number of corporate companies have started to report according to the Global Reporting Initiatives with reference to indicators of environmental management and training (Tilbury, 2004). The corporate reporting style is also evidence of support for a holistic approach to environmental challenges. The holistic approach is common to both environmental education and sustainable development. The holistic approach is an indication that a synergy is perceived between environmental education and sustainable development, and the discourses are not viewed as being extremely different by the centre.

Participation in sustainable development initiatives: It is evident in the annual reports (refer to Chapter 5 for quotations) that the centre supports the discourse as a strategy and supports events related to sustainable development. Active support for the discourse is shown through participation in an advisory panel to develop a national education action strategy for sustainable development and through providing support for schools in the Bontle-Ke-Botho initiative which is a competition with a focus on sustainable development. The appraisal of the Environmental Science Teaching Programme as a step towards sustainable development in Zimbabwe (Chikunda, 2007) is an example in the literature of how participation in the context of the discourse of sustainable development manifests.

Policy influence: In the annual reports the centre has acknowledged the significance of the DESD and has indicated that the framework of the DESD which was launched in 2005 is going to be used to shape activities and programmes of the environmental centre. According to Schreuder, Reddy and Le Grange (2002), key policy documents in South Africa such as the National Qualifications Framework of 1996, the South African Constitution and the Bill on Environmental Management of 1998, all emphasize the importance of sustainable development. These policies had influenced the Science and Sustainability Project in South Africa that Schreuder, Reddy and Le Grange (2002) had reported on. The response of staff, however, in the context of sustainable development has shown that no categorical outcomes for activities were actually written down or documented. An inference from the evidence is that the engagement with the discourse can also take the form of “unwritten policies”. For example, although there are no written outcomes for sustainable development, the centre includes the outcomes in programmes by virtue of accepting the DESD to underpin the programmes.

According to the response of staff, the discourse has influenced management of the centre mainly through a policy focus. There was a greater commitment to ensure policies are implemented and to use policy to become reflexive about practice (how much is being used e.g. paper). The centre has engaged with the discourse through a focus on its own policies.

Physical changes: In exploring the engagement with sustainable development, it can be inferred that the discourse has influenced the environmental centre to make observable changes. *Observability* (Rogers, 2000) is an attribute of innovations in the framework of Diffusion Theory where the innovation is made visible. The centre has implemented principles of sustainable development through revamping its toilets in tandem with water wise usage tips and has started to replace light bulbs with the more energy efficient ones. These are tangible examples that show evidence that the discourse of sustainable development can be translated into practice. These examples were also cited in beneficiary responses as an indication that sustainable development has the potential of being realized. The retailing industry has also shown that physical change supports sustainable development in practice. For example Pick 'n Pay in South Africa had taken steps to reduce power consumption by retrofitting all stores with automatic power saving switches (Chamberlain, 2004).

Sustainable development in accredited courses: The centre has received provisional accreditation to offer environmental education and related courses. The discourse of sustainable development will be integrated into accredited courses and not offered as an independent course or module. This shows that the centre has adopted an integrated approach to sustainable development. The approach confirms the view that the environmental centre recognizes a relationship between environmental education and sustainable development. The relationship is categorized by sustainable development being a discourse that is integral to environmental education and not the other way around. An international study by Hesselink, van Kempen and Wals (2000) has also shown that this is one of the ways in which the relationship between sustainable development and environmental education is perceived.

8.2.1.7 Science and sustainable development

Scientific skills (like investigation, observation, data collection, interpretation and analysis) and knowledge are developed in beneficiaries as part of activities. The active-learning approach (which involves three cyclic steps of investigation i.e. to find information, explore and question, act and report) is claimed as the popular framework used in activities to develop scientific knowledge and skills. The inference is that the scientific process in the context of sustainable development can be applied as an "open" process. Reductionist methods of science e.g. cause and effect have limits in sustainable development (Harrison, 2000). The active learning framework is not applied as an end to a cause and effect but rather as an exploratory framework which incorporates continuous assessment of the result.

The responses in the questionnaire and in the interview have shown that there is a focus on scientific knowledge in specific activities or where there is a need. Different approaches are used to

communicate scientific knowledge across to the beneficiaries. The approaches include outdoor or field activities relating to science at specific sites (like at rivers and dams) and as well as indoor activities. The inclusion of science as part of sustainable development programmes is an indication that the environmental centre views science as part of the discourse.

It was found in the analysis of the responses of the beneficiaries that scientific knowledge is sometimes presented in a way that is too technical, at a high level and in an authoritative manner making the science less accessible and difficult to understand within the context of the discourse. Leach, Scoones and Wynne (2005) allude to the point that science is usually held to be authoritative, objective and universal, making it difficult to challenge or question. Presenting science in an inaccessible way tends to emphasise and support the notion that science is objective and authoritative (Ravetz, 2005). The point that the environmental centre needs to consider is that while scientific knowledge may be highly specialized there is a need to adapt the knowledge to a level where it can be accessed for use in the everyday lives of the beneficiaries, but that this must remain credible. It is only then that science is more likely to be considered for greater use within the context of sustainable development.

8.2.1.8 Engagement with discourse: Impact on the beneficiaries

Communication of the discourse: One of the aims of the diffusion of an innovation is to reach a critical mass (Rogers, 2000). In this study it was found that multiple strategies are used to communicate the discourse to the beneficiaries. The emphasis is on integrating the discourse into programmes rather than to have programmes with a categorical sustainable development focus. Staff responses have confirmed that the rationale underpinning the programmes is to get the beneficiary to understand and practise the principles of sustainable development. The emphasis on getting the beneficiaries to understand the discourse of sustainable development was through the use of relevant and real examples as well through the use of games and case studies. The beneficiary responses confirmed that they found it useful to also use the same activities when they had to communicate the discourse to others in their workplace.

Personal perspective: The usefulness of knowledge communicated may be debatable and also depends on the interest of the receiver (Scott and Gough, 2003). The analysis showed that programmes of the environmental centre have greater appeal to the professional development practice rather than to the personal practice of beneficiaries. Two out of the thirteen beneficiaries who participated in the interviews were able to give comments on their personal practice while others focused on professional practice. On the face value of the beneficiary response this is of concern. It shows that there is a perception that environmental issues are more work or profession

related than of a citizen or personal concern. People, however, may have the right attitude to an innovation but as Rogers *et al*.(2005) have pointed out, the big gap on how to put it into practice makes it difficult. People need to be conscious of the impact of their lifestyles on the environment all the time and not only in their workplaces.

Professional perspective: The beneficiaries alluded to different aspects of impact on their professional lives. There was a realisation that while sustainable development focuses on important topics and issues, it is not a straightforward discourse. The programmes exposed beneficiaries to a variety of topics within and outside their professional context. The way in which the discourse was presented (practical and integrated) by the centre supported the beneficiaries to integrate the discourse in activities within their work context.

The centre has also contributed to the knowledge base of beneficiaries i.e. background information on the discourse and the link to the formal curriculum. Beneficiaries were able to apply what they gained to develop their own programmes within the context of the formal curriculum. A similar finding was reported by Scott (2007) in the evaluation of a professional development programme in Australia. In addition to the participants having gained information they were also able to apply what they gained to design activities for learners within the formal school curriculum.

Creating awareness: The responses of the beneficiaries have shown that programmes have created or increased awareness of the discourse and environmental issues. The awareness was created, in addition to exposure to different topics, through drawing attention to and interacting with related policies (e.g. The National Curriculum Statement - the policy guiding the implementation of the curriculum in South Africa) and through reference to guidelines for the implementation of the Decade of Education for Sustainable Development (UNESCO, 2004).

The key point that arises from the analysis based on personal and professional impact is that there is a need to explore ways that have greater influence on the beneficiaries to become conscious in taking decisions about lifestyle choices in the context of environmental impact and sustainable development. While the creating of awareness is of value it is not effective to address sustainable development issues if it does not manifest in practice or action in the personal (which includes their societal roles as citizens) and professional context.

8.2.2 Antecedents and challenges

According to Rogers (1968), a pioneer of Diffusion Theory, antecedents are factors, norms or any existing conditions that may have some influence on the goals or outcomes of the innovation. A

finding in this study is that there are two kinds of antecedents that influence the engagement of the environmental centre with the discourse of sustainable development viz. antecedents that support the engagement and antecedents that provide a barrier to the engagement with the sustainable development discourse. These antecedents and some of the challenges are discussed in the sections that follow.

8.2.2.1 Antecedents which support the discourse

The key antecedents that were identified as supporting the engagement with the discourse of sustainable development are discussed in the paragraphs that follow.

(i) There is a synergy between the principles of the formal education curriculum and the discourse of sustainable development. The synergy in principles has enhanced both the institutional power of education and the support for the discourse of sustainable development as ways to address environmental issues. Principles like a holistic approach i.e. considering all aspects of the environment, social transformation, equity and access to information and a high emphasis on values such as a healthy environment are common to both education and sustainable development.

(ii) The synergy between the principles of environmental education and the principles of sustainable development supports the discourse. The focus of Delta Environmental Centre is environmental education. Environmental education is about knowledge and values; it includes all aspects of human activity and the environment, and is about informed decision-making and action at both personal and societal levels (Ramsey and Hungerford, 2002). The principles of sustainable development (UNESCO, 2005) contain similar elements of environmental education.

(iii) The active-learning framework used in environmental education as evident in the text analysis was applied to activities in sustainable development. Research has shown that responsible environmental behaviour (Ramsey and Hungerford, 2002) amongst other behaviours is about knowledge about environmental issues, skills in identifying and investigating environmental issues and solutions, skills in using environmental action strategies and internal locus of control i.e. decision-making about lifestyles. The active learning framework is about investigating issues - finding out information, analyzing and taking action. One of the principles of sustainable development is to prepare people to plan, cope and find solutions for environmental issues that challenge planet earth and its inhabitants (UNESCO, 2005) The active-learning framework supports the engagement with sustainable development.

(iv) Legislative imperatives - The South African Constitution: Legislative imperative is identified as an antecedent that supports sustainable development and not as a factor to coerce participants. Government has a duty to citizens to provide information and credible guidelines (Wilbanks and Stern, 2002) for social and environmental stability. The South African Constitution, Act 108 of 1996, makes categorical reference to sustainable development in the context of ecology, natural resources and justifiable economic and social development. The constitution provides direct support for and justifies the engagement with the discourse of sustainable development.
(v) Compatibility with recognition of environmental issues: Situational power in the context of Critical Discourse Analysis is about the existing contexts or issues that influence a discourse. As mentioned in section 5.3.3.4 concerns of global warming, poverty and diseases have been identified by the world and local contexts as situations that are posing great threats to both human life and the natural environment. The recognition of the environmental problems and the need to find solutions supports the discourse of sustainable development (as an innovation) since the discourse suggests a way to address the situation. In a study in San Francisco on The Stop AIDS innovation, it was found that support for, and some success of the innovation amongst the gay community was evident based on the relative advantage of the campaign of responding to the situation of the impact of the disease on society (Rogers *et al.*, 2005).

8.2.2.2 Antecedents which pose a challenge to the discourse

Antecedents and perceived barriers which present a challenge to the engagement with the discourse have been identified through the analysis of the staff responses. The barriers are:

(i) Diverse backgrounds of the beneficiaries: The diverse backgrounds of the beneficiaries and different perceptions of the discourse make the negotiation of understanding of sustainable development difficult. In the context of Diffusion Theory, the agent mediating change needs to put in a greater effort where there are differences in the orientation between the beneficiary and the agent (Rogers *et al*., 2005).

(ii) The influence of the material world: Based on the response of staff, in general, society seems to be caught up in the appeal of the materialistic world making it difficult to communicate the importance of sustainable development to make life-style changes. Marketing offers advertiser opportunities or product placement shaping the choices of society and creates new needs on the spot (Lutzenhiser, 2002). While the impact of technology and some aspects of lifestyle may be known to impact on the environment, society more often continues with choices of the convenience of technology as opposed to trying to change life-style choices. Rogers *et al.*(2005) have alluded to the

point that sometimes attitudes to an innovation are favourable but the gap that exists is putting it into practice.

(iii) Language diversity: In South Africa there are eleven constitutionally recognized languages. This implies that within South Africa communities use different languages to communicate, which may not necessarily include English. The *EnviroTeach* resource is only published in one language i.e. English. This could be a major barrier to the communication and understanding of the discourse especially in communities where the vernacular is commonly used and where English is the second or third choice of written or spoken language. Translation into the vernacular may not necessarily convey the meaning of the discourse in the same way that it is articulated in the English. It is already a challenge to reach consensus on the discourse of sustainable development in English, the difficulty is certain to increase for consensus across languages.

(iv) Financial Constraints: Delta Environmental Centre is a non-profit making organization and has financial resource constraints which provide a challenge to the implementation of the principles of sustainable development. This was a point raised in the response of staff.. One of the agreements of the WSSD was that for the implementation of sustainable development there is need to mobilize new and additional resources (Moosa, 2004). For example the *EnviroTeach* resource published by the centre is dependent on external funders.

Other challenges to the engagement with the discourse of sustainable development identified in the study are:

- not everybody within the centre seems equally committed to challenging his or her personal practices and lifestyles and practice at the centre;
- not having a more accurate sense of the impact of the programmes to be able to improve on what is offered to beneficiaries;
- and the threats to the centre's sustainability since there is no firm arrangement on the expired lease for the premises on which the centre is based.

The findings show that the engagement with the discourse of sustainable development is not a smooth and unchallenged process. While some of the antecedents pose a challenge, the response to address these challenges is also not easy. Providing a basis to change perceptions of the material influence on society is also dependent on the sources of the material influence which is the business and the economic sector and not just on communities or individuals. This implies a challenge to the environmental centre to engage with the economic sector on the discourse of sustainable

development. There was no evidence of engagement with the economic sector on the discourse itself, but evidence of engagement for financial support.

8.3 Limitations of the research

In the field of research there may be limitations which are sometimes beyond the control of the researcher. In this section the strategies that were used to reduce the limitations in this study are discussed. The reader should consider the limitations when interpreting the analysis, discussion and the summary of the findings.

8.3.1 Possible limitations with data gathering

The key sources of the data were documents, the staff and beneficiaries of the environmental centre. Questionnaires and interviews were used to gather data from the staff and beneficiaries. Some of the beneficiaries and staff had more inputs to make after the tape recorded interview. Perhaps they felt more relaxed, although everything was done to eliminate the possibility of any intimidation during the tape recording of the interview. While their additional comments were written down by the researcher there could be a possibility that they had more to contribute. Although given the option to make further input at any point in time no participant responded to the invitation. Valuable information for the research could have been retained by the participants.

Staff members were reassured about the confidentiality of their names being used in the discussion of their responses in the research report. Staff members of the environmental centre however, could have been placed between the position of loyalty to the centre (employer) and articulating exactly how they felt. Some information and thoughts could have been withheld by staff members.

The questionnaires were self-administered by the staff and beneficiaries. While the intention of the self-administered questionnaire was for the participant to respond in a relaxed and thoughtful way without external pressure or supervision, the reality might have been different. The questionnaire for staff was six pages in length and the questionnaire for the beneficiary was four pages in length. The questionnaires could have been perceived to be too time consuming. There is the possibility that participants responded to some questions with thought and while others may not have been as thorough leaving out substantial information. In a question (C9) where staff participants were asked to *describe five examples of the kinds of activities for your beneficiaries in programmes that involve sustainable development*, some respondents only listed examples but did not describe the examples. The information that was provided was not always complete.

Both staff and beneficiaries did not respond to some questions in the questionnaire. One of the reasons could have been the length of the questionnaire. Although the questionnaire was piloted and measures were taken through subjecting the questionnaires through a process of development, there is a possibility that some of the participants did not fully understand the questions and therefore did not respond or provided a partial response. There is also the possibility that the piloting of the tools may have been too limited. The other possibility is that respondents did agree with questions and for some other unknown reason chose not to respond. All the possible limitations of the questionnaire could have contributed to some valuable information that was not forthcoming to enhance the findings.

8.3.2 Selection of beneficiary participants

Beneficiaries were selected in consultation with the Chief Executive Officer by first drawing up a list of participants who had attended workshops or activities that involved the discourse. The list came up to a number of twenty-five. The researcher had originally planned to involve ten participants as an adequate number for the purpose of the study. The beneficiaries from the list were contacted and eventually not all twenty-five participated. Although the study is a qualitative one, there is a possibility that from the hundreds of beneficiaries that attended the centre's activity, some with valuable experiences and different thoughts on the discourse could have been left out. The same applies to those who did not participate from the randomly narrowed list of twenty five participants.

8.3.3 Bias in research

No matter the efforts that the participants and researcher make to be objective in responses and in analysis respectively, the element of bias cannot be totally avoided (Fraenkel and Wallen, 1990). Firstly, with the researcher being actively involved in the field of environmental education, in being aware of the debates around sustainable development and having previously interacted with Delta Environmental Centre there could have been a possible subconscious influence during the analysis and in coming up with the findings. A multi-method approach of using document analysis, semi-structured interviews and questionnaires, and doing member-checks would have countered or reduced biases contributing to the trustworthiness of findings.

The bias of the participants is beyond the control of the researcher. The use of semi-structured interviews and probing during interviews helped to clarify responses but did not necessarily eliminate bias in views and bias to interest in the research. The similar biases could have applied

when participants responded to the questionnaire. The source of the bias could have been in the loyalty to the environmental centre.

8.3.4 The topical nature of the discourse

Due to the topical nature of the discourse, constant changes are likely. While the discourse is topical, research contributions to the discourse in environmental centres within the context of response and practice are very limited. There is a gap in that there are no categorical reference points or benchmarks against which to continuously compare the findings.

8.3.5 Analysis of documents

Document analysis is acknowledged as usually being an unobtrusive way of gathering data. However, information in documents is subject to the interpretation of the researcher. Critical Discourse Analysis has helped in making interpretations more accurate through the rephrasing and redirection of questions within the different dimensions of text analysis, conditions of process and conditions of production. Due to time constraints not all of the twenty two editions of *Enviroteach* were fully analysed. The editions were narrowed down to thirteen, and eventually four for more complete analysis based on the focus of the research. Other editions may have contained information that could have made a useful contribution to the findings.

8.3.6 Use of Boundary Organizations as a theoretical framework

Boundary Organizations as a theoretical framework was useful to an extent to understand the views and role of the environmental centre in engaging with the discourse of sustainable development as a mediator between the discourse and the beneficiaries. Boundary Organizations has, however, not been used exhaustively for two key reasons. Firstly, it was an intentional decision to use it as a supporting theoretical framework to Critical Discourse Analysis and Diffusion Theory to understand the aspect of the mediating role of the environmental centre between the discourse and the beneficiaries and not as a single analytical tool. Secondly, literature on boundary organizations with contextual relevance to sustainable development is virtually non-existent. Therefore, careful thought needs to be given by researchers who would want to use Boundary Organizations as a key theoretical framework within the context of sustainable development in future research.

In reference to the findings and considering the limitations the recommendations based on the study are presented and discussed in the next section.

8.4 Recommendations

The intended aims of this study included: to inform the implementation of sustainable development in environmental centres within current trends and debates of the discourse, and to develop a broad framework for the environmental centre in the case study (and organizations with similar interests) that can be used in a reflexive way to respond to sustainable development. In response to the research question the recommendations emanating from the overall study and analysis fall under three categories viz. one is a suggested framework for reflexive practice, two, the need for critical orientation of the centre and three, the possible foci for further research.

8.4.1 A proposed framework for reflexive practice

The data gathered through the research has shown that there are many points for consideration when engaging with a challenging discourse such as sustainable development. There is need for organizations to be aware of both the existing norms and of other factors that may contribute to managing the challenges in response to the discourse in a more informed way. Three theoretical bases have been used to explore the response of an environmental centre to the discourse of sustainable development. The three theoretical frameworks viz. Critical Discourse Analysis, Diffusion Theory, and Boundary Organizations (the last mentioned was least used), have all been discussed in Chapter 3. Emanating from the analysis the researcher has brought together in the context of the discourse the three theoretical bases into an integrated framework termed the *Integrated Discourse-Innovation-Boundary framework.*

The integration of the three key theoretical frameworks is shown in Figure 8.2. This integration is made possible by taking relevant tenets of each theoretical framework and grouping them into a focus. For example under foundational factors:

- the vision, mission and role are with reference to functions as a boundary organization
- antecedents are a tenet borrowed from Diffusion Theory
- text analysis is a tenet borrowed from Critical Discourse Analysis

The factors are grouped into three categories viz. foundational factors, praxis and influential factors. Foundational factors would refer to those factors which fundamentally guide the framework of the organization within the context of the discourse or a response to the discourse. Praxis refers to the translation of the discourse into practice within the organization. Influential factors refer to what motivates or influences the organization to adopt the discourse and facilitate its diffusion to beneficiaries.

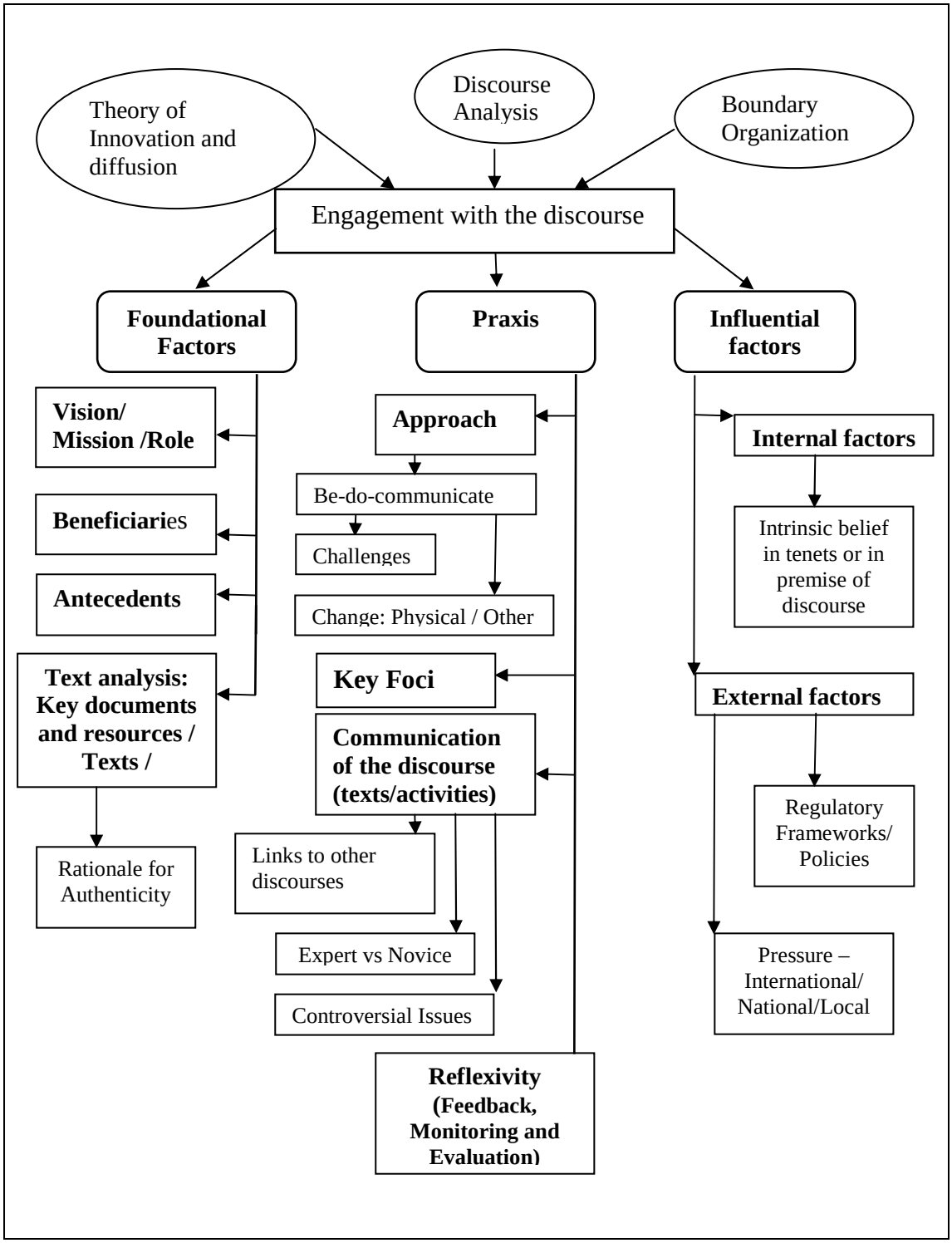


Figure 8.2 Integrated Discourse-Innovation-Boundary framework

The Integrated Discourse-Innovation-Boundary framework may be used to:

- to **explore and analyse** the discourse on sustainable development (or may be used to analyse other related discourses as well)
- to develop more categorical institutional (organizational) indicators or criteria or statements when **planning** to engage with the discourse in a more informed way
- to develop more categorical institutional (organizational) indicators or criteria or statements to explore the response with the discourse with a **reflexive approach** i.e. to also review vision and practice and to follow up with appropriate changes.

The *Integrated Discourse-Innovation-Boundary framework* can be translated into a more detailed point of departure to understand and explore the engagement with the discourse of sustainable development. The tool in Table 8.1 is a translation or commentary of the *Integrated Discourse-Innovation-Boundary framework* into a set of dynamic points of departure for reflexive engagement with the discourse of sustainable development. The word dynamic is used in keeping with a context of change to show that sustainable development is not a blueprint but a framework that may need to be adapted according to changing circumstances (both human and natural).

The tool in Table 8.1 shows the key foci on the Integrated Discourse-Innovation-Boundary framework. For each focus a big question or questions have been provided. The big questions were developed based on the analysis of the data and on the findings of the study. The point of departure guides the user of the framework to a possible starting point to respond to the big question. The commentary gives a brief description of what are the possible criteria or evidence to look for to arrive at a decision in response to the big question.

The analysis of the response to the *Integrated Discourse-Innovation-Boundary framework* (*IDIB* framework) and the tool can be used to find out how the organization is engaging with the discourse of sustainable development. The researcher does not claim the framework nor the tool as a complete evaluation of the engagement with the discourse of sustainable development although the framework and the tool have the potential to be developed into one. The researcher suggests that the framework and tool be used to identify points that may serve to enhance engagement with discourse. In this respect points which are identified as challenges could then become a greater focus on seeking ways to overcome them.

The framework and tool have other forms of potential use. The framework can draw attention to Delta Environmental Centre and to other organizations that find it of use, to areas that might not

have been previously considered. For example the impact of political factors (refer to Table 8.1) on the engagement with the discourse might have not been previously considered. The framework and the tool also have the potential of providing a basis on how to approach new factors that might be considered as important to the engagement with the discourse especially at Delta Environmental Centre. The framework also has the potential of providing a guideline to organizations similar to Delta Environmental Centre on what may be considered should they decide to engage with the discourse of sustainable development.

Table 8.1 A tool for the *Integrated Discourse-Innovation-Boundary framework*

Key factor		***Big question/s***	***Point of departure***	***Commentary***
Foundational Factors	1	Does the vision and mission make reference to sustainability?	Statements of the vision and mission	The vision and mission statement make specific reference to sustainable development or sustainability concerns.
	2	How does the organization perceive its role in relation to the discourse?	Commitment: Active support / Mediator / Critical Engagement with the discourse	Active support: The organization is actively or proactively involved in making contributions in debates, strategy development and through other opportunities on the discourse. The organization also actively puts into practice the underpinning tenets of the discourse. Mediator: The organization adopts the discourse but does not show direct support. The role is instead perceived as one of a mediator (between the systems of the origin of the discourse and the beneficiaries) to raise awareness of, get involved in the debate around the discourse or put into practice principles that underpin the discourse.
	3	Who benefits (beneficiaries)?	Background of Beneficiaries	The organization has categorically identified the beneficiaries. The organization is aware of the background (especially where there is diversity) of the beneficiaries.
	4	What are the antecedents (existing contextual factors) that hinder or promote the response to the discourse?	Organizational Factors	Organizational factors refer to issues like staff background, commitment by staff, practice and belief of staff in respect to the discourse.
			Social factors	Social factors refer to the background of the beneficiaries, the community in which the organization is based, as well as the greater social foci like poverty, culture and diversity and population density.
			Political Factors	Political changes especially major ones which may include a shift in political ideology or a constraining political ideology. Political factors would also include existing laws, policies and the constitution.
			Economic Factors	Economic factors refers to the financial status of the organization, as well to funder relations and implications for the sustainable development Economic factors could also be interpreted in the context of the needs, values and views of the beneficiaries.
			Historical Factors	Historical factors would cover factors that restrain or promote the adoption and practice of the discourse in the context of when the organization had started, the changes (if any) that had taken place over time, and also factors related to the managing of the organization. Historical factors could overlap with some of the previous factors. Historical factors could also include the resources that the organization has (or does not have).
			Environmental Factors	Environmental factors refer to the physical environment. The physical environment refers both to the ecological environment and as well as other aspects of the physical environment like the design of buildings for energy efficiency and water use.

Table 8.1 (continued) A tool for the *Integrated Discourse-Innovation-Boundary framework*

	5	What are the key documents / Texts that focus or make reference to the discourse?	Key documents / Texts	The organization identifies the key documents used for records (e.g. reports) for the purpose of the organization as well as documents that are used to communicate with the beneficiaries.
			Rationale for authenticity	In key documents and texts the key question is what is the rationale presented – is it based on a legal framework, is it based on a belief on a strategy to address environmental concerns (humans included), or is it based on the belief of the majority or on specific protagonist views.
Praxis	1	Approach	Be-do-communicate	The *–Be-* aspect refers to the internalization of the principles of the discourse (i.e. awareness of the pros and cons) and reflection of the discourse in all forms of communication. The *-do-* aspect refers to practice - whether the principles have been implemented in all aspects of the organization's work or whether there is an attempt to put into practice. The *-communicate-* aspect is third in the sequence i.e. the organization communicates the discourse based on the internalization and practice and not on theory.
			Challenges	The challenges the organization is faced with may be contained in the antecedents, maybe potential challenges or ones that manifest during practice or mediation to the beneficiaries. Examples of challenges could include the mediation of the discourse to a heterogeneous group of beneficiaries.
			Change	Change includes both the physical environment (design changes to the buildings) as well as organizational factors (e.g. policies, use of resources)
	2	What is/are the Key Foci?	Action/Awareness	The foci in activities could be initiation or raising of awareness or capacity building for action and change to address environmental concerns. The foci may also include a combination of both.
			Triple bottom line	The foci could be an integration of the economic, socio-political and environmental dimensions, partially favoring of dimensions over the other or a complete focus on dimensions.

Table 8.1 (continued) A tool for the *Integrated Discourse-Innovation-Boundary framework*

	3	What are the principles that underpin the communication of the discourse (in texts/activities)	Position in relation to other discourses	The discourse could be presented as a new discourse which has independent dominance over previous discourses. The discourse may be presented as having an overlap with other discourses. There could also be a "re-badging" to follow trends with the latest use of concepts.
			Expert vs novice	The organization may present itself as the expert in all aspects of the discourse (practice and knowledge) and mediates the discourse to the beneficiaries as novices.
			Synergy–co development	The discourse is not presented as a blueprint. The organization and the beneficiaries together explore the discourse within a context for practice. The process of exploring the discourse may involve critical analysis of the discourse, as well as of practice.
			Controversial issues	Controversial issues like whether certain proposed strategies or existing strategies are viable to address environmental concerns are a reality. The approach to controversial issues could be support for, support against or neutrality.
	4	What is the basis for reflexive competence?	Feedback, Monitoring and Evaluation	Reflexive competence refers to the organizational strategies to review its own practice, get feedback from the beneficiaries or from independent sources to subsequently make the respective changes. Reflexive competence also has a focus on the beneficiaries – whether they are given more choices to make lifestyle changes and whether there has been a change in lifestyle.
	5	How is critical orientation to the discourse developed?	Structured meetings, attending forums, tools for thinking, self assessment, paper presentation	A critical orientation to discourse is valuable given that discourses may present challenges (foreseen and unforeseen). The critical orientation could be both of personal and of a group nature. Personal could take the form of tools provided for thinking e.g. a mind-map of the tenets of the discourse. Personal could also take the form of a staff member writing a short paper on broad aspects of the discourse, work related aspects as well individual aspects. Group critical orientation could take the form of discussion, debate or a critical reflexive approach to programmes.
Influential factors	1	What are the key factors that influence a response to the discourse?	1.1 Internal factors	The organization responds to sustainable development based on the intrinsic belief that the discourse is a possible strategy to address environmental concerns
			1.2 External factors	The response to the sustainable development is due to external pressure from the international/national /local community to address environmental concerns and due to regulatory frameworks

The researcher acknowledges that the study was located within the qualitative paradigm and in using a case study approached there are limitations to generalize the findings. The framework, however, focuses on the big questions for Delta Environmental Centre and other organizations with similar interests to consider when engaging with discourse. The suggested framework is not a prescription but allows the user to add or delete when engaging with the discourse of sustainable development within a context of the work done by the organization. The suggested framework need not be used as a whole as it is represented in Figure 8.2 and in Table 8.1. There is the flexibility to use it in parts in any order to suit the context of the organization. For example, an organization might want to explore the influential factors first before exploring the component on praxis or might want to only focus on the internal factors of influence and not on the external factors as a starting point.

The proposed framework provides a tool as a point of departure for understanding, analyzing or engaging with the discourse and in no way a makes a claim as a “blueprint”. The framework is flexible to incorporate other foci which may be considered important by other users or may be used in conjunction with other existing tools to analyse the engagement with sustainable development or related discourses.

8.4.2 Developing a critical orientation to the discourse

An issue that emerged is that there is no evidence of staff deliberately engaging in critical discussion on the discourse in any kind of depth. Staff responses however, show that the staff of the centre is interested in the discourse of sustainable development. The researcher recommends that the centre sets up strategies to develop a more critical orientation to the discourse within the centre. The critical orientation should be beyond discussion within a forum or meeting. The critical orientation should include focus on the work or responsibilities of staff and of the centre as an organization.

8.4.3 Foci for further research

Two main areas for further research that would have a valuable contribution to the discourse of sustainable development arise from the study.

8.4.3.1 Long-term change and impact

This study took an overview approach to understand how an environmental centre engages with the discourse of sustainable development. One of the points that emerged is that the impact on beneficiaries from a personal perspective appears to be minimal but there is greater impact in a

professional context. Further research is essential to find out in more detail the barriers to personal impact or change in beneficiaries. The researcher suggests that both a homogenous group (e.g. school-based educators only) and/or a heterogeneous group (mixture of people from diverse backgrounds like in this study) be traced over a period of time to track and identify specific areas and examples of impact on both the personal and professional lives of the beneficiaries. There is need for a body of knowledge that can be used as a bench mark to find out the extent to which sustainable development is having an impact on the practice of beneficiaries.

8.4.3.2 Knowledge and sustainable development

Scientific and cultural knowledge has been recognized (as stated previously) as important to address environmental concerns within the context of sustainable development (UNESCO, 2004). The beneficiary responses show that there appears to be an imbalance between the two realms of knowledge. There is also need for in-depth research to determine the common barriers in the context of the following foci:

- how both realms of knowledge are facilitated to the beneficiaries
- identification of barriers to bring the balance between the two realms of knowledge
- how the realms of knowledge are used in the everyday life (personal, societal and professional) of beneficiaries within the context of sustainable development.

8.5 Conclusion

Based on the findings it would be reasonable to conclude that sustainable development is interpreted by Delta Environmental Centre as being more than a cliché. While there is discussion about meaning, and differences in opinion, there is support for the discourse, both amongst staff and beneficiaries as an approach to environmental concerns in South Africa. In analyzing the engagement of the environmental centre with the discourse there is evidence of an attempt to mediate the discourse and translate the discourse into practice. However, it is also evident that there are numerous challenges and antecedents (or barriers) that pose a difficulty to the engagement with the discourse.

These findings concur with the view expressed in the literature (e.g. Judson, 2007; Wals, 2007; Gonzalēz-Guadiano, 2007; Jickling, 1999; Scott and Gough, 2003) that sustainable development cannot be taken as a blueprint to address environmental issues. There is no singular opinion about what sustainable development is, although most staff and beneficiaries have acknowledged that the discourse has made society more conscious of present and potential environmental issues and the

need to take action. The same applies to mediating the discourse or to translating the discourse into practice – there is no blueprint. It appears to be a case of trying various approaches with the hope that combinations would have the desired effect of raising awareness and in bringing about a possible lifestyle change.

The centre provides the beneficiaries with access to scientific knowledge, supports capacity building, raises awareness and provides some strategies to translate the discourse into practice via resources like the *EnviroTeach* publication and through the programmes and activities. The access to knowledge, awareness and capacity building empowers beneficiaries to interact with the discourse in a more informed and coherent way. This does not mean that the discourse is presented as a blueprint. On the contrary some beneficiaries felt insecure when left to make sense of the discourse from their own perspective. The centre needs to explore ways of balancing the approach to suit the diverse needs of the beneficiaries.

The learning interaction with the discourse and the beneficiaries is purposeful within the context of the three dimensions of sustainable development (viz. economic, sociopolitical and environmental). However, the greater focus is on the environmental issues. There is less close purposeful learning interaction with the social dimension in sustainability issues. There is evidence of the principles of the discourse being shown in practice e.g. physical changes in the environment, the use of resources and in planning. A limitation is in creating the similar impact on the beneficiaries. The interactions with beneficiaries focus more on professional practice-based deliberations with choices that are congruent with sustainable development than on personal practice-based deliberations.

The centre actively engages with the discourse through providing a platform (e.g. presentations) for the benefit of other organizations to engage with the discourse. The centre uses opportunities for participation to make inputs on issues related to the discourse. Through active interaction with other organizations the centre has recognized the importance of networks. Networks are cornerstones of sustainability education and contribute to the value of partnerships to sustainable development (Lotz-Sisitka, 2006).

There is no real evidence of in-depth structured debate and engagement with the discourse amongst staff as with stakeholders outside the centre. A uniform approach to the discourse amongst staff members is not evident and the issue is more than differing opinions. The responses indicated a lack of consensus amongst the staff of the centre on how the discourse is going to be integrated in programmes. Some staff members do not integrate the discourse, while others do, and some are just mindful about the discourse. There is a gap in the professional capacity and development especially of what staff members think and do within the context of the discourse at the centre. There is need

for lively debate on the discourse of sustainable development amongst staff, especially because the centre does engage with discourse in various ways and considering that sustainable development is a contested discourse.

In advocating the discourse, developing a sense of vision building and in raising awareness amongst beneficiaries the centre has adopted more of neutral stance on issues than a categorical one. The environmental centre does not present its view on controversial issues but rather tries, in most cases, to present or raise concerns. In the context of a boundary organization and the role of providing a link between the beneficiaries and the discourse, this stance is a cautious one as it reduces the influence of the environmental centre and provides the space for the beneficiaries to arrive at their own conclusions. The stance may also be considered as strategic i.e. not to offend the funder in the case of publications should the views of the centre differ.

Delta Environmental Centre in engaging with the discourse has used the formal national school curriculum as a way of communicating the discourse to educators and learners. Programmes and activities related to sustainable development have been embedded within the policy and structure of the national curriculum. The integrated approach of the sustainable development discourse within the curriculum is intended to bring out the importance of environmental issues in an integral way and not to create a perception that environmental issues are an “add-on” to the curriculum (Lotz-Sisitka, 2006).

There are antecedents and barriers which present tensions and challenges to the engagement with the discourse. The identified antecedents are: differing levels of commitment amongst some members of staff and from other organizations to environmental issues and to applying the principles of the discourse; language diversity - as there is a difficulty to directly translate the discourse to other languages; limited financial resources to put some innovative ideas about sustainable development into practice; and that generally society perceives economic needs as more of a primary concern than the environment. The debate around the discourse, the lack of exemplary cases of practice and the diverse backgrounds of beneficiaries also present a challenge to engagement with the discourse of sustainable development.

There is need for Delta Environmental Centre to develop comprehensive measures or indicators as there is acknowledgement of the discourse especially within the context of the DESD. Measurement need not necessarily be quantifiable as some elements are intrinsically hard to quantify (European Commission, 2002). The extent of the challenges and successes are more likely to be significantly ascertained through the setting of clearly defined targets, through review or feedback and evaluation, where evaluation is not dependent on availability of budget but seen as mandatory.

Presently, the evaluation questionnaire is the key mode of gathering feedback on programmes. There is need for the centre to explore other means of evaluation and feedback.

Delta Environmental Centre, in engaging with the discourse, has placed greater emphasis on raising awareness on the principles of sustainable development, sharing strategies on possible ways on how to apply the principles (especially in professional contexts), on both educational and environmental value and on applying the discourse in the practice of the centre than on defining the discourse. It is clear the focus is not on seeking categorical definitions but on acting on the reality of environmental concerns within the context of sustainable development. An approach to sustainable development linked to a transformational agenda (Hattingh, 2002) and environmental justice feature prominently in findings of this research. In conclusion there are multiple expressions of Delta Environmental Centre in the engagement with the discourse of sustainable development. “We should not chide ourselves if we do not have a clear definition of concepts, as valuable concepts in the human world may be hard to define but have multiple expressions in cultures and activities all over the world.” (Hopkins and McKeown, 2002, p13).

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APPENDICES

Appendix 1	**Letter of permission from Delta Environmental Centre**
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Appendix 1



delta environmental centre

ENVIRONMENTAL EDUCATION, TRAINING AND CONSULTATION NETWORK
APPROVED EDUCATIONAL FUND I.T.O. SECTION 18A OF INCOME TAX ACT
COMPANY REG. NO. 1975/000010/08 NOT FOR GAIN REF. NO. 01 100030 000 OF FUNDRAISING ACT 1978
P.B.O No. 18/11/13/2704

Private Bag X6
Parkview 2122

Delta Park, Road No. 3
Victory Park, Johannesburg
South Africa

Tel: (011) 888-4831
Fax: (011) 888-4106
www.deltaenviro.org.za
delta@deltaenviro.org.za

TO WHOM IT MAY CONCERN
The Ethics Committee
University of the Witwatersrand

Re: Permission to use Delta Environmental Centre as a Case Study for PhD research

R.P.Pillay (Student number 0010414T) registered at the University of the Witwatersrand has discussed with me the use of Delta Environmental Centre for research contributing to a PhD.

The research topic is based around: *Exploring the response of a Non-Governmental Environmental Centre to the discourse of Sustainable Development: A Southern African Case Study.*

I, Diana Beeton, the Chief Executive Officer of Delta Environmental Centre hereby grant permission for R.P. Pillay to use the Centre for the purpose of his research. I believe that his research will contribute to the development of the Centre and contribute to the development of other environmental centres in the region.

I grant him access to information that he needs for the purpose of his research. Access will be granted to interact with myself and the Directors and staff of the Centre when reasonable arrangements are made.

Yours faithfully

Di Beeton

Diana Beeton
Chief Executive Officer

Date: 25 April 2005

Appendix 2

UMnyango WezeMfundo
Department of Education

Lefapha la Thuto
Departement van Onderwys

Date:	07 August 2006
Name of Researcher:	R.P. Pillay
Address of Researcher:	P.O. Box 7589
	Gardenville
	2047
Telephone Number:	0824349500
Fax Number:	(011) 2680750
Research Topic:	Exploring engagements of environmental centres with the discourse on sustainable development: A South African case study
Number and type of schools:	10 Secondary Schools
District/s/HO	All Districts

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

Permission has been granted to proceed with the above study subject to the conditions listed below being met, and may be withdrawn should any of these conditions be flouted:

1. ***The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.***
2. ***The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.***
3. ***A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.***

Office of the Senior Manager – Strategic Policy Research & Development
Room 525, 111 Commissioner Street, Johannesburg, 2001 P.O.Box 7710, Johannesburg, 2000
Tel: (011) 355-0488 Fax: (011) 355-0286

4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Senior Manager (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher must supply the Senior Manager: Strategic Policy Development, Management & Research Coordination with one Hard Cover bound and one Ring bound copy of the final, approved research report. The researcher would also provide the said manager with an electronic copy of the research abstract/summary and/or annotation.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Senior Manager concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

ALBERT CHANEE
ACTING DIVISIONAL MANAGER: OFSTED

The contents of this letter has been read and understood by the researcher.	
Signature of Researcher:	R.P. PILLAY
Date:	11/08/2006

Appendix 3

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Pillay

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER 60707**
PROJECT	Exploring the engagement of an Environmental Centre with Discourse
INVESTIGATORS	Mr RP Pillay
DEPARTMENT	School of Geography/GAES
DATE CONSIDERED	06.07.19
DECISION OF THE COMMITTEE*	APPROVED UNCONDITIONALLY

This ethical clearance is valid for 2 years and may be renewed upon application

DATE 07.08.15 **CHAIRPERSON** .....
(Professor T Metz)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Prof C Vogel
School of Geography

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

This ethical clearance will expire on 1 February 2008 30/08/2006

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 4

Informed Consent Form

Title of Research Project: The engagement of an Environmental Centre with the discourse of sustainable development.

I, _____consent to participate in this study conducted by Mr. R.P.Pillay, a student of the University of the Witwatersrand for his research on the engagement of an Environmental Centre with discourse of sustainable development.

- I realise that no harm will come to me, and that the study is being conducted for educational purposes.
- I participate voluntarily and understand that I may withdraw from the study at any time.
- I further consent to being video and/or audio recorded as part of the study.
- I also understand I have the right to review the questionnaires I complete and the transcripts made of our conversations before these are used for analysis if I so choose. I can delete or amend any material or retract or revise any of my remarks. Everything I say will be kept confidential by the interviewer. I will only be identified by a pseudonym in the transcript. In addition, any persons I refer to in the interview will be kept confidential.
- Verbatim quotes from me may be used in the research report, but they will be reported so that my identity is anonymous. Any specific individuals or courses I refer to will be given pseudonyms. I understand that the results of the study may be published, but my identity will be anonymous.

Name _____

Signature

_____Date_____

Appendix 5

Informed Consent Form – Audio/Video Tape of Interviews

Title of Research Project: The engagement of an Environmental Centre with the discourse of sustainable development.

I, _____give my consent for the researcher Mr. R.P.Pillay , a student of the University of the Witwatersrand to audio or video tape the interview that will be conducted with me for his research on the engagement of an Environmental Centre with discourse of sustainable development.
.

- I realize that there are no risks attached to my involvement in the study, and that the study is being conducted for educational purposes.
- I participate voluntarily and understand that I may withdraw from the study at any time.
- I understand that the recording of the interviews (audio or video) will be done by the researcher.
- I understand that the contents of the audio or video tapes will be used only for the purpose of this research and only by the researcher and be kept strictly confidential.
- I understand that the audio or video tapes will be kept in a safely locked cabinet, to which only the researcher has access.
- I understand that the interviews will be recorded within the 60 minutes (one hour) that has been allocated for the interview.
- I understand that the audio or video tapes of the interview will be completely destroyed once the transcripts have been completed i.e. within a reasonable period of not more than 14 months from the date of the interview.
- I also understand I have the right to listen to the audio tapes or view the video tapes and if I so choose can delete or amend any material or retract or revise any of my remarks.
- I also understand that I have the right to stop the recording of the interview should I see the need to do so.

Name _____ Date_____

Signature _____

Information Sheet – Staff members

Research Study on engaging with the discourse on Sustainable Development

My name is R.P.Pillay (also known as Rajen Pillay). I am registered at the School of Geography, Archaeology and Environmental Studies, Faculty of Science as Doctor of Philosophy student at the University of the Witwatersrand.

I am carrying out a study of how an environmental centre is engaging with the discourse on sustainable development. The environmental centre that is being used in this research as a case study is Delta Environmental Centre based in Victory Park, Johannesburg. The Chief Executive Officer of Delta Environmental Centre has granted permission for the Centre to be used as the case study for this research study. The focus of the study is on how the centre is engaging with the discourse of sustainable development through practice, activities and the programmes that the centre offers or has offered to its clients. I believe that the research will *contribute to the development of the centre, other environmental centres, contribute to the quality of sustainable development programmes for beneficiaries and contribute to the discourse of sustainable development, not only in South Africa but worldwide .*
To get an in–depth understanding of the centres engagement with the discourse of sustainable development, I have decided it would be best to interact with all staff members of Delta Environmental Centre. I would like to interview you as a staff member of Delta Environmental Centre. I'd like to get a better understanding by using a questionnaire that asks about the practice, the activities and your opinions about the engagement with the sustainable development discourse, also covering aspects I might not have covered through the interview.

Each part of the research will take about 45 minutes to complete i.e. the interview and the questionnaire. In addition, should the need arise to get further information on sustainable development and the engagement of the centre with discourse I'd like to conduct a follow up interview or ask you to complete a questionnaire several weeks after the first interview or questionnaire has been completed.

If you agree to take part in my study, I'd like to make it clear that your participation is entirely voluntary, no harm will come to you, and all information will be treated with confidentiality and anonymity. If you do choose to participate, you may decline to answer any questions, and you may withdraw from the study at any time. I hope to publish the results of my study in academic journals. In order to protect confidentiality, all names I use will be fictitious.

I will provide you with a summary of my research results on completion if you would like me to.

Thank You.

R.P.Pillay (Rajen Pillay)

Date: 25 June 2006

Appendix 7

Proposed interview questions (Semi structured interview).

Focus: Staff members of Delta Environmental Centre

Prior communication (meeting / telephonic or email contact) will be made with the staff member to share the purpose of the interviews, assure confidentiality, to get their permission to participate and to indicate the method of recording the interview. The interview will be tape recorded. The interviewer will make notes when necessary.

The interviews will be individual. The interview will take place at venue which is suitable, convenient and comfortable for the staff member. The interviews will be scheduled at the convenience of the staff members. The interview would be approximately 60 minutes (1 hour) in duration.

1. Please tell me about yourself and what you did before you joined the centre. (Probe as necessary)
2. Describe what you do at the centre?
3. How did you first come to hear about sustainable development?
4. What is your understanding of sustainable development?
5. What is your opinion about sustainable development as a way to approach environmental issues in our country?
   (Probe: things that you may agree/disagree/needs further thought/difference from environmental education)
6. How has sustainable development influenced the way things are done at the centre? (Probe as necessary – Management / planning of programmes / resources / conducting of programmes / evaluation of activities / physical environment)
7. How do you get the concept of sustainable development (in the programmes that you are involved in at the centre) across to your beneficiaries? Can you provide an example from the different client groups that come to the programmes.
8. What aspects of the sustainable development and the environment did the programmes based on sustainable development focus on? (Probe where necessary)
9. Some aspects of sustainable development as a strategy may require a certain amount of scientific knowledge and skills. How do you get the scientific knowledge and skills across to your participants?
10. How do you get feedback from beneficiaries who attended the programmes?
    (Probe: Can you give me two examples).
11. Is there anything else you would like to tell me about sustainable development or about the activities of the centre that you think we have not covered?

Thank you

Rajen Pillay

Appendix 8

□ □ □ What you feel, think and say is important □ □ □

The United Nations has declared the years 2005 to 2014 as the Decade of Education for Sustainable Development. Government departments, business and other organizations are expected to implement sustainable development. However, people and organizations seem to have different views on sustainable development. This questionnaire is a step to find out how an organization like an environmental centre is engaging with sustainable development.

Purpose

The information gathered in this questionnaire will be used to:

- explore and better understand sustainable development
- inform the programme design and delivery of environmental centres within current trends and debates in the context of sustainable development.

Aim

The aim of this questionnaire is to gather information from you as a staff member of Delta Environmental Centre related to:

- your views on sustainable development
- the environmental centre activities based on sustainable development
- the activities you are involved in based on sustainable development

The information that you provide will be treated confidentially. The information you provide is valuable to me. Please be honest in your responses, and respond to all the questions.

You may write your responses on another page with number of the question if you need more space and attach it to the questionnaire.

A. Personal information				
Name:				
Highest qualification e.g. A Certificate in…				
Age (Please tick)	Below 25	Between 25 – 40	Over 40	
Position at the centre:		Date when you joined the centre:		
B. About the work that you do (Please tick where necessary)				
1.What does your job involve?	Management	Facilitation	Development of programmes	Development of resources
	Other (Please state)			
2. How many programmes based on sustainable development are you involved in a week?				
3. Who are your beneficiaries?	School based learners	Learners at tertiary institutions	School based Educators	Other Government employees
	Corporate	Other (Please State):		

C. About sustainable development activities and programmes
1. What is your understanding of sustainable development?
2. How did the centre come to the decision to implement sustainable development?
3. Give examples of **changes (if any)** that have taken place at the centre since the implementation of sustainable development programmes under the following? 3.1 Management: 3.2 Planning of programmes: 3.3 Resources and materials used: 3.4 Conducting of programmes: 3.5 The physical environment 3.6 Other
4. List 5 examples of programmes offered at the centre that involve sustainable development.

5. Ring the letter of the statement/s that you think best describes the programmes that involve sustainable development offered by Delta Environmental Centre.

5.1 The focus/foci of the programmes at the centre is/are:

A. Political issues
B. Biophysical environment
C. Social issues
D. Economic issues

5.2 The programmes that involve sustainable development:

A. focus too much on giving knowledge and information to the beneficiary
B. focus too much on just providing experiences for the beneficiary at the site of the centre
C. has a balance of knowledge, experiences and develops the beneficiary to take appropriate action for change

5.3 The motivation for the beneficiary programmes that involve sustainable development is to:

A. provide rational explanations to facilitate change in clients
B. try to get the clients understand and practice principles to promote change
C. strongly emphasize laws, policies and obligations to promote change in clients

6. How do you plan for programmes that involve sustainable development for your beneficiaries?

7.1 Do you focus on scientific knowledge in your programmes that involve sustainable development?	Yes	No

If your response to question 7.1 is yes then respond to the following questions.

7.1.1 How do you get the scientific knowledge across to your beneficiaries? You may use examples.

7.2 Do you focus on scientific skills in your programmes that involve sustainable development?	Yes	No

If your response to question 7.2 is yes then respond to the following questions.

7.2.1 What scientific skills do you focus on?

7.2.2 How do you get the scientific skills across to your beneficiaries? You may use examples.

8. Do you focus on indigenous/cultural knowledge and skills in your programmes that involve sustainable development?	Yes	No

If your response to question 8 is yes then respond to the following question.

8.1 How do you get the indigenous/cultural knowledge and skills across to your beneficiaries? You may use examples.

9. Describe five examples of the kinds of activities for your beneficiaries in programmes that involve sustainable development. You may provide more than five.

10. How does the centre know whether the programmes that involve sustainable development have been useful?

D. Resources and Materials

1. Describe how you go about developing resources and materials for the beneficiaries in programmes of sustainable development?

2. Describe 4 examples of the resources and materials that beneficiaries have used in programmes of sustainable development.

E. What are the difficulties (if any) that the centre faces in implementing sustainable development (in programmes and at the centre).

1. Programmes:

2. At the centre:

E. Is there anything else you want to say about sustainable development or your work related to sustainable development that was not covered in this questionnaire?

Appendix 9

Information Sheet – Beneficiary participants

Research Study on engaging with the discourse on Sustainable Development

My name is R.P.Pillay (also known as Rajen Pillay). I am registered at the School of Geography, Archaeology and Environmental Studies, Faculty of Science as Doctor of Philosophy student at the University of the Witwatersrand.

I am carrying out a study of how an environmental centre is engaging with the discourse on sustainable development. The environmental centre that is being used in this research as a case study is Delta Environmental Centre based in Victory Park, Johannesburg. The focus of the study is on how the centre is engaging with the discourse of sustainable development through practice, activities and the programmes that the centre offers or has offered to its beneficiaries. I believe that the research will *contribute to the development of the centre, other environmental centres, contribute to the quality of sustainable development programmes for clients of the centre, and contribute to the discourse of sustainable development, not only in South Africa but worldwide .*

I selected you / your institution as a representative of many of the beneficiaries who have attended a programme or programmes offered by Delta Environmental Centre. I would like to interview you as a programme participant who has attended a programme offered by Delta Environmental Centre at some point in time within the last two years. In addition, I'd like to check what you have might have learnt by using a questionnaire that asks about the programmes you have attended at Delta Environmental Centre and sustainable development.

Each part of the research will take about 45 minutes to complete i.e. the interview and the questionnaire. In addition I'd like to conduct a follow up interview or ask you to complete a questionnaire several weeks after the first interview or questionnaire has been completed should the need arise to get further information on sustainable development and the impact of the centre's programme.

If you agree to take part in my study, I'd like to make it clear that your participation is entirely voluntary, no harm will come to you, and all information will be treated with confidentiality and anonymity. If you do choose to participate, you may decline to answer any questions, and you may withdraw from the study at any time. I hope to publish the results of my study in academic journals. In order to protect confidentiality, all names I use will be fictitious.

I will provide you with a summary of my research results on completion if you would like me to.

Thank You.

R.P.Pillay (Rajen Pillay)

Date: 25 June 2006

Appendix 10

Proposed interview questions (Semi structured interview)

Focus: Beneficiaries who have attended programmes at Delta Environmental Centre.

Prior communication (meeting / telephonic or email contact) will be made with the beneficiary to share the purpose of the interviews, assure confidentiality, to get their permission to participate and to indicate the method of recording the interview. The interview will be tape recorded. The interviewer will make notes when necessary.

The interviews will be individual. The interview will take place at venue which is suitable, convenient and comfortable for the beneficiary. The interviews will be scheduled at the convenience of the beneficiary. The interview would be approximately 60 minutes (1 hour) in duration.

1. Please tell me about yourself and about what you presently do.
   (Probe as necessary)
2. How did you first come to hear about sustainable development?
3. What is your understanding of sustainable development?
4. What is your opinion about sustainable development as a way to approach environmental issues in our country?
   (Probe: things that you may agree / disagree / needs further thought)
5. How did the programme you attended at Delta help you in understanding sustainable development?
6. Can you give me one thing about the programme that you thought about later?
   (Probe the impact on personal life – action taken?) Can probe for more examples).
7. What was the focus/foci of the programme? (Probe where necessary – biophysical / social/ economic/ political environment)
8. How did the centre bring across the scientific knowledge or skills related to issues of sustainable development (e.g. energy consumption)?
9. What is your overall feeling about the Centre's programme on sustainable development?
10. Is there anything else you would like to tell me about sustainable development or about the programme you attended at the centre that you think we have not covered?

Thank you

Rajen Pillay

Appendix 11

What you feel, think and say is important

The United Nations has declared the years 2005 to 2014 as the Decade of Education for Sustainable Development. Government departments, business and other organizations are expected to implement sustainable development.

Purpose

The information gathered in this questionnaire will be used to:

- explore and better understand sustainable development
- inform the programme design and delivery of environmental centres within current trends and debates in the context of sustainable development.

Aim

The aim of this questionnaire is to:

- get your views on sustainable development
- find out how you felt about the programmes on sustainable development that ***you attended*** at the Delta Environmental Centre.

The information that you provide will be treated confidentially. The information you provide is valuable to us. Please be honest in your responses. Please respond to all the questions.

If you need more space you may write your responses on another page with the number of the question and attach it to the questionnaire.

A. Personal information	
1. Name:	
2. Highest qualification e.g. A Certificate in...	
3. What kind of work are you presently involved with?	
4. Contact details:	

B. Sustainable development
1. How did you first come to hear about sustainable development?
2. What is your understanding of sustainable development?
3. Describe 2 examples of sustainable development practices.

C. The programmes that you attended	
1. How many programmes have you attended at Delta Environmental Centre in the last two years that involved sustainable development?	
2. When was the last time you attended a Delta Environmental Centre programme that involved sustainable development?	
3. Did you make any input while the programmes were being developed? If yes, briefly Explain.	
4. How would you describe the programmes you have attended? Circle the letter that applies to you. A. mainly once – off programme B. mainly programmes where you could go implement and come back to another session	

D. About the sustainable development activities and programmes you attended

Circle the letter of the statement that you think best describes the programmes that involved sustainable development offered by Delta Environmental Centre.

1. What do you think was the basis for the programmes that involved sustainable development?
   A. To provide rational explanations about sustainable development
   B. To try to get you to understand and practice principles of sustainable development
   C. To strongly emphasize laws, policies and obligations about sustainable development

2. What was the focus/foci of the sustainable development programmes?
   A. mainly political issues
   B. mainly biophysical environment/scientific issues
   C. mainly social issues
   D. mainly economic issues
   E. the above foci were mainly integrated (the links between the above were made often)

3. What do you think about the programmes that involved sustainable development?
   A. focused too much on giving knowledge and information
   B. focused too much on just providing experiences at the site of the centre
   C. had a balance of knowledge, experiences and development for you to take appropriate action to address environmental concerns

4. How do you use what you have learned through the programme/s of the centre in your daily life? (Provide examples)

5. To address some issues in sustainable development scientific knowledge and skills is required. Describe how the programmes of Delta Environmental Centre brought the scientific knowledge and skills across to you?
(Give examples)

6. What would you like included in future programmes that involve sustainable development?

E. Resources and Materials

1. Give examples of some of the resources and materials that you were given or used in programmes of sustainable development at the centre.

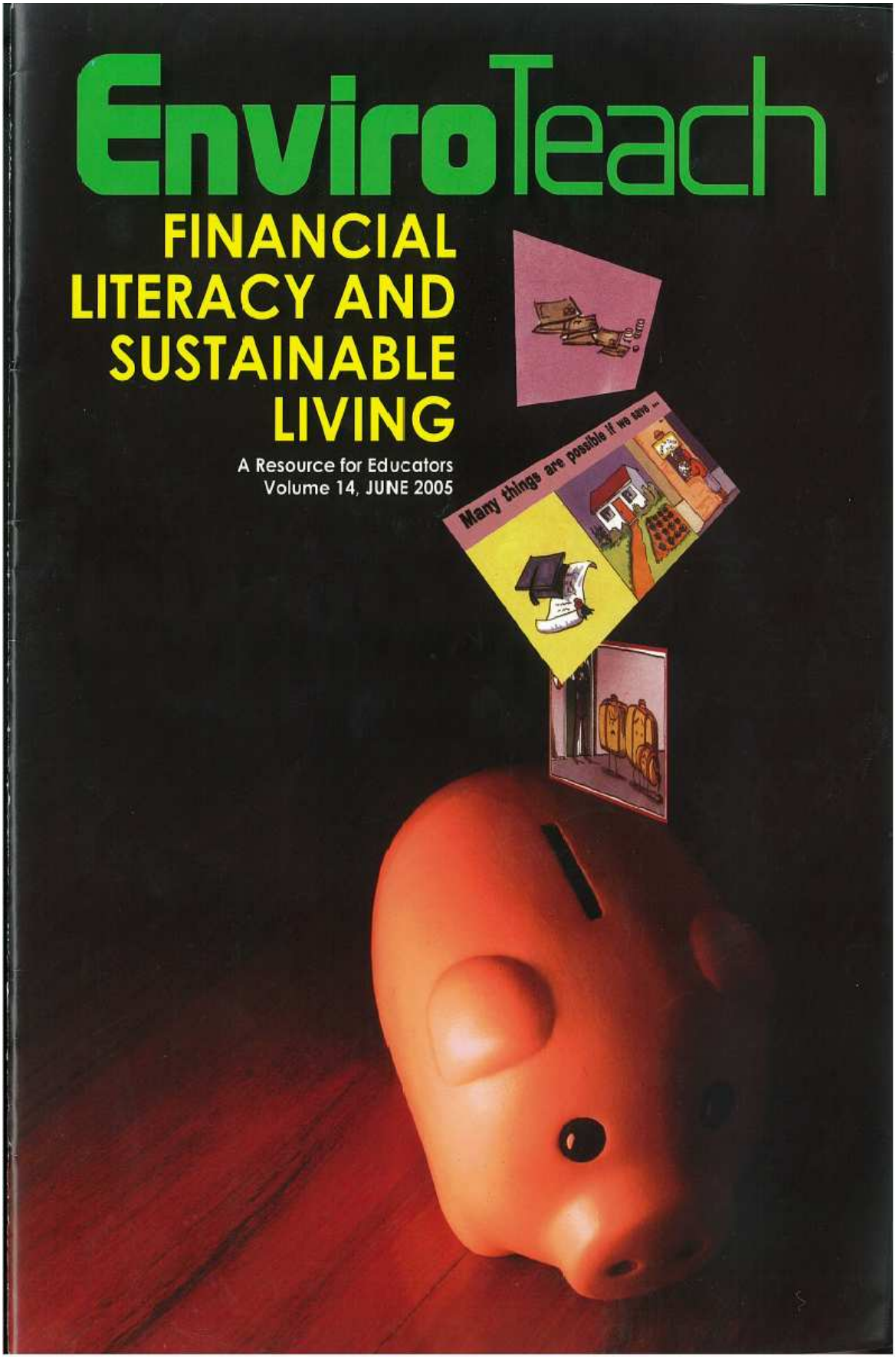
2. Do you still make use of these resources and materials? If yes, please explain how.

F. Overall impression

1. What did you like about the programmes on sustainable development?
(Please provide examples)

2. What did you not like about the programmes on sustainable development?
(please provide examples)

Appendix 12


EnviroTeach
FINANCIAL LITERACY AND SUSTAINABLE LIVING
A Resource for Educators
Volume 14, JUNE 2005
Many things are possible if we save ...

Foreword

Consumer education: a priority for the South African Insurance Association

Consumer Education is an important obligation of all role players in the financial services sector – one that is taken seriously by the South African Insurance Association (SAIA) which has a unique approach to consumer education, specifically the consumer education spend obligated by the Financial Sector Charter, and the fight against financial illiteracy.

It is a fact that many people in South Africa are not financially literate. Statistics show that those in lower income groups often do not have sufficient knowledge about financial services products (including insurance) to make informed decisions, do not have sufficient access to financial services products, and need to be empowered in this regard.

This is one of the reasons why the Financial Sector Charter addresses access to financial services as an important facet of Black Economic Empowerment. The Charter acknowledges the fact that access to these products is fundamental to BEE, and to the development of the economy as a whole. The Charter therefore requires that each financial institution annually invests a minimum of 0.2% of post tax operating profits in consumer education.

From the very beginning the SAIA realised that the 0.2% after tax profits to be spent by its individual members on consumer education could make a bigger difference if it was a combined effort, and the wheels were sent in motion to implement the SAIA Financial Sector Charter Consumer Education Initiative. It is in terms of this Initiative that the SAIA and its members will be contributing almost R4 000 000 to three projects to be implemented jointly with the Financial Services Board (FSB) in 2005.

This Financial Literacy EnviroTeach is the first step towards implementation of the first project. This is a joint project with the FSB to provide a resource (aligned to the national curriculum) to teachers in Grades 10 to 12 that will assist them with including financial literacy education in all relevant subjects, and to empower them to use this resource by presenting national, provincial and local workshops.

We sincerely hope that this resource and teacher training will be of assistance to teachers in their important task of preparing students of all walks of life for productive participation in the economy of our country, for making positive contributions within their communities, and for becoming successful, productive and happy individuals.



Barry Scott
Chief Executive
The South African Insurance Association

As a regulator, the Financial Services Board (FSB) strongly supports the idea of educating consumers as part of its overall consumer protection role. The FSB, furthermore, encourages institutions and industry representative bodies to include generic initiatives to educate consumers as part of their role in the provision of financial services and products.

The universal objectives of financial regulation vary in certain respects. However, there are three objectives which are common to the work of financial regulators throughout the world, namely, combating systemic risk, promoting an efficient and competitive financial system and, consumer protection. The significance of consumer protection cannot be underestimated. , However, the FSB recognises the limitations and costs of relying too heavily on the regulatory aspects of consumer protection. The more aware consumers become through education, the more effective consumer protection will become.

The launch of this financial consumer education version of the EnviroTeach handbook for teachers, as well as nationwide workshops for teachers, through a partnership of the FSB with the South African Insurance Association (SAIA), marks yet another milestone in the roll out of the Financial Services Consumer Education Initiative. The development of this Initiative was coordinated by the FSB with extensive input by industry, including SAIA. The FSB thanks SAIA and all its members for their strong show of support for the education of consumers.

The significance of this handbook is that it promotes educational programmes and activities to educate learners about financial management, including the importance of saving, budgeting, debt management, planning for the future, the rights and responsibilities of consumers in the marketplace, redress mechanisms in the event that something goes wrong and generic information about the financial services and products available when planning for the future. Of equal significance is that teachers will, for the first time, have a financial education resource in keeping with the requirements of the curriculum and assessment standards and which contains detailed lesson content and a variety of suggested student learning activities from which to choose.

We trust that this issue of EnviroTeach, together with the workshops, will be of assistance to educators throughout South Africa. Thank you for your dedication to the development of this nation on all fronts, through your commitment to the education and training of our youth.



Jeff Van Rooyen
Executive Officer
Financial Services Board

Editorial

The partners involved in developing, printing, distributing and offering training based in this edition of EnviroTeach on "Financial Literacy", are proud to be associated with the product. This edition and the training that will be facilitated nationwide is aimed at the Further Education and Training (FET) – Grade 10,11,12 – Band. EnviroTeach is a resource for educators, with each edition having a particular theme. The Learning Field for which this edition is relevant is Business, Commerce, Management and Service Studies with Mathematics being integrated into the Lesson Plans. The subjects covered, therefore, are Economics, Business Studies, Accounting and Mathematics.

The National Curriculum Statement (NCS) Grades 10-12 (General) is being implemented in South African schools from 2006, starting with Grade 10. This presents the project partners with an excellent opportunity to make a positive contribution to education and training at a senior secondary level. The principles upon which the NCS is based are:

- social transformation;
- outcomes-based education (Learning Outcomes built on the Critical and Developmental Outcomes);
- high knowledge and high skills;
- integration and applied competence;
- progression;
- articulation and portability;
- human rights, environmental and social justice, inclusivity;
- valuing indigenous knowledge systems;
- credibility, quality and efficiency.

The "Financial Literacy" EnviroTeach and training that will follow countrywide has been designed to illustrate and reflect these principles in innovative and creative ways whilst using the NCS documents as the guiding framework. Grade 10 has been identified as the main focus area for this edition.

A Lesson Plan format in template form has not been used because at the time of going to press, only a "draft" version was available. However, all the components that are necessary to construct a Lesson Plan are provided in each section.

Suggestions have been made by the editorial team for assessment ideas and tools. However, they are not compulsory nor are they intended to be the only suitable option.

The kind of teacher that is envisaged in the NCS states that all teachers and other educators are "key contributors to the transformation of education in South Africa". They also have various roles to fulfill which include being mediators of learning, interpreters and designers of Learning Programmes and materials, leaders, community members, citizens and pastors, assessors and subject specialists. The editorial team has attempted to provide some opportunities for learning in this "Financial Literacy" EnviroTeach that highlight and illustrate some of these roles.

The FET learner is the ultimate beneficiary of this project and, once again, the NCS states the following about the values that all educators should be attempting to imbue in our learners.
"Values and morality give meaning to our individual and social relationships. They are the common currencies that help make life more meaningful than might otherwise have been. An education system does not exist to simply serve a market, important as that may be for economic growth and material prosperity. It's primary purpose must be to enrich the individual and by extension, the broader society".

Learners are expected to act in the interest of a society based on respect for democracy, equality, human dignity and social justice as promoted in the Constitution. The FET learner is challenged to be an "active learner" throughout the publication.

The key underpinning principle of the NCS that has been infused into the EnviroTeach is "human rights, inclusivity, environmental and social justice". The subject statements are infused with this principle and practices as defined in the Constitution of the Republic of South Africa. The concept of ENVIRONMENT that underpins the activities in the edition of EnviroTeach is illustrated in Figure 1.

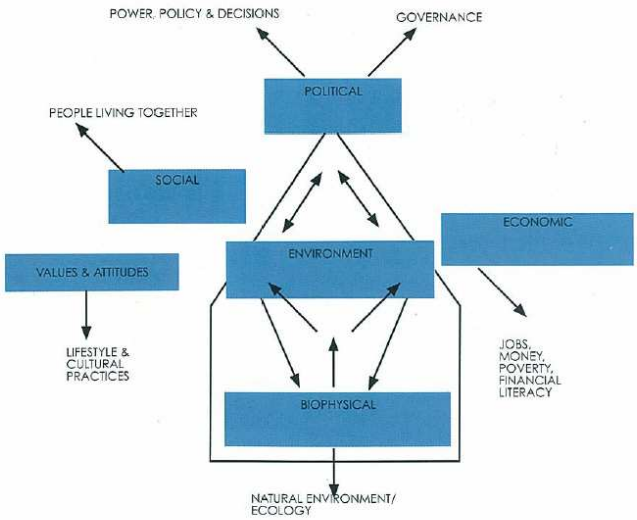
The United Nations has declared the years from 2005 to 2014 as the "Decade of Education for Sustainable Development". South Africa is playing a prominent role in this decade. This edition of EnviroTeach will serve as an excellent resource as it illustrates the strong links and interconnectedness between education (in this case, "Financial Literacy") and understanding the need to live sustainably.

We look forward to receiving your comments on this resource and would welcome sharing your Case Studies with readers in the future.

Rina van der Watt

References: Department of Education, National Curriculum Statement Grades 10-12 (General), 2004
Department of Education, The Manifesto on Values, Education and Democracy, 2001.

FIGURE 1: Concept of the environment



Appendix 13

EnviroTeach

A RESOURCE FOR EDUCATORS

March 2002

Water and the Environment







