A Critical Review of Postgraduate Environmental Education Research from selected South African Universities: 1995 – 2004

A thesis submitted to the Faculty of Education of the University of KwaZulu-Natal in fulfillment of the requirements for the degree of Master of Education

By

Nomanesi Madiya

Supervisor: Dr. A. James

Co-supervisor: Prof. R. Moletsane

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Abstract

This study focuses on reviewing Environmental Education (EE) research that has been conducted by M. Ed and PhD postgraduates from selected South African universities during the period 1995 to 2004. This period 1995-2004 has been characterized by transformation, restructuring, and change in different educational areas of South Africa. This research is premised on the notion that such transformation, restructuring and change may have had an impact on research. The research questions were on the focus, methodologies and, gaps and silences in postgraduate Environmental Education research during the period 1995 to 2004. The study was informed by Homer-Dixon's (1994) theory of Resource Capture and Ecological Marginalisation which claims that environmental problems that exist in South Africa today emanated from apartheid and other marginalisation policies.

Firstly, the study has argued that knowledge produced through postgraduate research can be useful in addressing these problems if it includes issues in all the environmental dimensions, biophysical, social, economic and political, as understood by O'Donoghue (1995). Secondly, it further argued that the methodologies that are used to research on these issues can be useful in addressing these problems if they involve the participation of affected people so that they are empowered with appropriate attitudes, skills and knowledge to deal with these. Thirdly, the study argued that unless new knowledge is produced that will address issues of marginalisation as were created by the past, environmental problems experienced in South Africa will persist.

Because of its reliance on documents as the source of data, I describe the design of this study as unobtrusive documentary small scale study. Masters and PhD theses and dissertations that were produced at the University of Johannesburg and Rhodes University during the period 1995-2004 were reviewed, using both quantitative and qualitative approaches.

The study identified some gaps in the reviewed postgraduate Environmental Education research. For example, more focus on schooling issues resulted in the overlooking of problems that emanated from marginalisation in the contexts where the sampled institutions are located. Little was done to empower people with skills and knowledge that would be useful in addressing environmental problems.

Keywords: Environmental Education research, Education for Sustainable Development, marginalisation, Transformation,

Declaration

I *NOMANESI MADIYA* declare that

(i) The research report in this dissertation, except where otherwise indicated, is my original work.

(ii) This dissertation has not been submitted for any degree or examination at any other university.

(iii) This dissertation does not contain other person's data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

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Ethical Clearance

RESEARCH OFFICE (GOVAN MBEKI CENTRE)
WESTVILLE CAMPUS
TELEPHONE NO.: 031 – 2603587
EMAIL : ximbap@ukzn.ac.za

**UNIVERSITY OF
KWAZULU-NATAL**

1 NOVEMBER 2007

PROF. R BALFOUR (1059421)
LANGAUGE, LITERACIES, MEDIA & DRAMA EDUCATION

Dear Prof. Balfour

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0603/07

I wish to confirm that ethical clearance has been granted for the following project:

"An exploratory study of research priorities, methodologies, trends and developments in educational research in M. E. D. and PhD students' theses in ten South African Higher Educational Institutions (HEI) from 1995 to 2004"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

MS. PHUMELELE XIMBA
RESEARCH OFFICE

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- Last, but most importantly, my children: Thandokazi, Ziyanda, Sisanda and Siviwe for their patience and for giving me all the needed love, smiles and hugs which gave me the reason to wake up and move on every morning.

Abbreviations

ANC - African National Congress

DoE - Department of Education

EE - Environmental Education

EEPI - Environmental Education Policy Initiative

ESD - Education for Sustainable Development

GEAR - Growth, Employment, and Redistribution

HEI - Higher Education Institutions

HESA - Higher Education South Africa

NECC - National Education Coordinating Committee

NEEP-GET - National Environmental Education Project for General Education and Training

NEP - National Education Policy

NGO - Non-Governmental Organisation

NRF - National Research Foundation

PPER - Project on Postgraduate Education Research

RDP - Reconstruction and Development Programme

RNCS - Revised National Curriculum Statement

SAEO - South Africa Environmental Outlook

UNEP - United Nations Environmental Programme

UNESCO - United Nations Educational, Scientific and Cultural Organisation

WCED - World Commission on Environment and Development

Dedication

This work is dedicated, with love, to my son Luhle, Thando, whose life was not long enough for him to witness its initiation and completion. May His Soul Rest in Peace.

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CHAPTER 1

POSTGRADUATE ENVIRONMENTAL EDUCATION RESEARCH FROM SELECTED SOUTH AFRICAN INSTITUTIONS (1995-2004): INTRODUCTION

….research in universities in South Africa is capable of delivering knowledge and insight of the greatest importance to our national well-being. Like any other important pursuit or institution, research itself deserves to be researched (HESA, 2006, p. 65).

1.1 INTRODUCTION

Environmental Education research was and is currently being produced by Higher Education Institutions both nationally and internationally, by experienced and postgraduate researchers. In conducting research, postgraduate researchers follow prescribed requirements, which include the fact that it should contribute significantly to the production of new knowledge in its field (Dinham & Scott, 2001; Yates, 2004). For example, Yates (2004, p. 83) holds the view that a research study may be judged as a:

> good piece of research [on] the scale of the original contribution: either or both that it is going to have some impact on the professional field, or that it redirects

or adds in a significant way to the ways that researchers are currently framing their problems for that field.

Based on this requirement, postgraduate researchers can produce either instrumental research (research that impacts directly on decision making) or conceptual research (research that impacts on decision makers' understanding, even if not directly leading to policy change) (Nutley, Walter & Davies, 2002). Postgraduate research, in other words, may bring about new insights and ideas; new knowledge, attitudes and understandings of practice in which they are produced (Nutley, Walter & Davies, 2002). The statement by HESA (2006) quoted at the beginning of this chapter implies the importance of research in the development and delivery of new knowledge that can be useful in addressing the problems that South Africa experiences. The question, however, is whether postgraduate research, Environmental Education research in particular, produces that new knowledge, and if it is able to come up with new ideas which are relevant and suitable for addressing environmental problems in this country. The best way to establish if this happens is by researching this corpus of research.

With regards to researching research, HESA (2006, p. 66) indicates that some of the questions that need to be asked include: "How much research is being done in South Africa? How, where and by whom is it being undertaken?" To these, one can include the question on what issues are being researched and whether methodologies are used which are relevant to the transformation of undesirable environmental conditions under which some people in this country live. If these questions are asked and gaps in research are

identified, issues such as environmental degradation, poverty, joblessness, inequity, to mention but a few, can be addressed (HESA, 2006).

In this introductory chapter, I first describe the background and context of this study, its focus and purpose and the statement of my research questions. Then I present the study's design and methodology, followed by a descriptive mapping of the dissertation structure.

1.2 BACKGROUND TO THE STUDY

Firstly, it needs to be mentioned that this study's report is generated from the work done for the Project on Postgraduate Education Research (PPER). Further details on the PPER are presented later under the context of this study. For alignment purposes, this report has to be read with the understanding that it complements other pieces of work that are being generated by other researchers who form the team that I work with in the PPER. In this section the reasons that prompted the decision to embark on the review of postgraduate Environmental Education research in particular are unpacked in some detail.

When reviewing literature on the state of South African environment, some reports by the South Africa Environmental Outlook-SAEO (a report by the South African Department of Environmental Affairs and Tourism), indicated issues of concern, considering that the country has changed from the former apartheid policies to democracy. For example, the 2002 SAEO (formerly known as the State of the Environment Report) reported that the Northwest Province was still having a 37, 7% unemployment rate and that 62% of the provinces' population was affected by poverty. There was a reported potential for the

spread of communicable diseases and epidemics and this situation was claimed to be due to overcrowding in this province. Land degradation was also found to be a serious problem in South Africa, with the Eastern Cape being the most affected. There was also a report that in Gauteng unemployment rates had increased from 16.6% in 1991 to 36.2% in 2001.

Although the rates for some of these problems have been decreasing since the 2002 SAEO reports, in some cities the 2008 and 2009 reports revealed that the levels are still high. For example, in Johannesburg the level of unemployment and poverty have been reported to be still high (Johannesburg State of Environment Report, 2008) while in Cape Town both the rate and level of unemployment have also been reported to be still high (City of Cape Town, 2009).

The following statement by the Department of Environmental Affairs and Planning (2009, p. 4) may be seen as a highlight of some environmental problems that South Africa is still faced with today:

> "While in South Africa the year 1994 saw a miracle of a peaceful transition to democracy, the country also finds itself confronted with the realization that after fourteen years of democratic rule, ten years of legislated integrated development planning, poverty remains endemic and widespread while inequalities are increasing… there is increasing pressure on our resources and continued environmental degradation".

Although this statement and the reports indicated above do not produce the sum total of South African environmental issues and trends, they do nevertheless represent, to a degree, a summative account of the primary environmental concerns that might be addressed by postgraduate Environmental Education research which meets the standards of postgraduate research described earlier. I believe that a review of the content and methodological foci of M. Ed dissertations and PhD theses will reveal where and how the selected institutions respond or responded to the regional, community, and national priorities concerning these environmental concerns during the decade under review. The review will also give an insight into how research priorities are defined in postgraduate Environmental Education.

It is also important to mention that in this study I understand the environmental problems mentioned above as having emanated from the oppressive powers of the pre-apartheid and apartheid governments which deprived the black population groups the right to choose areas to live in and economic activities to be involved in. These discriminatory practices entailed, among others, the displacement of people and dispossession of their land and other properties, and had an adverse effect on dignity of the citizens and identity of the communities and societies that were affected. They led to various environmental injustices and educational disparities which affected the poor more than the rich. For instance, land degradation, poverty and pollution, are among the examples that could be seen to have resulted, collectively, from the treatment and violation of the rights of black communities. These are some of the environmental problems, the extent of which is

discussed in detail in Chapter 2. In this study the argument is that these can be addressed through Environmental Education, if it is informed by relevant postgraduate research.

Furthermore, when the new democratic government came into power in 1994, some sectors of this country's citizens, if not all, associated this change with opportunities to be involved in decision making that would possibly turn the above situation around. For others it was seen to bring an end to the poor environmental conditions they found themselves in. There was hope, not only for dialogue and new beginnings, but also for a reversal of both the intended and unintended consequences of the pre-apartheid and apartheid governments' policies and practices. The multitude of pieces of legislation passed since the beginning of democracy, which include the Constitution and its Bill of Rights as well as the subsequent environmental laws, created a positive outlook to the future of those who had suffered the most under apartheid. Some researchers have since called for the establishment of suitable ways of incorporating Environmental Education in the education system of South Africa as a way of addressing these environmental concerns (Lotz-Sistka, 2002). The assumption might have been that once Environmental Education (informed by research) is made a part of the education system, inequity and its related problems would come to an end. Thus, new knowledge from research could assist policy makers and Environmental Education practitioners to understand further the intricacies involved in this fairly new field of educational focus.

Through the historical times in this country, research has been amongst the methods of attaining new knowledge to inform new developments (more of this in Chapter 2). As

mentioned earlier, the 1994 election and its outcomes brought about expectations for the creation of platforms to address the inequalities outlined above. Research would then produce knowledge to inform the transformation initiatives by both government and non-governmental sectors. Environmental Education would also be informed by this knowledge and be able to bring change that would enhance for human survival and bring satisfaction of environmental needs. Thus, there would be evidenced understanding of the interconnectedness of Environmental Education with the socio-economic and enviro-political issues. Therefore, research outputs of the institutions located in the various parts of this country (areas which were heavily laden with the confines of the apartheid laws) could not ignore the disparities discussed above. In the same light, the views of Percival & Homer-Dixon (1998), who understand environmental problems described above as the result of marginalisation practices, are found complementary to those of Janse van Rensburg (1994), in her proposal that research priorities in Environmental Education should be seen within a context of socio-political, environmental and epistemological changes in the Southern African sub-continent.

Considering these views then the assumption is that knowledge that has been produced by postgraduate Environmental Education researchers during the period 1995 to 2004 may contribute significantly in addressing environmental problems experienced in South Africa if it considers and includes issues in the various dimensions of the environment. It has been for these reasons, among others, that I wished to research Environmental Education research. The approach has been to examine the postgraduate research from some South African universities, for these institutions were amongst the producers of

new knowledge during this period of change. The preliminary thoughts were that, the impacts of pre-apartheid and apartheid practices, the new democratic policies and the wide scope of Environmental Education would imply that there were diverse choices of topics that these postgraduate researchers could focus on in their research and possibly overlook others. This would create gaps in Environmental Education. This study intends to establish, to an extent, this possibility.

1.3   CONTEXT OF THE STUDY

In this section I present the context within which this study was conducted and its link to the Project on Postgraduate Education Research (PPER). The PPER Project is funded by the Ford Foundation, National Research Foundation (NRF) and the University of KwaZulu-Natal. It is a project that surveys the trends and reflections in postgraduate educational research in all the higher education institutions of South Africa for the period 1995 to 2004. PPER seeks to answer the following questions in its focus:

- How the research priorities in education have been understood, investigated, and interrogated by the postgraduate researchers.
- How a research priority has been defined or prioritised in postgraduate research in education with reference to scholarship, student interest and areas in need of further research;
- What other domains or disciplines researchers and their supervisors have referred to in contextualising these priorities;

- What issues, developments, and trends were revealed in terms of where universities and researchers placed their focus;

- What the researchers routinely included or excluded and why;

- To what extent the theoretical paradigms employed in postgraduate education research were able to yield new insights concerning research priorities.

From this broad PPER a similar pattern of questions in relation to postgraduate Environmental Education research has been followed in this study. This research work therefore needs to be read within the understanding that it forms part of a wide range of study areas and fields that have been identified by researchers in the PPER. The next section explains the rationale for my choice of Environmental Education.

1.4 RATIONALE FOR THE STUDY

The research trends of the ten year period (1995 to 2004) are likely to still impact on the present issues and research related to environment, to education generally and to Environmental Education in particular. The work of future researchers, policy makers and Environmental Education practitioners may still be informed by knowledge that was produced during that period. The rationale for this study is this:

Firstly, Environmental Education has principles and policies which relate to both formal and informal teaching. From these principles there is little indication of what should determine the priorities for research, and how research should be conducted. The assumption in these policies and principles, it appears, is that Environmental Education

researchers are able to rationally decide on what needs to be researched and how it needs to be researched, possibly based on the stipulations of policies and curricula or their own prioritisation. With my assumption that postgraduate Environmental education research can produce relevant knowledge to address the environmental problems experienced in South Africa, I wanted to review it to understand how priorities have been understood during the period 1995 to 2004.

Secondly, Environmental Education started as a response to human impact in the biophysical/natural environment (Le Grange & Reddy, 2007), and was less concerned with human-environmental issues such as poverty, homelessness, unemployment, HIV/AIDS, unhealthy living conditions, to mention but a few. It has since grown, as alluded to earlier, to include social, economic and political aspects of the environment, and this makes the concept broader (O'Donoghue, 1995; McDonald, 2002; Carruthers, 2006; Cock & Fig, 2001; Cock & Koch, 1991; Ramphele & McDowell, 1991). Based on this widened scope of Environmental Education, this study reviews the Environmental Education research done in the period 1995 to 2004 with the intention to establish the areas of focus and to identify gaps and/or silences in postgraduate research during the study period wherever possible. The ultimate goal is to surface the basis for future research on those identified gaps, that could, if researched further facilitate abatement of environmental problems in South Africa.

Thirdly, as indicated above, South Africa is still faced with environmental challenges such as pollution, land degradation, homelessness, unemployment and poverty (SAEO,

2002; Johannesburg State of Environment Report, 2008; City of Cape Town, 2009). This is regardless of the educational, political and social changes currently enjoyed and of the postgraduate research that has been produced in different over the years, assumably based on postgraduate research requirements mentioned above. Therefore, additional rationale for this study, which came to light during the course of this study, was the finding from literature reviewed that very little has ever been done to review the postgraduate Environmental Education. In short, this research work aims at establishing what the postgraduate researchers in Environmental Education have understood as research priorities during the ten year period (1995 - 2004) and how knowledge produced in such research has responded to biophysical, social, economic, political environmental problems that are experienced in South Africa.

Fourthly, with the historical pre-apartheid and apartheid practices alluded above, the majority of people of South Africa were denied access to knowledge and skills that would be useful to improve their living conditions. It is important therefore that research on Environmental Education should use methodologies that would assist these people to develop such skills and knowledge. Literature reviewed indicates that little research has investigated the kind of methodologies that have been used and what the gaps in postgraduate Environmental Education research and methodologies were during this study period. Irwin's (2005) directory of topics researched and methodologies used in Environmental Education in Southern Africa can be acknowledged as having contributed valuable knowledge in this regard. However, his work does not bring the details of the purposes, contexts, and the ideological assumptions of postgraduate Environmental

Education researchers during the period under this study. Hence I wanted to review this body of work produced by postgraduate Environmental Education researchers to establish its content, context and methodologies and the extent to which it contributes to addressing the environmental challenges that this country experiences. In the process of this review I intend to also identify the other possible issues that might have been overlooked by postgraduate researchers, which if researched might also have been valuable in addressing the aspects of and impacts to our environment. This is done, assuming that there is valuable knowledge that these researchers have produced during this study period, 1995-2004, (as per the requirements of a valuable postgraduate research mentioned above). The next section then presents the focus of this study in relation to the rationale discussed above.

1.5   FOCUS AND PURPOSE OF STUDY

This study focuses on reviewing Environmental Education (EE) research that has been conducted by M. Ed and PhD postgraduates from selected South African universities during the period 1995 to 2004. This period 1995-2004 has been characterized by transformation, restructuring, and change in different educational areas of South Africa. This research is premised on the notion that such transformation, restructuring and change may have had an impact on research. Postgraduate Environmental Education researchers may have produced priorities and attendant agendas that are characteristic of the political and social movements of the decade. Prioritisation may have not only been governed by researchers' own choices, but also determined by the government or institutions concerned. Such influences may have led to either inclusion or exclusion of

some aspects that may have been pertinent to improve Environmental Education in South Africa.

This review therefore intends to identify the trends with regards to the researched issues and methodologies that were used during the study period. The target benefits are to the future Environmental Education researchers who may direct their research to these identified gaps, if any found. This may also benefit the Environmental Education practitioners who may restructure their practices to address the needs of the learners and communities where Environmental Education is practiced. The outcomes may also inform policy makers who in turn could possibly consider them in future policy reviews. This study's report may also inform the content of Environmental Education in the education system. According to the White Paper on Environmental Management Policy (1997), this is supposed to increase people's awareness of and concern for environmental issues, and assist in developing the knowledge, skills, values, and commitment necessary to achieve sustainable development. The next section highlights the questions that direct the focus of this study and the problem to which these are linked.

1.6   PROBLEM STATEMENT AND RESEARCH QUESTIONS

The discussion above noted that the first decade of democratic government (1995 – 2004) in South Africa has been characterised by reconstruction and restructuring of different government systems, including education. For instance, researchers were commissioned to design relevant documents for the new education system (Lotz-Sisitka, 2002; Chisholm, 2004). Also, Environmental Education research has been conducted and

possibly disseminated by academics during this decade. Both the new education system (through Environmental Education) and research reports certainly brought to light some useful recommendations for improving the situations that they focused on. But they both did little (it seems), if anything to arrest the deterioration of the environment of this country.

As stated by different SAEO reports above, the levels and rates of some environmental problems are still high. It was therefore not clear to me as to the purpose and context of postgraduate Environmental Education research in particular; how researchers in this area have understood research priorities; how those priorities have been interrogated and what has been ignored by design or default in the process. No publication has been found during this study which reviews the content and methodologies used by postgraduate Environmental Education during the period 1995 to 2004. To understand this persistence of high levels and rates of environmental problems regardless of new knowledge production, this study will therefore review the content of postgraduate Environmental Education research. The specific questions that this study attempts to answer include the following:

- What has been the trend in postgraduate Environmental Education research during the period 1995 to 2004 in terms of focus and methodology?

This question has been divided into 3 sub-questions:

- What have postgraduate Environmental Education studies focused on during the period 1995 to 2004?

- What methodologies have been used in postgraduate Environmental Education research during the period 1995 to 2004?

- What were the gaps or silences in postgraduate Environmental Education research during this period?

The next section introduces the major concepts and theories that frame this study.

1.7 CONCEPTUAL AND THEORETICAL FRAMEWORK

The major concepts that will be used throughout this study include environment, Environmental Education, Environmental Education research, Education for Sustainable Development, and educational transformation. These will be discussed in Chapter 3 of this study including the study's major theoretical frameworks.

The theoretical framework includes Homer-Dixon's (1994) Theory of Ecological Marginalisation and Resource Capture. Ecological Marginalisation means that environmental problems are the result of unequal resource access and population growth and Resource Capture refers to the view that resource depletion and population growth lead to unequal resource access.

This review is also guided by O'Donoghue's (1995) conceptualisation of environment that includes at least four dimensions. These are: the biophysical which is about living things and life support systems; the social which relates to people living together; the political that defines issues of power, policy and decisions and the economic which relates to it comes to jobs and money.

Based on these theories, this study argues that postgraduate Environmental Education research could produce knowledge and use methodologies that would be useful in addressing the environmental problems that were created by unequal resource access and marginalisation in all the dimensions of the environment. I argue that unless these problems are addressed and people are empowered with knowledge and skills (through participating in research studies), chances of persistence of these problems even during the post-apartheid period are high. These arguments and assumptions led to the adoption of the research design of this study as discussed below.

1.8   RESEARCH DESIGN

The research paradigm and methodology, including the approach, data collection and analysis methods, as well as sampling techniques used in this study are discussed in this section.

1.8.1   Research paradigm and methodology

As indicated earlier, the purpose of this study includes the reading and interpretation of postgraduate Environmental Education theses and dissertations to understand their

content, methodologies and possible gaps. This purpose lands the study within the broad interpretive paradigm which assumes that knowledge and/or reality are socially constructed and the researcher is the medium for revealing this knowledge through interpreting and describing people's intentions, beliefs, values and meaning making (Henning, et. al. 2005). The quest to understand the content and methodologies of postgraduate Environmental Education research is driven by the thought that the intentions of this corpus of knowledge will be revealed and the possible gaps will be identified and be brought to light.

The study relies on documents as the source of data, and therefore its design is a small scale 'unobtrusive' documentary study. It is small scale research because it is part of a bigger project, the PPER, (discussed above) and is focused only on a small section of this bigger project, postgraduate Environmental Education research. The study is unobtrusive research (also known as non-reactive) because involves methodologies that employ indirect ways to obtain data rather than direct data elicitation from the research participants (Webb, et. al.1984, cited in Alison, et. al. 2001).

This study also adopts a documentary analysis method. Documentary research involves the gathering of information through a formal processing, studying, description and analysis of text content so that conclusions may be drawn (Bryman, 2004). This methodology has been identified as best suited to the objective of this study, as stated earlier. Document analysis is mainly associated with the qualitative approach (Cohen, Manion & Morrison, 2007; Babbie & Mouton, 2007; Henning, et. al. 2005). In this study, however, both quantitative and qualitative approaches have been followed in the analysis

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and report of findings. Quantification of researched issues and methodologies used is followed by qualitative interpretation of the findings (Creswell & Plano Clark, 2007). The logic in combining the two approaches is that quantification of researched issues and methodologies used is meaningful if it is followed by qualitative interpretation of the findings (after Creswell & Plano Clark, 2007). The analysis will therefore identify the most researched issues in each of the sampled universities including the purpose and context of research while identifying other possibilities that might have been overlooked by researchers during the study period.

1.8.2   Sampling

This section illustrates how the eleven institutions of higher learning on which the Project on Postgraduate Education Research (PPER) focused have been narrowed to two (2) for this study. To recap, this study's data is drawn from the 11 South African higher education institutions originally sampled by the PPER. This original sampling was based on education research output of these institutions over the decade 1995 to 2004 and the region in which each institution is located. Most of these 11 institutions have not produced postgraduate research in Environmental Education (EE) in their faculties of education during the study period. The study thus focused attention on the two that had more than twenty postgraduate studies. These were the University of Johannesburg (UJ) and Rhodes University (RU).

All accessed PhD and M. Ed theses and dissertations from these two institutions, excluding those that were written in any language other than English, were reviewed. The

location of study of each thesis was identified through scrutinising either the title page or title or abstract or a combination of these indicators. From these theses and dissertations, further interest was on South African based studies because this study is biased towards the South African context only.

1.9   OVERVIEW AND OUTLINE OF THE THESIS

The work done for this study is presented in six interrelated Chapters. This section presents a brief summary of what each of the chapters entails.

CHAPTER 1 presents a brief introduction to the study, describing its background and relating it to the Project on Postgraduate Education Research from which its data is drawn. This Chapter also covers the focus and purpose of this study, the problem statement and research questions. The design is presented, and the chapter encompasses the research paradigm, sampling, method of data collection, and approaches followed.

CHAPTER 2 focuses on the literature review which first describes the history of environment, education and Environmental Education in South Africa during the apartheid era. An effort is made to show how apartheid practices and policies have contributed to the present environmental problems. This chapter also discusses the trends in Environmental Education research internationally and in South Africa with a view to identify the inclusions and exclusions and therefore the possible foci during the study period extending from 1995 to 2004. The policy context for environmental education and research internationally and in South Africa, particularly the policies that have shaped these in the country, are also discussed in chapter 2.

CHAPTER 3 details the rationale for undertaking this study. The theories that frame this study are also discussed in this Chapter and there is an obvious leaning towards Homer-Dixon (1994)'s Ecological Marginalisation and Resource Capture's viewpoint in the work covered. The same can be said of O'Donoghue's (1995) environmental dimensions in relation to the focus of this study. Also, the concepts of environment, and Environmental Education; education for sustainable development; environmental education research; educational transformation and knowledge production are presented in this chapter, highlighting how they are understood in the context of this study. In addition, these concepts and theories are discussed with the intention of highlighting the possible role of knowledge produced by postgraduate Environmental Education researchers in the transformation of the environment in South Africa.

CHAPTER 4 covers the study's research design and methodology, including the sampling methods for both the PPER and this study. This Chapter also discussed the process of accessing data from different institutions, explaining how this was negotiated. Also, the details of data analysis are presented in chapter 4, as well as the ways of ensuring trustworthiness in this study.

CHAPTER 5 presents qualitative and quantitative findings from the study. For both institutions these findings are first presented in comparison with the total postgraduate research production that each institution generated during the study period. They are then narrowed down to postgraduate Environmental Education research in relation to the research questions.

CHAPTER 6 analyses the findings and draws some implications for practice, policy and future research. This Chapter also presents the conclusions drawn from the findings from data analysis.

Chapter 2 presents a review of relevant literature, including the claim that some of the environmental and educational problems that South Africa experiences today have their roots in the historical dichotomy this country went through in the past. Environmental Education policies, both local and international are also discussed in Chapter 2. The major areas of focus of environmental education research and the gaps thereof are also discussed in this chapter.

CHAPTER 2

ENVIRONMENT ISSUES AND ENVIRONMENTAL EDUCATION IN SOUTH AFRICA: A REVIEW OF THE LITERATURE

2.1 INTRODUCTION

Chapter 1 introduced the content of this study by highlighting its background; its context and relation to the PPER; its rationale, focus and purpose. Also the research questions, theoretical and conceptual framework and the research design were all alluded to in the previous chapter. Briefly, it was indicated in Chapter 1 that Environmental Education (EE) is regarded as one of the tools that can be used to address environmental problems, some of which are the product of human interference with the natural environment. Research, on the other hand, provides new knowledge and theories for Environmental Education practice so that it is able to improve and/or bring about change and modification of conditions in different environmental dimensions.

I also indicated my belief, informed by literature, that some of the environmental problems that are experienced in South Africa today were generated by apartheid and other marginalisation practices and policies and that Environmental Education can play a significant role in addressing these if it is informed by 'good significant research' as stated by Yates (2004) (refer to Chapter 1). The study therefore aims to understand what postgraduate Environmental Education researchers focused on during the first ten years

of democracy in South Africa, and whether those foci were able to produce knowledge relevant to address environmental problems that this country is experiencing.

Based on this intention, the main purpose of this chapter is to review literature related to:

- Environmental issues and Environmental Education internationally and in South Africa, by tracing the environmental and educational history from pre-apartheid and apartheid South Africa and the extent to and ways in which that history has contributed to creating environmental problems over the years.
- The trends in Environmental Education research internationally and in South Africa to identify the gaps and/or silences in this area of education.
- The policy context for Environmental Education and Environmental Education research internationally and in South Africa, particularly policies that have shaped Environmental Education in this country.

2.2 ENVIRONMENTAL ISSUES IN SOUTH AFRICA: A HISTORICAL OVERVIEW

Historically, environmental issues in South Africa have been mainly shaped by pre-apartheid and apartheid practices and laws. These laws gave power to the state to exclude black people (in particular) from their deserved environmental rights (McDonald, 2002), to dispossess their land, and to put them in situations that led to poverty and pollution. This section intends to foreground the ways in which some environmental problems in

South Africa were human induced and to highlight the basic assumption that these problems may be addressed through education, supported by relevant research.

Available literature reviewed in this study suggests that during the apartheid and pre-apartheid eras, environmental policies in South Africa were more political than environmental. This meant that the decisions taken to address environmental issues were mainly oppressive towards black South Africans. For example, McDonald (2002) states that these environmental policies led to the occasional forced removals of black South Africans from their ancestral lands to create space for game parks, preservation and protection of fauna and flora, into which these blacks had restricted access. This violation of people's rights would create an impression that the environment was not theirs and that conservation and taking care of the environment was the government's responsibility. Having said that, Table 1 below presents a summary of the examples of legislation and enviro-political issues that had an impact on the environment (and Environmental Education) in South Africa. These are then discussed in greater detail in the sections that follow.

TABLE 1: Environmental Issues in South Africa

1913	1923	1930S	1953	1960-1980	1990S	1994→
Native Land Act passed -relegating blacks to homelands	Escalation of land dispossession for nature conservation	Rural betterment/rehabilitation. Reduced livestock for black farmers	Implementation of Bantu Education Act - inferior education for blacks and less exposure to environmental diversity	Clearance of squatter settlements in urban areas - more blacks sent to small homelands - overpopulation results	Unbanning of political parties Restructuring of education curricular - EE conceptions broadened	RDP addressing environmental inequalities and injustices. GEAR for job creations. Bill of Rights – for rights to safe and healthy environments for all. EE in the NCS. Persistence of environmental problems. What has been researched by postgraduate EE researchers?

2.2.1 Native Land Act (1913)

Under the Native Land Act of 1913 about 87 percent of South Africa's land was allocated to the white population groups (Feinberg, 1993; Whyte, 1995). Black South Africans were relegated to the reserves which were later called homelands under the apartheid government. These reserves constituted only 7% of the country's land and were the least fertile in the country (Durning, 1990; Feinberg, 1993; Whyte, 1995). They were characterised by insufficient natural and trained human resources, with unhealthy living conditions that were aggravated by overpopulation. It was from 1960 to 1980, that 1.75 million black people were forced to move into these homelands to clear the squatter settlement and other 'black spots' in urban areas. This led to a dramatic increase in the population density in the homelands during this period (Percival & Homer-Dixon, 1998).

What this meant then was that the small land reserved for the blacks would be over cultivated and over grazed. This would be worsened by the fact that the reserves had fragile environments, with inappropriate agricultural lands to support the dense populations. This led to severe soil and gully erosion, lower food production per capita and poverty (Whyte, 1995). Also, agricultural practices in the homelands were largely subsistent, with limited understanding of the implications of activities such as sledge building from wood, wood for fire, veld burning in winter, etc. The clearing the squatter settlement and other 'black spots' in urban areas however was not the only reason for placing black South Africans in small fragile homelands during the apartheid era, and were also not the only cause of environmental problems in this country. Discussed below are some other reasons.

2.2.2 Game reservation and environmental racism

As one of their food sources, black South Africans depended on subsistence hunting from which they were also prohibited by the white government, again, in the name of game reservations. Reservation of game, which would benefit the country in different ways, was not a problem. The problem, however, was the fact that black South Africans were not welcome in the game reserves as they were regarded as poachers, while their white counterparts were seen as conservationists (Khan, 2002). Also, membership to the game protection associations was open only to the affluent 'gentlemen' "drawn from the political, professional, and social elite" (Khan, 2002, p. 17). This trend was following the United States of America (USA) where wildlife protection and landscape preservation organisations were established by members of the well-educated, affluent upper and middle classes and were open only to whites (Khan, 2002).

Obviously therefore, game reservation and conservation during the apartheid era contributed to and strengthened the marginalisation and exclusion of blacks from their rightful lands because they were not amongst those privileged 'affluent gentlemen'. The way it was done also created the impression that natural resource conservation was a white government's concern and that black people had to just open space for this.

In addition to this racial discrimination, McDonald (2002, p. 96) indicates that there was also gender discrimination in South Africa with regards to nature conservation. It was a male dominated practice, "with strong militaristic overtones, giving women at best a marginal role, and black women barely any role at all". In other words, women were

excluded from the possible economic benefits they would get from the reserves. Referring to these exclusions, Callaghan, Hamber & Takura, (1997, p. 1) state:

> (Women) have been the historic victims of political and economic exclusions and have suffered the ravages of patriarchy, sexism and discriminatory practices that have kept them outside of social, political and economic power structures.

What this means then is that black women went through double oppression during the pre-apartheid and apartheid eras: racial and gender oppression. This put them into an even worse position with regards to lack of knowledge and skills to address biophysical, social, economic and even political environmental problems that they were and are still faced with today. Women therefore, especially black women, need to be empowered, for example through participation in research and skills training, to be able to deal with the social, political and especially economic difficulties they are faced with.

Referring to this racial and gender oppression, Anderson & Grove (1987, p. 5) emphasise that exclusion and marginalisation of blacks was based on white privilege, power, and possession "as extensions of the colonial political paradigm". This meant that in addition to routine social racism and other forms of marginalisation, black South Africans also experienced environmental racism. This was evidenced by the fact that it was never much of the apartheid government's concern as to how black people felt about the evictions and how their living conditions would be in the homelands where they were sent to. The majority of these people stayed without the basic needs such as water, adequate shelter, food and proper sanitation facilities. These limitations would compel people to use,

excessively, those resources that were freely and easily accessible to them, such as land and forests, which would then aggravate environmental problems in this country. Based on this history, we cannot run away from the fact that different races, classes and cultures will show different responses towards the environment in this country.

This study aimed to establish whether the issue of racial differences with regards to environment and Environmental Education has been considered amongst the research priorities during the period 1995 to 2004. For example, have there been studies aiming at understanding and characterising the former marginalised black groups and supporting their engagement in both general education and Environmental Education? This is one of the issues that this review of postgraduate research will determine.

2.2.3 Poor living conditions, poverty and pollution

Although during the apartheid and pre-apartheid eras South African society was still largely dependent on agriculture, the economy was increasingly industrial and capitalist (Seekings & Nattrass, 2006). As a result, rural problems such as poverty, land dispossession, over-cultivation and low agricultural productivity encouraged people to leave the rural areas for cities in search of job opportunities and better life (Seeking & Nattrass, 2006; Whyte, 1995). This movement led to urban environmental problems such as the shortage of housing, unemployment, and other socio-economic problems. Those who got employment lived in hostels or backyards of their employers and relatives (Seekings & Nattrass, 2006) while the majority lived in shacks or squatter settlements, with limited or no sanitation or waste removal services. In other words, the rural

problems which were generated by the location of black people in small marginal rural areas extended to the urban areas.

For a long time these urban problems affected mainly black men. Women on the other hand were not allowed to leave the homelands in which they were confined by the government but could only visit their husbands in the hostels for limited hours (Flepp, 1985) - another different discrimination on them. With the passing of time however some began to ignore the laws and followed their husbands to the cities. Their movement to these cities, together with overcrowding and poor living conditions in the hostels added to the rapid increase in the development of shack settlements. By 1950 many poor people were living in shacks (about 50 000 in Durban, 100 000 in the Rand and 150 000 in Cape Town), also with poor living conditions but 'better' than paying rent in the backyards of employers (Nuttal, 1996; Bonner, 1995; Goldin, 1987). On the other side the low density suburbs which had all the modern amenities such as swimming pools and large gardens were developing fast for the privileged white communities (Beinart, 1992).

Some black townships were located close to the industrial areas, which led to chest problems due to industrial pollution and other toxic impacts. These unhealthy living conditions would sometimes affect the bread winners of the poor families, which increased the poverty levels for these families. Also, some problems were exacerbated by the fact that a set of policies that were developed by 1948 concerning welfare and labour market were structured for inequality (Seekings & Nattrass, 2006). For example, job opportunities were reserved according to race (e.g. street cleaning in Durban was informally reserved for Coloured or Indian workers). Blacks were restricted from socio-

economic practices such as trading, (Horrell, 1978; Giliomee & Schlemmer, 1989), a practice that also contributed to poverty. However, Seekings & Nattrass (2006) state that during the Second World War many white workers were drawn off into the armed forces and job reservations were relaxed for African people. These were tightened again after the war, confining African workers to unskilled work. This meant low wages and therefore difficulties in acquiring basic needs such as food and proper shelter.

During the transformation period South Africans wanted to change such historical environmental practices through the implementation of new policies that would be informed by research, amongst others factors. The question is whether this history has in a way influenced what has been researched over the transformation period and, if environmental problems are still high or increasing in some areas (as stated in Chapter 1), what might have been the trends in Environmental Education research in this regard.

2.3 ENVIRONMENTAL CONCEPTUALISATION AND EDUCATION IN RELATION TO THE ENVIRONMENT IN SOUTH AFRICA

In this section I will present, first, the environmental problems in relation to the apartheid education system in South Africa, illustrating how this system contributed in aggravating the problems as we experience them today. Secondly the changing conceptualisation of the environment in the new South Africa will be discussed. This will be followed lastly by the discussion on the role that RDP and GEAR played in changing the environment and Environmental Education in this country.

2.3.1 Education in relation to the environment in South Africa

Some environmental problems in South Africa were aggravated by the black inferior education system for black people which, according to Pelzer (1966, cited in McDonald, 2002), was introduced through the implementation of the Bantu Education Act (47 of 1953). This system of education had an impact on the environmental behaviour "since the resultant widespread illiteracy and semi-literacy presented a major obstacle to the development of an aware, informed public, able and willing to participate in environmental decision making" (Pelzer 1966, in McDonald, 2002, p. 18). Together with the restriction on the freedom of movement, the Bantu Education system weakened strengthened the ability of black people to explore and be familiar with the broader environment. As alluded in the discussion about women oppression above, black people were forbidden to leave the highly congested homelands in which they were placed, while the white areas were about one-tenth as heavily populated as black areas (Durning, 1990). Such restrictions implied lack of exposure to the range of environmental experiences to reflect on.

Schreuder (1995, p. 18) states that "apartheid exploited formal curricula to reproduce the political values and beliefs of those in power, including the values and beliefs of the dominant social paradigm". Such values and beliefs included preparing blacks to be cheap labour that would serve the white employers instead of informed citizens that would contribute fully in the development of the country, thereby reducing the possibilities of human-induced environmental problems. This poor education impacted more on women whose only opportunity, as a result, was to work as domestic servants for white families (Flepp, 1985) with no other skills or knowledge that could be useful for

a wider range of economic involvement, including environmental development and planning.

The un-banning of anti-apartheid political parties in the early 1990s meant, amongst other, the urgent need to restructure the education curricula that limited effectiveness in understanding and thus responding to environmental crises in South Africa. Different policies were drawn that were aimed at changing Environmental Education trends of the past (more about this later in this chapter). However, it is still relevant to research what has been researched in Environmental Education after this un-banning of political parties. The assumption is that such research can provide possible reasons for the persistence of environmental problems in South Africa as discussed in Chapter 1.

The discussions above indicated that the main environmental concern of the former governments in South Africa was nature conservation. This indicates that for them the concept 'environment' narrowly meant only nature. The next section highlights the manner in which and the reason why this conception changed over time.

2.3.2 Changing environmental conceptions in South Africa

Although environment was understood as 'nature' in the past, environmental problems in South Africa have always been intertwined with social, biophysical, political and economic issues. The pre-apartheid and apartheid governments, however, were more concerned with nature conservation, which addresses only one aspect of the environment, biophysical (ecology or natural environment). In the 1990s people in South Africa began to be involved in environmental debates which, according to McDonald (2002) led to the

broadening of the definition of ecology. These debates according to Carruthers, (2006) began to focus on "brown" rather than "green" issues: demands for clean water and less industrial pollution, worker safety, and land for housing and subsistence farming. "Once the environment was redefined to include the working and living space of black South Africans it became apparent that environmental initiatives were akin to other post-apartheid, democratic objectives" (McDonald, 2002, p. 2). This trend followed the global environmentalism which since the 1990s had not been solely concerned with fauna, flora and air pollution, but also campaigns against toxic waste dumping, consumer rights and other environmental issues emerged (Cock & Fig, 2001, p. 2).

New environmental discourses, such as environmental justice, which focused on poverty as a fundamental cause of environmental degradation and capacity building, were adopted. These challenged the practices and policies of the past (Cock & Fig, 2001; Cock & Koch, 1991; Ramphele & McDowell, 1991). The new expectations, after a divided political past, were that all South Africans, regardless of race, class, or age, would care for the physical environment because, unlike under authoritarian apartheid, environmentalism became grass-roots mobilization for "our future and for our children" within a united democratic nation (Carruthers, 2006, p.1; Whyte, 1995). The fact that could be overlooked, however, in this kind of mobilisation of 'all South Africans' is the fact that different living conditions would need different approaches in order to change or restructure different responses to the environment. By this I mean that behaviour of the former disadvantaged population groups towards the environment would not be expected to be the same as that of the formerly advantaged groups unless the formerly

disadvantaged are provided with alternatives to the ways they were living during apartheid times.

Although the reports mentioned in Chapter 1 reveal the persistence of environmental problems in South Africa, the democratic government adopted various approaches towards addressing these. Some of these approaches are discussed below.

2.3.3 RDP and GEAR: role in changing the environment and Environmental Education

As a result of the new environmentalism in South Africa in the 1990s (discussed above), the social, economic and political environmental relations began to be part of the country's concerns and the African National Congress (ANC) also started to address the environmental inequalities and injustices as part of the Reconstruction and Development Programme (ANC, 1994). People's basic needs such as water and electricity supply, access roads, schools and clinics stood top in the political agenda of the time. The RDP initiative, however, was replaced by GEAR (Growth, Employment, and Redistribution) in 1996, which according to Carruthers (2006, p.1) was "a conventional macro-economic directive, a free-market friendly economic directive, silent on the environment but seemed to assume that environmental integrity was incompatible with economic growth". Carruthers (2006) states that the introduction of GEAR deflected environmental concerns away from the main vortex of politics, prioritising employment creation, investment, and the eradication of poverty. This change in government priorities with regard to the environment also implied more focus on the social and economic dimensions of the environment than the former focus on biophysical.

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With all these changes however, environmental problems are still being reported high in some areas. This study is based on the notion that new knowledge produced through postgraduate Environmental Education research can be useful in addressing these and therefore this knowledge needs to be scrutinised to understand its focus in both content and methodologies. Such analysis can highlight the possible gaps in both of these areas (content and methodologies).

The purpose of the exploration of the historical-environmental developments discussed above has been to understand and highlight the roots of environmental problems which this country is experiencing. It has also been meant to indicate that research would have to focus its priorities on (and to produce knowledge relevant to) all environmental dimensions for environmental problems to be address in this country. The next section therefore intends to reveal some of the trends in Environmental Education research both internationally and in South Africa.

2.4 A REVIEW OF TRENDS IN ENVIRONMENTAL EDUCATION AND ENVIRONMENTAL EDUACTION RESEARCH

This section reviews literature related to: first, trends in international and national Environmental Education in the context of higher education and postgraduate research as well as other Environmental Education issues that have been researched in the past. Methodologies that have been used to research these are also reviewed. Secondly the section reviews what has not been researched, that is, the gaps in Environmental Education research and methodologies.

2.4.1 Environmental Education in the higher education context: A review of researched Environmental Education issues and methodologies used

Čiegis and Gineitienė (2006) understand higher education institutions as leaders in teaching and learning and in research and technology. They argue that these institutions can help in providing new knowledge and skills needed to meet the challenges of sustainable development in a community. Through research, amongst others, higher education institutions can also raise public awareness and provide preconditions for informed decision-making and responsible behaviour (Čiegis and Gineitienė, 2006). Tilbury (2004) identifies some projects that have been produced at some international higher education institutions which target teacher education with highly interactive activities to promote practical skills for integrating sustainable development themes into the curriculum. These projects also illustrate the use of suitable teaching methods for knowledge, values and citizenship objectives towards sustainable future. Informed by such projects, postgraduate researchers may also adopt interactive methodologies to research on identified environmental issues.

In South Africa for example, there are different issues that might have directed or influenced the choice of research priorities by Environmental Education researchers, especially during the first decade of democracy. These might include the response to government-identified priorities and/or response to environmental problems discussed above. With regards to responses to environmental problems, in a report from the International Mission Environmental Policy, Whyte (1995) identified the need for more research that would be conducted with the affected people in a participatory manner,

including the owning of the product of the research by the people concerned, as well as by the academic or commercial organization that carried out the research for affected communities. In other words, researchers need to identify problems where new knowledge is needed and, working with the communities concerned, work out methodologies towards the solution of those problems.

From literature reviewed in this study, it has not been easy to identify trends in postgraduate Environmental Education research from the body of international and national research in Environmental Education. The discussion that follows therefore includes the general trends that have been identified from literature and does not specify the level at which such studies were researched.

Some trends in Environmental education research have been identified by researchers throughout the world. For example, Jickling (2007) states that there have been some changes in Environmental Education research direction resulting from the intense debates that the field has undergone over the years. Although in other disciplines or fields "deeply held assumptions are revealed, challenged and replaced" (Jickling, 2007, p. 109), in Environmental Education there has not been such wholesale reworking, but instead the widening of possibilities, twists and shifts in research priorities. These changes have been identified in Southern African Environmental Education research. For example Gough & Gough, (2004) state that in the 1990s the landscape of Environmental Education research in this region was mainly dominated by quantitative survey research and participatory action research, with other approaches, such as case study, grounded theory, actor network theory, narrative research, indigenous knowledge, post-structuralism, policy

research, critical realism and critical discourse analysis also getting considered in some South African institutions. They further mention some South African Environmental Education researchers (Janse van Rensburg, 1995; Lotz-Sisitka, 1996; O'Donoghue, 1997) as the academics that were beginning to question the "notions of methodological 'purity' and conformity to dominant research paradigms" (p. 412).

Concerning the researched issues, Gough & Gough (2004, p.413) state that in the 1990s emphasis was on "various contexts of social and political transformation in southern Africa, some of which is intentional and some unintentional, and the tensions that arise when undertaking research in these contexts". Here Schreuder (1995) in 'Delusions of Progress' where he highlighted some perspectives on the common roots and causes of educational and environmental crises in South Africa can be mentioned. Some Environmental Education researchers according to Gough & Gough (2004) focused their research on issues of accountability, where they were assessing the success of Environmental Education programme. Some focused on understanding attitudes and behaviour change. For example Blignaut (1992) focused on 'Existing constraints and attitudes towards the implementation of Environmental Education in Cape schools' while Fiedeldey, et. al. (1998) wrote on 'Human values, attitudes and perceptions of the environment'.

Cheong & Treagust, (2001) state that traditional research on environmental behaviour has focused on the study of issues such as knowledge, attitudes, beliefs, and values to work towards a sustainable environment. They indicate however that recently other influential factors to environmental behaviour such as people's situation, the physical-environment

traits and personal variables have come to be considered in research. These discussed foci include both South African and international trends and are not specific to postgraduate researchers, the researchers who form the focus of this study.

2.4.2 Silences/Gaps in Environmental Education Research

As discussed above, since the 1990s there has been a growing understanding of the broad nature of the environment, from seeing it only in nature conservation and ecological terms. The scope of Environmental Education and Environmental Education research therefore has extended to other environmental aspects, in addition to nature conservation which it has been mainly about before. There have been contradicting reports by researchers with regards to where Environmental Education research has focused on and what has been left out by researchers. For example, Rickinson (2003) states that there has been claims that Environmental Education theory and research ignored children who happen to be the major role players in education. The importance of children in research is shown in the following passage by Beecham, 2001 (cited by Tanzanian Research and Analysis Working Group, 2008, p 2):

> Children are already participating in society as active members, not just citizens in waiting - eager for the day they turn 18. They are often assumed to be passive recipients of basic social services, particularly health and education, but in practice sometimes make their own decisions about whether they use such services. They are subject to the state of the environment in the communities in which they live, and they are also decision makers and economic actors often contributing vitally to household income and well-being. Hence understanding

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their perspectives and priorities is beneficial to trying to improve the lives of households and communities, and the quality of programmes and policies.

If they have been ignored therefore (as stated by Rickinson above) their contribution towards addressing environmental problems would be missed.

Braus (1995) on the other hand states that Environmental Education (and research) has been selectively targeting younger learners in some countries, ignoring other segments of the population. This trend misses other important "audiences, including business leaders, urban poor, senior citizens, the general public, policy makers, and parents" (Braus, 1995, p. 48), people who also need to make informed decisions to deal with environmental problems now and avoid the development of future ones. Gangloff (2007) for instance, mentions researchers such as Khan (2002); Kellert & Khan (2002); Pyle (2002); Rivkin (2000); Kuo, Bacaicoa and Sullivan (1998) some of whom have been concerned with the diminishing children's access to nature. This narrow focus is attributed to the lack of: materials, organizational support, training in how to reach new audiences and training on how to take cultural, ethnic, and economic diversity into account (Braus, 1995). What these contradicting reports imply is that priorities for research focus differ in different parts of the world and possibly also different areas of the same country, which makes it important for research to be reviewed to identify possible regional, national and international gaps.

Research priorities may rely on power of persuasion by certain parties with their particular interests at the expense of the real social, ecological, economic, political or

cultural needs. Gough (1999), for example, states that many Environmental Education researchers tend to present their research as empirical-analytic research in order to have it accepted for publication. In this case the selection of research methods is based on publication demands even if another method would better address the problem at hand.

Also and besides the important role that women and children have played in shaping the history of South African environment, Gough & Gough (2004) report that themes such as human rights, as broadly including gender equality, overcoming poverty, and cultural diversity, have not been the traditional foci for most Environmental Education researchers. In other words, their statement confirms that the environmental knowledge that poor, mainly black, women have or do not have about interacting with the environment to sustain their livelihood has not been much interrogated in Environmental Education research (Derman 1993, cited in Hallowes, 1993). Issues of gender equity, according to Gough & Gough (2004) need to form part of Environmental Education research priorities, especially with the disadvantages and discriminatory practices that children and women have undergone in the past. Thus this study intends to determine if these gender issues have been acknowledged as part of other priorities in environmental education research during the study period in South Africa.

On research methods, Birdsall *et. al* (2007, p. 1), state:

Scholars think of themselves as having "inside knowledge" or being "inside" knowledge. The state of being inside knowledge can be interpreted as a comfort

zone or privileged position, or on the other hand, a trap excluding other ways of knowing.

This may indicate that researchers rely on certain methods which they believe are the best to produce knowledge and ignore others. For example, Westmarland (2001) indicates the criticism, by feminist researchers that quantitative positivistic methods ignore and exclude women in research and add women knowledge to male knowledge, making the findings from research on men to be also generalised to women. This is the trend that would miss the fact that women may have different environmental experiences compared to men and their skills and knowledge may also be different - which would then mean they need a special research focus or attention in some issues.

Referring to different publications in Environmental Education and Environmental Education research, Agyeman, 2003, states that creative things are beginning to happen which reflect the racial and cultural variation in Environmental Education in terms of curriculum content, pedagogy, and practice, which make the field more responsive to the needs of diverse populations. However:

> The same cannot be said in terms of research methodologies within mainstream environmental education… there seems to have been very little in the way of development of new research genres specifically aimed at understanding, characterizing and supporting racial and/or cultural diversity within much of mainstream environmental education (Agyeman, 2003, p. 81).

Although Agyerman's statement here refers to the USA situation it applies also to South African contexts which have the kind of environmental history discussed earlier in this chapter. There seems to be limited, if any, research aimed particularly at balancing the different cultural, class and racial responses to the environment as were created by the history of this country. This review of the researched issues and gaps in Environmental Education shows a limited effort towards informing Environmental Education to address the environmental disparities and inequities as the causes of environmental problems in this country. It is hoped therefore that the review of postgraduate Environmental Education research, on which this study is focused, will reveal a different trend in this regard.

The next section addresses policies on which Environmental Education has been based over the years both internationally and locally.

2.5 THE POLICY CONTEXT

In this section I discuss international policies that have shaped Environmental Education over the years. These will also include the principles and goals of Environmental Education as were set in the international Environmental Education conferences. More emphasis will then be placed on South African policies that are related to Environmental Education that were, in the main, set during the transformation period. These are discussed with the assumption that they may have informed the choice of research questions and topics during the transformation period.

2.5.1 International Environmental Education policies

In the 1960s an awareness of the human impact on natural environmental systems and the role that education could play in reversing such environmental destruction came to light (Le Grange & Reddy, 2007). Scientific and ecological problems such as land, air and water pollution; deforestation and desertification were increasing and a need for intervention (in the form of education) was realised. Following the 1972 United Nations Conference on the Human Environment in Stockholm, United Nations Educational, Scientific and Cultural Organisation (UNESCO) organized an International Workshop on Environmental Education in Belgrade in 1975. This was a response to the task that was given to the United Nations Environmental Programme (UNEP) by the conference delegates to establish the term "Environmental Education" as an "international norm and the conceptual framework within which further development could take place" (Irwin & Lotz-Sisitka, 2005, p. 40).

Irwin & Lotz-Sisitka further state that two years later (1977), the first Intergovernmental Conference on Environmental Education was held in Tbilisi, USSR. It was from these conferences that recommendations for the international application of Environmental Education were prepared. In particular, this section will highlight the principles and goals of Environmental Education as were set in the Tbilisi Conference in 1977 and illustrate how these principles have shaped the Environmental Education curriculum over the years.

2.5.1.1 Principles and goals of Environmental Education

Braus (1995, p. 46) states three major goals of Environmental Education that were developed by the delegates in the Tbilisi Conference (1977):

- To foster a clear awareness of and concern about economic, social, political, and ecological interdependence in urban and rural areas;

- To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment; and

- To create new patterns of behaviour of individuals, groups, and society as a whole towards the environment.

As much as the achievement of these goals would be physically witnessed, for example through the changing behaviours towards the environment, it can still be argued that Environmental Education research would be an important tool for the production of knowledge production on the ways of ensuring the achievement of these goals. Research would also provide information on what different nations of the world do to address their environmental problems and therefore to achieve these goals. This knowledge could be used, in a comparative manner, to inform the environmental practices of different parts of the world. For example, in a country like South Africa I believe that research would produce knowledge on how the new patterns of behaviour by different population groups could be made positive, based on the third Environmental Education goal mentioned above.

It can be mentioned that these Environmental Education goals also show an understanding of the need for it to include all environmental dimensions than the original biophysical focus. This might have been based on the realization that these environmental dimensions are interdependent and therefore problems in one of them affect and cause problems in all.

This interdependence in Environmental Education dimensions is also clear in the Environmental Education principles which, according to the declaration of the conference, would be the guide for effective Environmental Education (Irwin & Lotz-Sisitka, 2005, p. 41). According to the Environmental Education principles Environmental Education should:

- consider the environment in its totality—natural and built, technological and social (economic, political, cultural-historical, ethical, esthetic);
- be a continuous lifelong process, beginning at the preschool level and continuing through all formal and non-formal stages;
- be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- examine major environmental issues from local, national, regional, and international points of view so that students receive insights into environmental conditions in other geographical areas;
- focus on current and potential environmental situations while taking into account the historical perspective;
- promote the value and necessity of local, national, and international cooperation in the prevention and solution of environmental problems;

- explicitly consider environmental aspects in plans for development and growth;

- enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;

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

- help learners discover the symptoms and real causes of environmental problems;

- emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;

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

The fraternity of Environmental Educators and researchers globally has accepted these and based their own Environmental Education strategies and principles on them.

Another international initiative concerning environment (and Environmental Education) is AGENDA 21 of the 1992 Rio Earth Summit, which according to Irwin & Lotz-Sisitka (2005) encourages Environmental Education programmes so that teachers and learners are involved in promoting sustainable development. "Since 1992 the field of environmental education has been widely influenced by the notion of sustainable development, with many educators (and researchers) advocating that environmental

education should, in fact, be focused primarily on achieving the goals of sustainable development" (Irwin & Lotz-Sistka, 2005, p. 42-43). If postgraduate Environmental Education researchers were influenced by the goals of AGENDA 21, what do the researched issues reveal in term of researchers' understanding of sustainable development? Does research indicate the acknowledgement of interrelationship between biophysical, social, political and economic environmental aspects with regards to sustainable development? This study intends to determine the extent (if any) to which these international goals and principles of Environmental Education have been considered in the selected South African institutions.

2.5.2 South African policies related to Environmental Education

In addition to the international policies discussed above, Environmental Education in South Africa has been informed by other policies which mainly developed from the deliberations of the National Education Coordinating Committee (NECC), which initiated the National Education Policy (NEP) (Lotz-Sisitka, 2002). First, like all aspects of South African governance, Environmental Education and Environmental Education research are related to the Bill of Rights in the South African Constitution (Section 24, 1996). As such, environmental issues remain on the agenda of South African democratic government, hence the inclusion of the Bill of Rights in the South African Constitution (Section 24, 1996, p. 1251), which states that everyone has the right:

     (i)   To an environment that is not harmful to their health or well-being; and

(ii)   To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources.

If, as reported by SAEO (refer to Chapter 1) the levels and rates of environmental problems in South Africa are still high in some areas, it can be concluded that there is a reason for these trends which counters the stipulations of the Constitution.

Research can be an important means of identifying that reason and this study intends to determine whether within the focus of postgraduate Environmental Education research there has been an intention to identify it.

In addition to the Bill of Rights, the beginning of democracy in South Africa came with a number of policy initiatives that structured transformation of education and training generally. For example, in 1989 the White Paper on Environmental Education proposed the integration of Environmental Education into formal education. This was the first attempt towards the inclusion of Environmental Education in formal education in South Africa (Le Grange, 2010). Although this White Paper included some of the guidelines stipulated in the Tbilisi principles (1977), according to Le Grange (2010) it omitted some important issues such as the development of learners' critical thinking skills and the identification of symptoms and real causes of environmental problems by learners. A number of other initiatives and deliberations towards the incorporation of Environmental

Education into formal curriculum therefore followed this White Paper. For example, in the Department of Education's White Paper on Education and Training (1995, p. 18) the Ministers of Labour and Education jointly presented a principle on Environmental Education that "…involving an interdisciplinary, integrated and active approach to learning, (Environmental Education) must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources". This principle was informed or related to the general Environmental Education recommendations that were developed in the Tbilisi conference (discussed above).

Some policies that were initiated and implemented during the transformation period were, according to Obol, Allen & Bach (2003, p. 28), influenced by the National Environmental Education Project for General Education and Training (NEEP-GET) for the processes such as:

> course development for formal and non-formal education in 16 higher education institutions; in-service teacher training for environmental education by NGOs; production of resource materials by government departments and NGOs; and workshops for teachers by both governmental and non-governmental agencies and organizations.

The purpose of Environmental Education according to NEEP-GET, around which postgraduate Environmental Education research might have focused, includes the development of skills and competencies such as the ability to:

> identify and solve environmental problems; understand interconnectedness between systems (political, economic, ecological, cultural, social); develop a historical perspective on environmental issues; use science and technology appropriately without detriment to life sustaining systems; develop action competence to address environmental issues; develop environmental literacy (an understanding of current environmental key concepts); understand the contextual and constructed nature of environment and environmental issues; develop a deeper understanding of how people come to perceive of environment and the consequences of their perceptions and actions; clarify their personal values and perceptions on environment and environmental issues (1993, p. 4) .

In this study I argue that knowledge produced through Environmental Education research can be useful in ensuring that these skills and competences are developed, especially if the methodologies used involve people concerned in a practical way.

In addition to the above policies, Whyte (1995) states that the Environmental Education Policy Initiative (EEPI, 1995) also came with a number of proposals with regard to how Environmental Education could be integrated into the education curriculum in South Africa to ensure transformation. These proposals referred to different levels of education, from primary to tertiary. Amongst the proposals that were brought about by EEPI it was indicated that as a perspective, Environmental Education should be integrated within

subjects in a way that would allow each subject to develop its own unique orientation toward environmental issues, concerns, and processes (Whyte, 1995). The following are also some of the proposals that were developed by EEPI which may have been regarded as priorities for research during this study period.

- (The development of) three separate environmental courses, namely a thoroughly revised environmental studies course at the lower primary level, "education for sustainable living" at the middle school level, and a vocationally oriented subject at the senior secondary level, including, for example, environmental law, environmental planning, primary health care, development studies, and conservation management;

- Courses should include subject-based environmental components such as a module on the environmental implications of the chemicals industry in the chemistry syllabus and;

- The promotion of what is called "local, environmental problem-solving curriculum action," which promotes environmental activity beyond the school grounds in ways that enhance the curriculum within the school and can fundamentally alter the way a school operates (Whyte, 1995, p. 18).

If these proposals were taken into consideration in the choice of research topics during the study period, then knowledge may have been produced which would assist in their implementation, considering the fact that Environmental Education was a relatively new area of education during this period.

There are many other proposals that were brought about by EEPI which were intended for the transformation of the results of the past marginalisation practices in South Africa. These include first, the proposals on the issues of race, class and gender in Environmental Education. Referring to the discriminatory nature of higher education during the apartheid era, and the resultant disadvantage to blacks, particularly women, the EEPI proposed that the traditional disciplines at universities needed to be restructured so that they incorporate environmental concerns and increase the capacity of those formally disadvantaged groups to identify, analyze, and solve environmental problems.

Secondly, the EEPI proposed that non-formal education should be accessible to women, particularly black women who "are traditionally the guardians of the health and welfare of their families and, as such, are often very active in environmental issues that impact on the health of their children" and, have been most disadvantaged by the patriarchal, apartheid education system (Whyte, 1995, p. 18).

Thirdly, with reference to issues of class, EEPI proposed the acknowledgement of the value of Environmental Education for workers to the protection of the environment, as these are people in position to monitor compliance with environmental legislation by industry, government, and local municipalities.

In its attempt to influence the Environmental Education policy and curriculum development EEPI was followed by the Environmental Education Curriculum Initiative (EECI). EECI encouraged active learning process for learners and communities "to resolve environmental issues and risk; to prevent environmental degradation and to support sustainable living" (EECI, 1999 cited in Le Roux and Ferreira, 2005). This

initiative therefore understood the better way of dealing with environmental issues to be an active involvement and participation of different people in Environmental Education process. This may include active participation and involvement in research on issues around Environmental Education.

A number of other policies have been developed in South Africa towards the mending of environmental discrepancies of the past. For example, one of the principles of the National Environmental Management Act, (initiated in 1998 and updated over the years including 2008) is:

> Community wellbeing and empowerment must be promoted through environmental education, the raising of awareness, the sharing of knowledge and experience and other appropriate means (Act No. 107, 1998, p. 11); … inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution and degradation of the environment (p.40).

These processes would also succeed if they are informed by research, some of which could have been conducted and produced by postgraduate Environmental Education researchers during this period, especially if the methodologies they used were empowering the affected communities.

Another policy that was developed during the transformation period in South Africa is the Norms and Standards for Educators Policy (2000) which indicates the roles of a teacher as broken into practical competence; foundational competence and reflexive

competence. One of these roles is the community, citizenship and pastoral role with one of the foundational competences expected from a teacher being the understanding of key community problems with particular emphasis on issues of poverty, health, environment and political democracy. For the scholar, researcher and lifelong learner role one of the expected reflexive competencies is that teachers have to reflect on knowledge and experience of environmental and human rights issues and adapting own practices. These are some of the issues that postgraduate Environmental Education researchers, some of whom were teachers, might have focused on during this study period, which this study may have to scrutinize to determine inclusions and exclusions.

Also, the fifth goal of the White Paper on Environmental Management Policy (1997) was:

> To integrate environmental education in all programmes, levels, curricula and disciplines of formal and non-formal education and in the National Qualification Framework (Department of Environmental Affairs and Tourism (1997, p. 17)

Environmental Education would therefore not be a classroom process, but all people and at all settings would be educated, including both young and old.

Some policies include Curriculum 2005 which was implemented in 1998 focusing on Outcomes Based Education, and which happened to be faced with challenges that led to its revision. Such revision of Curriculum 2005 led to the approval of the Revised National Curriculum Statement (RNCS) (2002) which aims "to create a new South African identity that encompasses critical consciousness, to transform South African

society, to promote democracy and to magnify learner involvement in education" (Msila, 2007, p. 151). The RNCS also indicates the need for sensitivity to issues of poverty, inequality, race, gender, age, disability and such challenges as HIV/AIDS (DoE RNCS, 2002). The implementation (or not) of these would in one way or another depend on research. This study will then determine if postgraduate Environmental Education researchers took consideration of these in choosing their research topics and deciding on methodologies to use in their studies during the period 1995 to 2004.

These policies and proposals have been highlighted here to indicate those initiatives that have been taken in South Africa in a quest to address environmental problems through Environmental Education. The issue of participation and empowerment has been at the top of all these policies and proposals. If they had been implemented in different parts of the country tremendous changes in environmental conditions of this country should have been identified. However, SAEO reports otherwise and research can play an important role in addressing this problem.

2.6 SUMMARY AND CONCLUSION

South Africa experiences many environmental problems, some of which are the result of historical political practices of the apartheid government. These historical policies led to different forms of marginalization in educational, ecological and/or socio-economical fields. They also led to unsustainable land-uses, which in turn led to the socio-economic problems discussed above. The challenge for Environmental Education is the diversity of issues it has to deal with or the large scope of what the concept 'environment' entails

(more of this in the conceptual frameworks section of this study). This challenge can be addressed if, as some local and international Environmental Education policies indicate, it is integrated into curricula for all levels and fields of education including both formal and non-formal education practices.

In addition, Environmental Education goals and principles can be achieved through education, informed by research. Therefore, Environmental Education does not have to be the responsibility of particular disciplines or individuals but should involve all areas of education and all people. Different communities, especially those that were affected by political marginalization, need to be environmentally educated in order for the goals of Environmental Education stated above to be achieved. Some of these communities are composed of people who are in the majority uneducated and therefore need different Environmental Education strategies from those used for educated communities. These strategies can also be determined by involving these affected people in research projects to address environmental problems.

The challenges discussed in this review of literature are only some examples of what Environmental Education researchers have and/or should face. The question then is what challenges have Environmental Education researchers responded to in terms of their research foci and how they have conducted their research as a way of making it relevant to address environmental challenges faced by South Africa. These are the questions that base the focus of this study.

The next chapter discusses the conceptual and theoretical frameworks. Thus, it focuses on the discussion of major concepts that are used as the 'building blocks' of this study. The theories that frame the discussions, data analysis and interpretations for the study are also discussed.

CHAPTER 3

CONCEPTUAL AND THEORETICAL

FRAMEWORKS

3.1 INTRODUCTION

In Chapter 2 I presented an historical review of how the pre-apartheid and apartheid South African governments exercised power over the black population groups with regards to environmental practices and use of space. In this review I presented an argument that some environmental problems experienced in South Africa today, such as soil erosion, land and water pollution, overpopulation, poverty, and others, emanated from those past governmental practices of power and marginalisation. I also highlighted trends in research on environmental issues and Environmental Education, particularly the issues that have been researched in Environmental Education over the past decades, as well as the gaps and silences that may attract further research. Lastly, I discussed the international and local policies informing Environmental Education generally and Environmental Education research specifically, internationally and, particularly, in South Africa.

This chapter focuses on the theoretical and conceptual perspectives that have informed this study. I present the conceptual frameworks first, to guide the reader to the context in which each of the concepts have been used throughout the study. This conceptual framework includes the concepts: environment; environmental education; education for sustainable development; Environmental Education research and transformation.

O'Donoghue's (1995) understanding of the environment as a multidimensional concept is also discussed in relation to this study's arguments.

The theoretical framework of the study, including Homer-Dixon's (1994) Resource Capture and Ecological Marginalisation, is then discussed, indicating how these have framed the understanding of the source of environment and environmental problems in this country, which the study argues can be addressed through relevant research. Furthermore, the concept of knowledge production as understood by Gibbons; Nowotny; Limoges; Schwartzman; & Trow (1996) is also discussed in relation to the arguments presented in this study.

3.2 CONCEPTUAL FRAMEWORK

In this section I discuss the concepts that have framed this study. These concepts include; environment, education and Environmental Education; Education for sustainable development; Environmental Education research and transformation.

3.2.1 Environment and Environmentalism

Firstly, the concept "environment" is defined differently by different scholars and in different fields of study and professions such as health, business, natural science and others. For example, the United States Environmental Health Division (2007, p.1) defines environment as "things in the natural environment like air, water and soil, and also all the physical, chemical, biological and social features of our surroundings". Adding the social dimension, the institute notes that the social environment "encompasses lifestyle factors

like diet and exercise, socioeconomic status, and other societal influences that may affect health aspects of the environment" (p. 1). The South African National Environmental Management Act 107 of 1998 defines environment as:

> the surroundings within which humans exist and that are made up of: (1) the land, water and atmosphere of the earth; (2) micro-organisms, plants and animal life; (3) any part or combination of (1) and (2) and the interrelationship among and between them and; (4) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being (p. 8).

In Environmental Education, 'environment' constitutes the centre of debates and its conception has changed over time from more than just a nature-ecology perspective to include human-socially influenced perspectives (Le Grange & Reddy, 2007; O'Donoghue, 2006). These perspectives include the interactions between people, social structures and the physical world. As such, environmental problems are the complex "products of interacting biophysical, economical, political and social dimensions" (Le Grange & Reddy, 2007, p. 77). These four dimensions form the basis for how the environment is understood in the context of this study.

From these definitions it is clear that there is a need to explain the concept environment as it can refer to different aspects of life. In this study I bring to the fore the importance of looking at the environment in its totality than focusing on one aspect as all the different dimensions, regardless of the terms used to describe them, are interrelated. This understanding leads to a discussion on the concept of environmentalism presented below.

The term environment can be understood, according to Miltteman, 1998, cited in Cock & Fig, 2001, p. 1) in a political context as a "political space, a critical venue where civil society is voicing its concerns". This understanding lends an ideological view, referred to as environmentalism. For example, as discussed in Chapter 2 of this thesis, prior to 1990 the understanding of environment by the educated, white, middle class in South Africa was informed primarily by a conservationist approach. Here the environment was mostly seen as concerned more with wildlife conservation than the welfare of indigenous people concerned (Cock & Fig, 2001; Khan, 2002). This approach according to Cock & Fig (2001) led to the view by many South Africans that environmental issues were white, middle class issues. However, since the 1990s this discourse of environmentalism has begun to change.

The change in discourse has been drawing on "ideologies of environmental justice and of green politics to emphasise the importance of linking the struggle against social injustice and the exploitation of people with the struggle against the abuse of the environment" (Cock & Fig, 2001, p. 2). Environmental initiatives, including Environmental Education, emerged in the 1990s in South Africa to address the issues of civil environmental concerns (Cock & Fig, 2001). Since the focus of this study is on research conducted in Environmental Education and the knowledge produced which could address the environmental concerns in this country, a change in environmentalism was expected. In other words, the assumption of this study is that during the transformation period, 1995 to 2004 (discussed later in this chapter), researchers may have chosen topics that indicate the changes in environmental ideologies, emphasising the issues of social injustice, poverty, inequality and the relationship of these to environmental problems.

3.2.2 Environmental Education

Education is defined by Yero (2002) as the process of developing knowledge, skills, or character of the learners (both adults and children). As discussed in Chapter 2, lessons from South Africa's pre-apartheid and apartheid history suggest that education can also be the tool of oppression or transmission of certain ideologies that may not be intended to transform the living conditions of people concerned. Based on this history, Pendlebury (1998, cited in Le Grange, 2000) indicates that education in South Africa during the transformation period is seen as a tool for transformation of all spheres of social life. In the context of this study, education is also regarded as a way of acquiring new and/or adjusting the existing knowledge, skills, attitudes, values and behaviour for the benefit of the individual and society at large. It can be acquired through formal and/or informal processes. Based on these different ways in which education has been conceptualized and used by different people and in different contexts, this study aims to determine the manner in which this concept is understood in the context of Environmental Education research during the transformation period.

According to O'Donoghue (2006) when Environmental Education first emerged in Southern Africa in the 1980s, it focused on the development of environmental awareness through the teaching of ecology for the purpose of addressing and rectifying environmental problems. This focus broadened with time to include social, economic and political dimensions. From this broadened focus, Environmental Education is conceptualized as involving three aspects: education about, education in, and education for the environment (Robottom, 2007). Education about the environment, a focus that dominated Environmental Education in the 1960s, focuses on increasing people's

ecological and scientific knowledge of the environment (Ferreira, 2007). As discussed in chapter 2, this approach intends mainly to change behaviour toward the environment.

The second aspect, education in the environment refers to "…those activities that seek to build an affective connection with the environment through experiences in the environment" (Ferreira, 2007, p. 119). When, for example, a teacher takes the learners to an environment outside the classroom for observation, measurement or other field related activities, the process involves education in the environment. The goal here is the development of knowledge that will ensure acceptable behaviour towards the environment. Referring to Fien (1996) Ferreira (2007, p. 119) states:

> …education in the environment gives reality, relevance and practical experience to learning through direct contact with the environment; develops important skills for data gathering and field investigations; develops appreciation; and fosters environmental awareness and concern.

The third aspect, Education for the environment, is when education activities aim to do something about the environment (Ferreira, 2007). This is when people are motivated and informed about their responsibility in environmental matters so that they are willing and able to adopt positive attitudes towards the use of environmental resources. This way they will be empowered to make informed decisions on how to interact with the environment, possibly also to change their disadvantaged social conditions for sustainable positive environmental practices.

In this study Environmental Education is understood to be inclusive of all three aspects; education about the environment, in the environment and for the environment. I do not see how the goals of Environmental Education (discussed in chapter 2) can be achieved if one or more of these are not considered or are ignored in the process of Environmental Education. As indicated in the discussion above, this study aims to establish the inclusion or recognition (or not) of all these aspects in postgraduate Environmental Education research. The purpose is to establish whether these three aspects of Environmental Education are all included in Environmental Education research, as well as the ways in which they are included. Furthermore, the socio-political influences on Environmental Education and Environmental Education research over time are investigated. For example the apartheid education system in South Africa focused on education about (and perhaps in) the environment, with more attention on ecological protection than on social and economic considerations. This focus seems not to have worked when we consider adverse resource degradation in areas such as the Eastern Cape, where some agricultural lands were so much eroded that they became completely unusable for agricultural purposes (as discussed in Chapter 2 section 2.2.1).

Post-apartheid education policies (discussed in section 2.5.2 above) aim to promote the integration of all the aspects in Environmental Education for better life for all. Robottom (2007) states, however, that education for the environment which is focused on social change, is too demanding for teachers and schools. This is where Environmental Education has to show the learners that the state of the environment, as some of them were born into, is not the ideal one and that it is us, the present and the future generations that will change it for the better. It means showing the learners the consequences of

human, social, political, and economic interference with the environment, in a way integrating the ecological protection dimension into the other environmental dimensions. If education for the environment is then a problem (as Robottom suggests), the question is whether research has produced knowledge that can inform communities and educationists in primary, secondary and tertiary education about their responsibility in environmental matters so that they are willing and able to adopt positive responses and attitudes towards resource use.

Different writers have attempted to define the nature and scope of Environmental Education as promoting the development of responsible environmental behaviour (Ballantyne & Packer, 1996; Gough, 2006, cited in Mosothwane, 2007). But according to Ballantyne & Packer (1996) responsible environmental behaviour will be achieved if students are provided with opportunities to acquire knowledge, values, attitudes, commitment and skills they need to protect and improve the environment. They further state that the majority of educators tend to emphasise the aspects of attitudes and values and pay less attention to developing knowledge. Based on the assumption that Environmental Education is understood differently by different scholars and practitioners, this educator behaviour may be the result of their varied understandings of Environmental Education and how it should be taught. Some educators may believe that knowledge about the environment will not guarantee acceptable behaviour towards it, while values-teaching focuses on acceptable decision making process. This is evidenced by the fact that, as Ballantyne & Parker (1996, p. 26) assert, "[e]nvironmental educators have expended more time and effort on addressing the process aspects of attitudes/values development than on attending to content issues and searching for better ways to develop

students' environmental knowledge and concepts". In other words, environmental attitudes and values have been regarded as more important than environmental knowledge. The review of postgraduate Environmental Education research will determine the trend in this regard, that is, whether researchers have focused on knowledge, attitudes and values or whether there is a gap in this regard.

3.2.3 Environmental Education research

Of what value is research on environmental education? As Gough (2006, p.337) defines it, "[w]hen we speak of Environmental Education research we can only mean education research which has as its focus either existing values and meanings which we believe should be preserved…..and/or new values and meanings which we believe should be promoted". This suggests that research may lead to change in values and meanings with regards to environment and Environmental Education.

This leads to the question: what is research? Cohen, Manion & Morrison (2007, p. 35) define research as "a systematic, controlled inquiry based on deductive or inductive processes". Thus, according to UNESCO (1987, p. 9) Environmental Education research has been conducted by different international regions and states with the aim of "devising innovations, on the basis of a rational analysis of needs and problems, in the content, methods and strategies of an education and training in keeping with the principles and objectives of Environmental Education". In other words research decisions have been determined by the problems identified, either in Environmental Education content or educational methods and strategies. However, research that researches Environmental Education has also not been static over the years. Mrazek (1993, cited in O'Donoghue,

2006, p. 347) indicates that in the 1980s the empirical Environmental Education research has been narrowly focused.

Marcinkowski (1993, cited in Chawla, 2006, p. 360) also indicates that Environmental Education research has mainly "focused on what students know or think, with little attention to the feelings and self-understandings that transform their knowledge and attitudes into action, or bind them to inaction", because it has been highly quantitative. This statement corresponds to Ballantyne & Parker's (1996) above that there can be more focus on either knowledge or attitudes or values in research, which may cause a gap that may need attention of researchers. Through the review of postgraduate Environmental Education research, I will be able to identify and bring to fore such gaps if they exist.

One of the roles of Environmental Education has always been to encourage sustainable use of resources (Gonzalez, 2007), hence its association with the concept Education for Sustainable Development. The following section discusses this concept and relates it to the context of this study.

3.2.4 Education for Sustainable Development (ESD)

In the United Nations Decade of Education for Sustainable Development (2005-2014) UNESCO (2008) states that:

> Education for sustainable development is about learning to: respect, value and preserve the achievements of the past; appreciate the wonders and the peoples of the Earth; live in a world where all people have sufficient food for a healthy and

productive life; assess, care for and restore the state of our planet; create and enjoy a better, safer, more just world; be caring citizens who exercise their rights and responsibilities locally, nationally and globally (p. 6)

The concept 'Education for sustainable development' (ESD) resulted from the perceived need for attention to the socio-economic and political dimensions of the environment which were often neglected in favour of biophysical aspects in conceptualisation of Environmental Education. González-Gaudiano, 2001 (cited in Peters, 2005) identified ESD as one of the emerging discourses in Environmental Education and Environmental Education research, having originated from the 1980 World Conservation Strategy. ESD, according to the World Commission on Environment and Development (WCED), is a pattern of development that meets the needs of the present generations without compromising satisfaction of the needs of the future generations (Fien, 1993). González-Gaudiano (2007) posits the argument that sustainable development's demand and concern for future generations is vague and raises numerous questions relating to whether the current generation's needs have been satisfied, (which is the way that can ensure sustainable development).

As discussed in the section (2.5.2) on policies, development can be sustainable if the disadvantaged people are empowered to attain or develop alternative ways of living when their environmental activities are understood to be against sustainable development. Although some writers argue that ESD does not replace Environmental Education, a shift has been noted by some, such as Peters (2005) towards the 'economistic' models and perspectives (as against or in addition to the biophysical models of the 1950s). These

models, associated with modernization, may ignore the social and physical dimensions of the environment in one way or the other (Peters, 2005).

In the same note of unequal development, González-Gaudiano (2007, p. 105) highlights that ESD may overlook the fact that some environmental problems are the result of:

> a pattern of distribution and enjoyment of the resources and wealth of the world that is intrinsically unfair, immoral, rapacious and criminal. What education can contribute to is putting a spotlight on this curtain, and it can develop capacities to deconstruct the trends that hide or distort the social order that underlies dominant discourse on the sustainability of development.

This suggests that the primary action before emphasising sustainable development would be to provide what is needed to address the needs of the socially disadvantaged. This may be through education and capacity building for change (Tilbury, 2004 cited in Robottom, 2007). The question then is whether researchers have identified this need as stated by Tilbury, and whether the topics that have been researched are meant to transform the societies and address the inequalities through ESD. This question also depends on how transformation, the concept that is discussed below, is or has been understood by postgraduate Environmental Education researchers.

3.2.5 Transformation

Transformation is one of the central concepts that frame the content of this study. The period 1995 to 2004 is regarded as a period of transformation in South Africa, having

been characterised by a lot of change and restructuring in governmental and non-governmental policies as a way of addressing the problems that were brought about by the past governance of this country. The concept of transformation can be understood in different ways by different people in different contexts. Referring to organizational context of transformation, Daszko & Sheinberg (2005) state that transformation is often confused with any kind of change in technology, process improvement or transition, while in reality only few changes are truly transformational. "…while all transformation is change, not all change is transformational" (Daszko & Sheinberg, 2005, p. 1). This indicates that change may take place in an organization but only for the benefit of the privileged few, those that have or are in power.

In the context of education, Harvey (2004, p. 1) indicates that transformation usually refers to "the transformation of the student via learning or the transformation of the institution so that it is better able to provide transformative outcomes, that is, transformative learning or research". The discussions in chapter 2 of this study showed that education during the apartheid years was a political strategy, which was meant to put black population groups in inferior social, economic and political positions. Literature revealed that this marginalization of black population groups resulted in adverse effects on the environment due to unequal development of both rural and urban communities. The effects included pollution, poverty, diseases and other environmental problems and these were partly the result of unequal education opportunities.

Based on these inequalities of the past, Reddy (2004) argues that the meaning of transformation in South Africa related to political transformation of society. This means

that whatever change that would take place after the beginning of democracy would have to be meant to address those issues of inequality so that all South Africans live in decent and healthy environments. With regards to education, one of the proposals of the Green Paper on Higher Education Transformation (Department of Education, 1996, section 4) was that higher education system should "deliver requisite research, the highly trained people and the useful knowledge to equip a developing society with the capacity to participate competitively in a rapid changing global context". In other words, knowledge that would have to be produced in the higher education institutions would have to be relevant to the needs of society.

3.3 THEORETICAL FRAMEWORKS

The discussion in Chapter 2 on South African environment and environmental education shows the different environmental and Environmental Education problems that this country is experiencing, their history and the steps that are being taken to address these. In this discussion I have also indicated that over the years research has always been understood as having a role to play in providing knowledge and theories that could be referred to in order to address some environmental and Environmental Education problems. As stated above, conceptualisation of 'environment' has resulted in different environmentalism versions, all intending to deal with environmental problems, but in different approaches. For example the apartheid regime understood it in a nature conservation perspective, at the detriment of people's dignity, while transformation in the 1990s brought about new environmentalism intended to link the rights of people against social injustice and exploitation with the struggle against the abuse of the environment (Cock & Fig, 2001).

Different research modes and theories have been used by researchers (details in section 3.2.2) to produce knowledge suitable to understand the causes and to develop solutions to environmental problems in South Africa. There have been changing understandings of what should be researched and how research should be done, resulting in different modes of research, referred to as modes of knowledge production (Gibbons, et. al. 1996). Theories have been used to inform research on environment related issues, including the theory of Ecological Marginalisation and Resource Capture by Homer-Dixon (1994) which he used to explain the source of environmental scarcity, and therefore environmental conflicts in different parts of the world, including South Africa. The following section explains the theory of Resource Capture and Ecological Marginalisation by Homer-Dixon, (1994), the modes of knowledge production by Gibbons, et. al. (1996) and O'Donoghue's (1995) environmental understanding, showing how all these have been used to frame the argument of this study.

3.3.1 Resource Capture and Ecological Marginalisation

When powerful social groups identify the transformation of the functional integrity of ecosystems, they decide on forms of interventions which may also produce and lead to socio-economic and health impacts on the non-powerful (Kousis, 1998). Kousis indicates that when these interventions take place, people get deprived of access to resources and get exposed to environmental risks while the powerful have full use and control over natural resources.

> Those who directly or indirectly have the economic and institutional power to affect various types of rural natural resources or activities induce, through their

actions, specific forms of ecosystem offences. Sequentially these environment-related offences lead not only to negative ecosystem impacts but to negative socio-economic, political or psychological effects as well, normally but not exclusively in terms of damages to a local population (Kousis, 1998, p 88).

This discussion indicates the concepts of Resource Capture and Ecological Marginalisation which are seen by Homer-Dixon (1994) as the cause of environmental problems in areas such as South Africa, and which in this study I argue can be addressed through knowledge produced from Environmental Education research. Resource Capture is when the powerful social groups identify decreased quality and quantity of renewable resources and limit access of other social groups to those resources. This unequal access to resources, unfortunately, does not solve the problem, but leads to further decrease in resource quantity and quality and more environmental scarcity, referred to as Ecological Marginalisation (Homer-Dixon, 1994). It gets aggravated by population growth, which in the case of South Africa was caused by more people being sent to rural homelands from the cities in the name of influx control.

Unequal access to resources such as land, fuel, food, water and even education in South Africa led to decrease in the quality and quantity of these resources in the rural homeland of South Africa where people were placed by the apartheid government. Over-cultivation; overgrazing; deforestation; mud brick making, to mention but a few, all led to adverse soil erosion, poor water quality and quantity, pollution as well as food insecurity and poverty in the rural areas of South Africa. Due to these poor environmental resources, people over the years, especially after the attainment of democracy, have opted to move

to urban areas with the hope of better living conditions. This movement, made worse by immigration from other poor African countries, has increased pressure on urban resources, resulting in scarcity of resources in those areas as well, including also the high rate of unemployment and poverty. Figure 1 below illustrates resource Capture and Ecological Marginalisation as understood by Homer-Dixon (1994).

Figure 1: Resource Capture and Ecological Marginalization

Decrease in quality and quantity of renewable resources

Population growth

Increased environmental scarcity

Unequal resource access
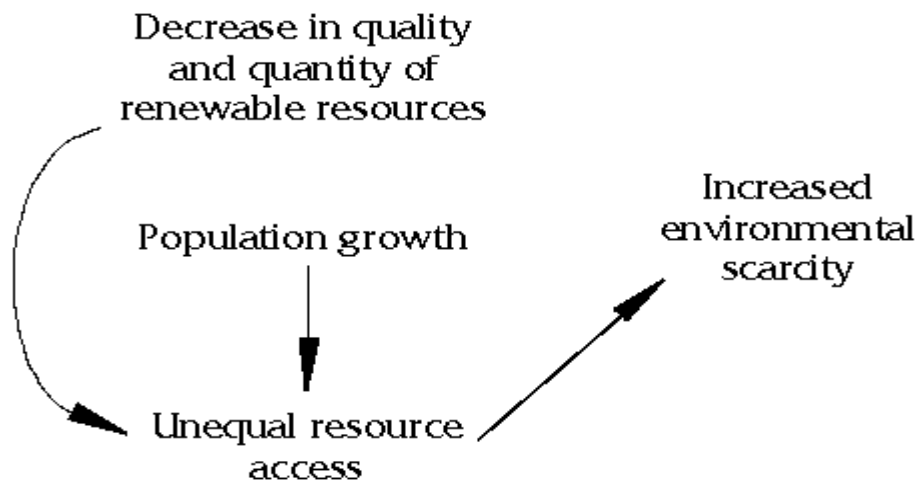
Resource Capture: Resource depletion and population growth cause unequal resource access.

Decrease in quality and quantity of renewable resources

Population growth

Increased environmental scarcity

Unequal resource access
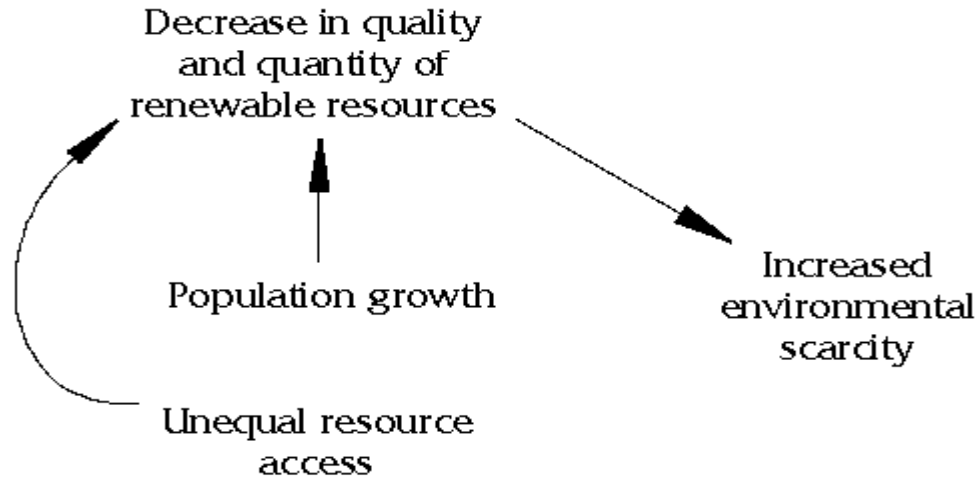
Ecological Marginalization: Unequal resource access and population growth cause resource degredation and depletion.

Source: Homer-Dixon (1994)

Describing Ecological Marginalization, Homer-Dixon (1994, p. 5) states:

> Unequal resource access can combine with population growth to cause migrations to regions that are ecologically fragile, such as steep upland slopes, areas at risk of desertification, and tropical rain forests. High population densities in these areas, combined with a lack of knowledge and capital to protect local resources, causes severe environmental damage and chronic poverty. This process is often called "ecological marginalization".

Homer-Dixon (1994) gives an example of the Philippines where inequalities in access to rich agricultural lowlands combine with population growth to cause migration to easily degraded upland areas, erosion and deforestation. These actions in turn led to economic and social problems for those communities. The colonial policies in the Philippines left a grossly unfair distribution of good cropland in lowland regions. This imbalance has not been rectified by the powerful landowners even after independence. As a result the "economically desperate, millions of poor agricultural labourers and landless peasants have migrated to shantytowns in already overburdened cities…." (Homer-Dixon, 1994, p. 7), which does not therefore, resolve the problem.

Researchers have used this theory to research political and ethnic conflicts and disputes in different parts of the world due to unequal resource access and its effects (El Zain, 2008; Ravinborg, 2003; Mwaura, 2005). El Zain (2008), for example, used to argue the impact of displacement of rural populations in environmental degradation and civil wars in Sudan, while Mwaura (2005) used it to study pastoral conflicts in Uganda and Kenya.

Social conflicts and violence are some environmental issues that have been associated with resource scarcity in these studies using Homer-Dixon's (1994) theory. In this study, however, I have used this theory not to narrowly look at particular environmental problems but with an open mind of reviewing (getting into) all postgraduate Environmental Education studies that were done in the selected institutions. In this study I argue that biophysical, socio-economic and political environmental problems stem from unequal resource access and unless these are addressed through knowledge produced by researchers they will continue even when apartheid has stopped in South Africa. I believe that knowledge that has been produced during the transformation period through research must have been meant for the transformation of people's lives by addressing these environmental problems.

Various Environmental Education policies have been developed during the transformation period which are meant to address the inequities of the past (section 2.5.2) as stated in these theories. For example when the Bill of Rights in the South African Constitution (Section 24, 1996, p. 1251) stipulates the right to safe and healthy environment for all one would refer back to Resource Capture and see the policy as addressing the situation where the politically powerful people grab large tracts of land and other resources only to put the marginalized in unsafe and unhealthy spaces such as flood prone areas of the Western Cape. This study is based on the assumption that the causes of environmental problems as identified by Homer-Dixon (1994) have informed the development of new policies during the transformation period and that the researchers have also been informed by such transformation in one way or another in the choice of their research topics and methodologies. If this is the case, then the question goes to the

kind of knowledge they have produced, whether it has been meant to transform the living conditions of the former ecologically marginalized or it has been just meant to theorize about these. This brings us to the next section on the different modes of knowledge production.

3.3.2 Knowledge Production

One of the major functions of higher education institutions is to produce new knowledge through research, which is partly done by postgraduate researchers. Gibbons et. al. (1996) have identified changes in the ways in which such knowledge is being produced in the natural and social sciences as well as in the humanities. They argue that this change has been from what they term Mode 1 of knowledge production whose "cognitive and social norms determine what shall count as significant problems, who shall be allowed to practice science and what constitutes good science" (Gibbons, et. al. 1996, p. 3). In other words the reason for knowledge production in Mode 1 has been subjective to the cognitive and social norms which might deem other problems non-significant to research.

This mode has been "characterized by a cleavage between academia and society where academia revolves around an autonomous university, self-defined and self-sustained scientific disciplines and specialties, and the determination by scientific peers of what does and does not constitute science and knowledge" (Gray, 2008, p. 2). It is also described by Polk & Knutsson (2008, p. 644) as "a traditional type of knowledge production that occurs in a university context". Knowledge produced through this mode has been and is meant mainly to enrich the theoretical perspectives of various disciplines. However, Godemann (2008) states that today science has to generate knowledge that

addresses global problems such as poverty, environmental degradation and climate change. Throughout the world there has been an increasing demand and expectations from research, that it should be relevant to societal needs - a demand for shift towards Mode 2 of knowledge production.

In Mode 2

> …knowledge is intended to be useful to someone whether in industry or government, or society more generally and this imperative is present from the beginning. Knowledge is always produced under an aspect of continuous negotiation and it will not be produced unless and until the interests of the various actors are included. Such is the context of application (Gibbons, et. al. 1996, p. 3).

The indication here is that in Mode 2 research is conducted to directly solve social (environmental in the case of this study) problems that are identified in consultation and participation of all the people concerned. Referring to Le Grange (2005), Van Louw & Beets (2008, p. 475) mention that knowledge in this mode is meant to be useful and "is produced in the context of implementation until the interests of all participants have been considered". Tierney, (1994, cited in Malone, 1999, p. 232) also posits "if our research is to be praxis oriented, if our purpose is somehow to change the world, then of necessity we must get involved with those whom we study".

This indicates that the process of knowledge production as demanded by Mode 2 should not leave the conditions that were researched as they were. It must be meant to empower

those people whose problems have been identified by a researcher so that they are able to overcome the problems. On the issue of empowerment however there may be conceptions from some researchers that if the knowledge they produce will make respondents aware of their situations then they will be empowered to change their conditions. Malone (2006, p. 377) however states:

> Empowerment is not just a discourse or a state of mind. Empowerment requires the acquisition of the property of power and its exercise in the accomplishment of some vision or desired future condition. That vision cannot be the construction of a text to be published.

In other words if knowledge production is described as emancipatory or meant to empower the respondents or participants, there must be a clear indication of how those people will acquire the power to change their poor or undesirable conditions for a better future. Knowledge produced should leave them independent through necessary skills and knowledge. In fact, as LeCompte, (1993, cited in Malone, 2006) indicates, research should provide not just awareness about the researched conditions, but also activism. People should be able to act on their conditions so that they are able to participate in the issues of sustainable development.

In addition, Louw & Beets (2008, p. 475) indicate that in Mode 2 knowledge "does not result from existing disciplines and does not contribute to the formation of new disciplines". As a result various theories and practical methodologies (that are meant to solve problems) are used and "…both the research themes and designs are influenced by

the problem-solving imperative". A review of research methodologies and content of research conducted by postgraduate researchers in the two institutions on which this study is focusing will determine the mode of knowledge production that was prominent and the intentions it had towards to the solution of multidimensional environmental problems in South Africa. Though these have been mentioned in passing earlier in this discussion, the dimensions of the environment are discussed in detail in the next section.

3.3.3 Environmental dimensions

The literature reviewed indicates that the concept of environment was originally understood to mean only ecology. As a result Environmental Education was only concerned with controlling human actions towards the conservation and preservation of ecosystems. As indicated in Homer-Dixon's (1994) theory of Ecological Marginalisation, this conception of environment has actually led to adverse implications, not only on natural ecosystems, but also on social, economic and political environments. This was an indication of the different interrelated dimensions of the environment as understood by O'Donoghue (1995). These dimensions include: biophysical; social, economic and political (Figure 3).

Figure 3: Interrelated Environmental dimensions (O'Donoghue (1995), adapted

from Le Roux, 2000, p. 19)
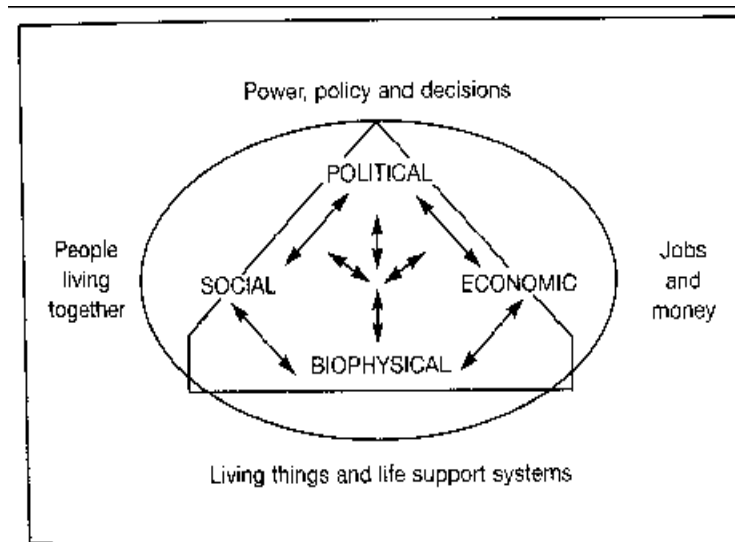
Figure 3 illustrates the importance of the biophysical dimension (living organisms) as a base of the environment, but the arrows indicate the interrelationship between all the dimensions – that if one is affected in any way, all of them will be affected. Le Roux, (2000, p. 21) gives the following example to illustrate the interrelationship of processes in these dimensions:

> Think about, for example, the issue of soil erosion. This environmental issue clearly has an effect on the biophysical or natural world of plants and animals that soil supports. It also has an economic dimension (think about how many people depend on soil to earn a living and will often exploit soil resources for farming because of this); a social dimension (the way people live together is often determined by and, in turn, determines the quality of the soil); and a political

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dimension (consider how apartheid policies forced people to live in certain areas often already badly degraded and leaving people no choice but to further exploit already over-exploited land).

These interrelationships demand that knowledge that is produced through research should be considerate of all the different aspects of the environment to avoid the case where solution of problems in one aspect will lead to the development of other problems in other dimension. This study investigates whether the focus of postgraduate education research during the period 1995 has considered this interrelationship through producing knowledge that addresses problems in all the dimensions, or whether there are gaps that still need future attention.

Based on Gibbons et. al's (1996) theory of knowledge production, this study is based on the propositions (or expectations) that during the transformation period, postgraduate Environmental Education research should have focused on producing knowledge that could be used to address environmental problems that were created by the policies of Resource Capture and Ecological Marginalisation (Homer-Dixon, 1994) in South Africa. The second question of the study interrogated the methodologies that were used during this period, also based on the propositions of Mode 2 of knowledge production (Gibbons, ibid), that these should have intended to change the situations in which people of South Africa found themselves in, owing to resource capture and ecological marginalisation. The propositions (or expectations) outlined above were tentative and were to be tested with the evidence from the study.

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3.4 CONCLUSION

In this chapter I presented the concepts and theories that frame this study and discussed how I will use these together to get answers to my research questions. Concepts that were discussed include; environment, education, Environmental education, Environmental education research and transformation. All these were explained in relation to the context of this study. Homer-Dixon's (1994) theory of Resource Capture and Ecological Marginalisation was then discussed to show how the former environmental policies of South Africa worsened the environmental conditions instead of solving problems. I then discussed the modes of knowledge production in which there has been a noticeable shift from university or discipline based research to research that is meant to address social problems in consultation and with participation of the people concerned. Here I indicated that research in the new Mode should empower people and transform them to be activists rather than just raise the awareness of their conditions. I then indicated that when analyzing data I will adopt O'Donoghue's (1995) understanding of the environment that it is more than just ecology, but includes social, economic as well as political issues. Last, I developed a model of how all these concepts and theories will be used together in this study to get the answers to the research questions.

In the next chapter I present the study's research context and methodology as well as research design, which include the methods that were used to collect and analyse data and sampling techniques for both the PPER and this study.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

This study reviews the postgraduate Environmental Education research from two South African Higher Education Institutions: University of Johannesburg in Gauteng and Rhodes University in the Eastern Cape. As stated in Chapter 1, the study drew its data from the Project on Postgraduate Education Research (PPER) located in the Faculty of Education at the University of KwaZulu-Natal. Funded initially by the Ford Foundation, with the National Research Foundation later becoming a co-funder, the purpose of the PPER is to list, categorise, and analyse ten years of Masters and Doctoral theses produced from 1995 – 2004 in Education in South African Higher Education Institutions (HEIs). Within the larger study, this thesis reviews the postgraduate (Masters and Doctoral) Environmental Education theses and dissertations in order to address the following critical question and sub-questions:

- What has been the trend in postgraduate Environmental Education research during the period 1995 to 2004 in terms of ……?

  - What have postgraduate Environmental Education studies focused on during the period 1995 to 2004?

  - What methodologies have been used in postgraduate Environmental Education research during the period 1995 to 2004?

o What were the gaps or silences in postgraduate Environmental Education research during this period?

This section draws on the summaries presented at the ends of Chapters 2 and 3. Chapter 3, in particular, presented the theoretical and conceptual underpinnings of this study, explaining how the chosen theories frame the study and how various concepts are understood in the context of this study. The chapter indicated that the study is based on the notion that most environmental problems in South Africa emanated from Resource Capture and Ecological Marginalisation as understood by Homer-Dixon (1994). It is also based on the notion that knowledge that is produced through research can help in solving these problems if it is applicable knowledge as stipulated in Mode 2 of knowledge production (Gibbons, et. al 1996). The period 1995 to 2004 in South Africa has been characterised by change in education policies meant to redress the inequalities brought about by the apartheid regime.

This thesis is based on the assumption that due to the transformational activities in the first ten years after apartheid, environmental educational researchers would conduct research that aims to contribute towards addressing the problems and inequalities brought about by the pre-apartheid and apartheid laws. However, as concluded by Daszko & Sheinberg (2005), not all change is transformational. This means that there may have been changes, for example in research methodologies, during the transformation period but that change may have not been able to bring about transformation to the lives of the marginalised people. Having reviewed existing literature on the state of environment and noting reports of increasing environmental problems in some areas, I then chose to

review Environmental Education research for the purpose of bringing to light research trends in this area and possible areas that may be addressed by future research, policy formulation and Environmental Education practice.

In this chapter I present, first, the paradigm in which the study is located. This is followed by the discussion of the study's design, which includes the approach, sampling and methods of data collection.

4.2 RESEARCH PARADIGM

In this study I seek to understand and interpret issues that were researched by postgraduate Environmental Education researchers in the selected institutions during the period 1995 to 2004, and the methodologies that were used in the process of such research. In other words, I want to understand the way(s) in which postgraduate Environmental Education researchers constructed and gave meaning to research priorities and appropriate methodologies to conduct the research. I assume that the review of their studies will reveal the ways in which they understood priorities and the intentions of the research they conducted during the study period. The study therefore is located within the interpretive research paradigm in which "knowledge is constructed….by description of people's intentions, beliefs, values, and reasons, meaning making and self-understanding" (Henning, et. al. 2005, p. 20). This means that, through the analysis of Masters and Doctoral studies from the two institutions, I will be able to identify the way that researchers understood Environmental Education during the transformation period, the reasons for their research and the methodologies they believed would be relevant for their studies based on their understanding of Environmental Education.

4.3 RESEARCH DESIGN AND METHOGOLOGY

As stated above, this study intends to identify trends as well as to reveal gaps in postgraduate Environmental Education research, which, if addressed may bring about positive transformation in the four environmental dimensions identified by O'Donoghue (1995): the bio-physical, social, political and economical dimensions.

Research design according to Babbie and Mouton (2007) is about determining and clearly specifying what one needs to find out, including making decision of the best way of collecting and analysing data. It is, in other words, a plan of action that a researcher will follow in order to gain answers to the stated research questions. Henning (2002) states that for different reasons such as adjusting the topic, inquiry may not develop exactly according to this plan of action, but it is still the necessary starting point, without which a study may not succeed at all. It is therefore imperative that research design should explicitly describe the procedures that will be followed to gain answers to the research questions. The following section describes and provides justification for the research design and methodology used in this study.

4.3.1 Unobtrusive documentary study

Because of its reliance on documents as the source of data, I describe the design of this study as unobtrusive documentary small scale study. In this section I explain these two concepts: unobtrusive and documentary, to indicate their applicability to this study. Unobtrusive research (also known as non-reactive) is described by (Webb, et. al.1984, cited in Alison, et. al. 2001) as involving methodologies that employ indirect ways to obtain data than the direct data elicitation from the research participants. In this study I

only analyse and interpret knowledge that has been produced by postgraduate Environmental Education researchers from their theses (documents) and I do not intend to incorporate their views in the form of, for example, interviews or observation because it would not be easy for me to access them considering the fact that they are no longer students in the institutions concerned. Also, the intention of this study, which includes the description of trends and revelation of gaps in research, does not necessarily demand an additional source of data. I therefore describe this design as unobtrusive.

Unobtrusive research has always been used by some researchers in different fields; for example, Pullen, Ortloff, Casey, & Payne (2000), in education research; Hodgkinson & Thelin (1971) in social service research; Moyer, (1975) in Environmental Education research. It can also involve researching other objects besides books. In Geography for example, researchers usually interrogate physical objects as evidence for their understanding of culture. I also describe the design of the study as small scale study. As explained in the first chapter, this study is a small part of part of a bigger project (PPER) which addresses the trends in postgraduate education research in South Africa during the period 1995 to 2004. I chose to focus on environmental Education using both quantitative and qualitative approaches to analyse data (more about this below).

As indicated above, the study also adopts a documentary analysis method. Documentary research involves the gathering of information through a formal processing, studying, description and analysis of text content so that conclusions may be drawn (Bryman, 2004). For different reasons researchers may use document analysis as a method of data collection. These reasons may include the validation and costs, or their content value

(Henning, et al, 2005). They may also be used to validate data found from interviews. Some researchers may regard this method as more affordable than other methods such as surveys and experimentation (De Vos, et. al, 2002; Bryman, 2004) and yet it may still provide quantifiable data which sometimes would have been overlooked or omitted if other methods had been used (Bryman, 2004).

Some of the questions that a researcher has to consider and address when dealing with documentary research are suggested by Cohen, Manion & Morrison (2007). In Table 5 below, I outline the ways in which these questions are considered in this study.

TABLE 2: Questions to be considered for documentary research (Cohen, Manion & Morrison, 2007, p. 202)

Context of the document	Documentary analysis in this study
Where has the document come from?	From only the sampled institutions
When was the document written?	Should be within the study period 1995 to 2004
What kind of document is it?	Masters and PhD theses and dissertations only
What is the document about?	Those that are about Environmental Education and/or ESD research
What is the focus of the document?	This is this study's research question which can only be answered by interrogating the document itself
What were the reasons for, or causes of, the document? Why was it written?	For Masters/PhD qualifications only
What were the political and social contexts surrounding the document?	The analysis considers the transformational context of South Africa during the study period
What does the document both include and exclude?	This is one of this study's research questions

The questions suggested by Cohen, Manion & Morrison in this extract are basic questions that can assist the researcher to address issues of relevance and trustworthiness of the

document concerned in answering the research questions set. In this study these questions were considered in different ways as indicated in Table 2. To answer the critical question of this study (What has been the trend in postgraduate Environmental Education research during the period 1995 to 2004 in terms of focus, purpose and methodology?) these questions gave me direction into how to look at the documents. For example, the question, 'where has the document come from?' channels my focus into only those theses that were produced in the sampled institutions. When was the document written? This question directed the focus of my review only to the theses that were produced during my study period, 1995 to 2004. What kind of document is it?

Even though I did refer to other documents for literature review, no document would give me better answers to the critical question than the theses that were produced by the postgraduate Education researchers in the institutions concerned. What is the document about? This question guided me into focusing only on Environmental Education theses and dissertations. What were the political and social contexts surrounding the document? This question, for example, guided me in looking at the assumption that the political transformation that was taking place during the period 1995 to 2004 may have had an impact in the choice of research questions and methodologies. In a nutshell, all the questions suggested by Cohen, Manion & Morrison (2007) in the above extract proved to be a good guide for the focus of this study.

4.3.2 Research approach

In a quest to answer the critical research questions posed by this study, I used qualitative and quantitative approaches. As illustrated in Chapter 2 (literature review), these two

approaches have come to be understood as useful and legitimate in social research (Babbie & Mouton, 2007). Although some researchers may choose to locate their studies in one of these, most if not all the time the research will involve quantification and qualification of data, even if this is done at different degrees. These approaches are usually said to be used separately or together depending on the research questions that need to be answered. Babbie & Mouton (2007) state that the distinction between quantitative and qualitative approaches is essentially the distinction between numerical and non-numerical data to be collected. When the two approaches are used, a researcher may first observe, perceive, or identify a problem qualitatively and then may want to quantify it. The researcher may, on the other hand (as in the case of this study), first quantify phenomena and then want to describe them in a qualitative manner. Quantification, according to Babbie & Mouton, (2007, p. 23) "makes our observation more explicit…easier to aggregate, compare, and summarise data".

In this study, as indicated above, documents are the means by which data was collected. Document analysis is mainly categorised as a qualitative methodology (Babbie & Mouton, 2007; Henning, 2005; Cohen, Manion & Morrison, 2007). In this study, however, I used quantitative analysis to determine the frequencies and percentages of themes I identified from data during analysis. Although quantification of data helped to foreground the trend of focus in both contents and methodologies that were used during the study period, I regarded it as limited in answering the questions for this study, especially because data was collected only through documents. I therefore regarded the percentages and frequencies revealed by quantitative analysis as a foundation for thick qualitative description of research patterns and identification of gaps in postgraduate

Environmental Education research. Qualitative description allowed me to use categories and concepts that were used by researchers themselves as an attempt to stay true to the meanings they gave to those concepts and categories (Babbie & Mouton, 2007).

4.4 SAMPLING

In this section I discuss the structural procedure of sampling that I followed in this study. This discussion begins with the PPER sampling, from which this study's data was drawn.

4.4.1 PPER sampling

The initial selection of institutions from which to gather data for the larger PPER study in 2006/7 was based on the research output in education over the past decade, and the region in which the institution was located. The project sought a representative of regions in South Africa with the belief that regional needs do impact on the kinds of research conducted in HEIs. Further, the wish was to select institutions on the basis of their having had a substantial history of education research, whilst not disqualifying institutions because of previous disadvantage. The initial institutions that were selected included (in alphabetic order):

Nelson Mandela Metropolitan University (Eastern Cape);

Rhodes University (Eastern Cape);

Stellenbosch University (Western Cape);

University of Cape Town (Western Cape);

University of Fort Hare (Eastern Cape);

University of the Free State (Free State);

University of Johannesburg (Gauteng);

University of KwaZulu-Natal (KwaZulu-Natal)

University of the North-West (Limpopo);

University of the Western Cape (Western Cape)

University of the Witwatersrand (Gauteng)

The belief of the project leaders that the two factors (output and region) would ensure that region-specific information was gathered and the breadth of research over a chronological period characterised by rapid change was covered. In 2008 the National Research Foundation (NRF) needed the project to collect data from the remaining eleven Higher Education Institutions (HEIs) as well, which were originally not part of the project. These were:

Cape Peninsula University of Technology;

Central University of Technology;

Durban University of Technology;

Tshwane University of Technology;

 University of Limpopo;

University of Pretoria;

University of South Africa;

University of Venda;

University of Zululand;

Vaal University of Technology;

Walter Sisulu University for Technology and Science (did not take part in the project).

4.4.2 Sampling: this study

The sampling technique for this study was purposive. Purposive sampling is a type of non-probability sampling which is based on the knowledge a researcher has of the population and its elements (Babbie & Mouton, 2007; Cohen Manion & Morrison, 2007). As the name of this sampling strategy suggests, it is used or followed to satisfy a particular purpose. For this study sampling is purposive because data was obtained from the larger PPER database, that is, I selected from the topics in the database all those that were on Environmental Education or Education for Sustainable Development, as the study is looking at research trends in postgraduate Environmental Education research. Makhado (2002) states that to increase the utility of information obtained from samples, purposive sampling must be done. This requires that information be obtained about variations among the subunits before the sample is chosen. It is for these reasons that the sample for this study was selected from the initial eleven PPER institutions.

Noticing that most of the institutions in the PPER sample have produced very little or no Environmental Education research in their faculties of Education in the period 1995 to 2004, I decided to focus only on the two that had the biggest numbers of Environmental Education theses and dissertations during the study period: The University of Johannesburg (UJ) and Rhodes University (RU). I regarded these institutions as information-rich for my research questions. The power and logic of purposive sampling is that those few cases that are studied in depth yield much insight about the topic

(Makhado, 2002). Considering the amount of time that is involved in the process of data capturing, cataloguing and cleaning, the additional PPER sample, that which added institutions that were initially not sampled, was excluded from this study.

From the PPER database, all PhD and M. Ed theses and dissertations from the two sampled institutions, with a focus on Environmental Education or Education for Sustainable Development were selected for analysis. However, the sample excluded those that were written in any language other than English. Some were written in Afrikaans, which I could not understand.

Because I was interested only in trends in post-graduate Environmental Education research in South African higher education institutions, I further selected studies whose contexts were South African.

4.4.3 Data collection process and methods

As indicated above, data for this study was gathered from the M. Ed and PhD theses and dissertations produced from the two HEIs during the period 1995 to 2004. This section outlines the processes that were followed in gaining access to this kind of data. As the study is unobtrusive, it was important that careful ethical processes were followed. These were mainly accommodated by the Project on Postgraduate Education Research as indicated below.

4.4.3.1 Negotiating access to the institutions

This section describes the process of gaining access to the institutions for the collection of data for the PPER. Because this study drew its data from the PPER, I felt that this process needed to be explained.

According to Wagiet (1997) negotiating access is a two-fold process that involves gaining access to the institutions as well as to their inner subjectively constructed worlds which requires compliance with a number of ethical considerations. The process of data collection for the PPER involved negotiating access through different gatekeepers of the institutions concerned. First, letters were written and sent (through emails) to the Deans of faculties of Education and to the librarians, outlining the aims and purpose of the PPER and asking for their participation through permitting students in the PPER to make copies of sections of theses in their libraries. In cases where the Deans and librarians were not responding to the emails, phone calls followed.

All the eleven institutions were willing to take part and were pleasingly cooperative. The briefs that were sent to the Deans of faculties also indicated the intention to interview some of the supervisors of those theses, where they were still in the institutions concerned. Interviews were not done on the first round of data collection but at a later stage after having captured data from the theses. Data from interviews, as indicated above, was not used for this particular study.

4.5 DATA ANALYSIS

This study intends to describe the trends in postgraduate Environmental Education research during the period 1995 to 2004 in terms of focus in content and methodology, and has been guided by the sub-questions indicated in the beginning of this chapter. It analyses the extent to, and ways in, which the researched issues and methodologies that were used during this period contributed to addressing the biophysical, social, economic and political environmental issues, many of which were created by pre-apartheid and apartheid practices of Resource Capture and Ecological Marginalisation. The discussion of trends in postgraduate Environmental Education research will also reveal gaps and/or silences in Environmental Education postgraduate research during the study period.

As indicated above the method of collecting data for this study has been the analysis of documents, in the form of Masters and PhD theses from the University of Johannesburg and Rhodes University. I therefore decided to use content analysis to analyse data. Content analysis is a process of summarizing and reporting the main contents of data and their messages (Cohen, Manion & Morrison, 2007). It follows strict and systematic procedures "for the rigorous analysis, examination and verification of the contents of written data" (Cohen, Manion & Morrison, 2007, p. 475). According to Palmquist (1993, cited in Babbie & Mouton, 2007, p. 491), content analysis:

> …examines words or phrases within a wide range of texts, including books, book chapters, essays, interviews and speeches as well as informal conversation and headlines. By examining the presence or repetition of certain words and phrases in theses texts, a researcher is able to make inferences about the philosophical

assumptions of a writer, a written piece, the audience for which a piece is written, and even the culture and time in which the text is embedded.

The steps of content analysis as suggested by Babbie & Mouton (2007) were followed. They mention two types of content analysis. There is relational analysis, which aims to reveal relationships between the elements of data rather than the elements themselves. The second one is conceptual analysis which involves the analysis of major concepts or phrases in data. In this study conceptual analysis was seen as the most relevant type of content analysis because my intention is not to reveal relationships between the data elements, but to understand the concepts and phrases that were used during the transformation period, 1995 to 2004, in researching Environmental Education, and to interpret their relevance to the transformation of biophysical, social, economic and political environmental conditions in South Africa.

The advantage of using content analysis is that it is easy to reanalyze data as documents are in a permanent form. Its purpose according to Weber (1990, cited in Cohen, Manion & Morrison, 2007) includes the revealing of focus, and trends in communicative content. This is the characteristic purpose that made content analysis a relevant method for this study as it also intends to reveal the focus and trends in postgraduate Environmental Education research.

I started by reading through all the sampled theses and then identified the sector of Education under which each study focused: that is, whether it focused on schooling (from primary to secondary education sector), or higher education (tertiary education sector,

including universities, colleges and technikons), or civil society education (including focus on community or people that are not in formal education sectors), or service provider (the organizations that are involved in Environmental Education), or government (governance generally, including education department), or mixed (where a combination of two or more of the above sectors is evident), or documents (all forms of documentary research). These sectors were first identified by the PPER data analysis and were adopted in this study. However, I did not use them in a closed manner, that is, my analysis was open to new sectors that I might identify in the process, which might have been overlooked by the PPER. I identified these sectors through words or phrases (such as teachers' views, community participation, to mention but a few) used in the titles of theses. In cases where the title was not informative enough, I also read through the abstracts and identified the participants in the study. For example 'learners in Grade four' and 'biology educators' indicate the schooling sector. I then counted the frequency of each of these sectors, also considering the areas of major focus in the two institutions.

The next step was to identify the research purposes, as well as research methodologies that were used for each study. I read and re-read the abstracts of each thesis, trying to make sense of what the purpose of the study was and what methodologies were used. In cases where these aspects were not mentioned in the abstract, I read from other copied sections of the particular thesis such as introduction, methodology or concluding chapters. I listed all topics and put the purpose and methodology next to each before I started categorizing these purposes and methodologies (Appendix A) according to their similarities in focus and counting frequencies of each.

These purposes of research were categorized and divided into themes according to their similarities. To limit the number of categories, I decided to generalize around the content for some theses and decided to put together all those that had similar purposes even if they were not explicitly stated. These categories were organized quantitatively into graphs and tables and were then qualitatively interpreted and discussed. These tables and graphs made it easy for me to identify the trends in the research that I was reviewing and I thought they would be understandable to the reader of my thesis as well.

The question on gaps in Environmental Education research was answered through identification of the focus of research and consideration of other possibilities in content and methodologies, guided by the assumptions and the theoretical frameworks I have stated above, that research is supposed to produce knowledge that can be used to solve biophysical, social, economic and political environmental problems.

When identifying methodologies used there were cases where a particular methodology has different kinds, and I decided to group all these as one kind of methodology. For example some researchers used specific case studies, phenomenological and ethnographic, while some did not specify the type of case studies they used. Because all these were case studies, I did not separate them in my analysis as my intention was to determine the frequency of case studies in this regard, not the kinds of case studies that were used.

4.6 TRUSTWORTHINESS IN THE STUDY

According to Lincoln and Guba (1985) trustworthiness in research aims to show that the research findings are worth the attention of the reader. Although this study's analytical methods are both quantitative and qualitative, I decided to use trustworthiness, a qualitative concept, in this study as opposed to quantitative validity and reliability because the study's design, intention and paradigm are mainly qualitative. There are four issues of trustworthiness that a study has to take into consideration: credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985; Schulze, 2003). I will first describe these concepts and then discuss how they were considered in this research.

Schulze (2003, p. 97) describes these concepts as follows: Credibility "demonstrates that the research was conducted in such a way that the phenomenon was accurately described". Transferability demonstrates that the findings from a particular research can be applied in another context. Dependability "refers to whether the findings would be consistent if the enquiry were replicated with the same subjects or in a similar context". Confirmability is a manner in which the research findings are free of the researcher's biases and motivations, but are a function solely of the participants.

To address the issues of credibility in this study, an in-depth explanation of the major concepts used in this study and all the processes of sampling and data analysis was done. This included both quantitative and qualitative analysis and reporting of data. Secondly, analysis was not only intended to list the researched issues and areas of focus, but also to identify the purpose and methodology as indicated in each study. This process provided a

richer and multilayered data even though it cannot be described as triangulation. Also, the appendices that I have included at the back of this thesis add to credibility and confirmability since they provide more detail on how analyses were done. As much as possible I quoted directly from the theses when describing the authors' meanings and implications. However, I acknowledged that researchers whose theses were reviewed would achieve a stronger confirmability than my interpretation would.

In addition to the two experienced and appropriately qualified supervisors, the study is part of a bigger project which is also led by experienced academics. This issue was regarded as part of ensuring dependability, as an element of trustworthiness, in this study, especially because these academics would discuss my study and give adequate feedback (Lincoln and Guba, 1985). In addition, I was at an advantage of being in a project with more experienced peers than myself – those doing their PhD studies. They would challenge my thoughts and drafts, and give suggestions where necessary. A professional and qualified editor would also read through this study after the completion of the writing process to add to trustworthiness (Lincoln and Guba, 1985).

On a general note I considered the limitation of relying on documents for data and therefore did all that I could do to work towards trustworthiness in this study. For example, Cohen, Manion and Morrison (2007) indicate that a researcher needs to understand that documents are social, selective and contextual products which do not need to be just accepted as they are but need to be interrogated and interpreted. To interrogate the documents or theses and dissertations I was reviewing in this study, I followed in-depth reading (repeating until clear of content) of the sections I was

interested in. In cases where these were completely not clear (such as in methodology that was used), I also did further literature review to associate what the researcher was stating with how other writers have explained it. In other words I would sometimes give my interpretation based on literature and inference. Caution was valued as I was reading the theses to consider ambiguity of some words and phrases. This indicates cases where a word or phrase may have more than one meaning, indicating the need to understand it in the context in which it has been used in the text one is reading. For example, I considered the example given by Cohen, Manion & Morrison (2007):

…..what does the word 'school' mean: a building; a group of people; a particular movement of artists (e.g. the impressionist school); a noun; a verb (to drill, to induct, to educate, to train, to control, to attend an institution)…… (p. 490).

Reading each thesis several times assisted me to understand the context in which phrases were used before I made any interpretation. When the categories and themes were defined (as discussed in the data analysis section above), I also double checked from the EndNote database of the PPER to see if the different project members that captured data also understood these the same way as I did.

The document analysis that was done in this study, like any other method of data collection, has its strengths and weaknesses. For example, as indicated above, no other source would have given me better information about the researched issues and methodologies during the study period than the theses I reviewed. Even the researchers concerned might have left out some of the details I got from these documents. Documents

on the other hand do not forget any detail written on them. However, document analysis has its limitations. De Vos, Strydom, Fouche, & Delport (2002) states that the document may be limited in the amount of relevant information it holds for the researcher, and that the researcher may be vulnerable to the biased opinions of the author with little chances of questioning those.

Although document analysis is widely used by researchers, it is quite often integrated with other methods such as interviews and observations for triangulation, which may mean extra time and costs for research. Thus, limiting data collection for this study may have left some questions unanswered for the audience or reader of this thesis. Nevertheless, in the trustworthiness section above I have explained how I have tried to address this possibility. For example, I have explicitly explained the process of data collection, analysis (and findings) of this study as a way of way of ensuring trustworthiness. Moreover, it is not the purpose of this study to generalise about the findings to other contexts, such as other institutions that were not reviewed. However, in this study I intend to provide the picture of the research trends in the two sampled institutions with the hope that if knowledge I have produced can be considered in other contexts, it may be useful in influencing research on issues similar to those identified in the different theses reviewed.

4.7 REFLECTIONS ON THE RESEARCH PROCESS

In this section I reflect on the experiences I went through as an inexperienced or novice researcher in the different sections of this study. To introduce these, I briefly outline a brief background of my research journey.

When I joined the Project on Postgraduate Education Research (PPER) in 2007, I had just completed my Honours degree, which I had done through correspondence. In the process of my Honours study, I had been theoretically introduced to different research methodologies, but had very little experience in carrying out a research project. As a result, the process of this study has been a hard experience for me. The reflection begins from the process of data collection and supervision, to data analysis and reporting. It includes the highlights on my experiences as a novice researcher and the challenges I experienced with the design of my study. I present this reflection with the intention and hope that it will be a useful point of reference to researchers who are as novice as I was as I started in this process.

4.7.1 Experiences with getting access to data

Negotiating access to data can be time-consuming, difficult and testing on one's patience, creativity and flexibility (Taylor, Millei, Partridge & Rodriguez, 2003; Matthiesen & Richter, 2007). As a novice researcher in the project that has been facilitated by experienced academics, it never came to me that I needed to familiarize myself with literature on getting access to data (Matthiesen & Richter, 2007) as I never anticipated any obstacles in the process. This was also caused by the fact that I had been working with the team on issues such as the preparation of applications for ethical clearance and I would not be responsible for all steps that had to be followed. When it came to negotiating access to data there were institutions that were assigned to me and I had to communicate with the gatekeepers including the deans of faculties of Education and the librarians in those institutions to request their consent to come and make copies of theses and dissertations.

In this process I learnt that there were power dynamics inherent in accessing data and that power is something that a researcher needs not to only be aware of, but to negotiate in the process of research (Merriam, Johnson-Bailey, Lee, Kee, Ntseane & Muhamad, 2001). These power dynamics proved to have a lot to do with the researcher's identity and the mode of communication the researcher uses in the process. There were cases where I got no response to the emails that I sent to some institutions concerned. I then communicated the problem with one of the project leaders, a professor, who then communicated with the institutions, to whom they responded. His power as a professor worked for the good.

The impression I got from the responses to the leader was that my email address had a lot to do with poor response from the institutions. It was beginning with a student number, which is how student email addresses are in our institution. Therefore it revealed my identity as either 'a number' or a student, depending on the interpretation by the recipient of the email. Both these possibilities put my emails in a position that made recipients reluctant to respond to. I also found from literature that the form of communication one uses when negotiating access to data has implications for whether one gets consent or not. For example, Matthiesen & Richter (2007) mention three of these and indicate that emails tend to be too informal and may not be appropriate to rely on except for initial queries; telephone calls are warm and personal and one can verbally state the request, but have a possibility of leaving out some points; written letters are the most formal and professional approaches to use. In most cases I ended up combining these three forms of communication, that is, emailing and attaching a detailed letter of what the projects is about and then calling the dean and the librarian to make them aware that I have sent those electronically and asking for their response.

My other experience with negotiating access to data related to the issue of being an outsider in the institutions where I went to collect data for the PPER. An outsider is described by Breen (2007) as a researcher who does not belong to the group under study. When referring to the concept of outsider, literature mainly focuses on issues of gender, race, sexuality, and socio-economic status (Breen, 2007; Merriam, et. al, 2001; Matthiesen & Richter, 2007). l could not find information from the literature I reviewed about the challenges I could experience while trying to find data from the libraries of institutions to which I was not a member. However, the experiences I encountered during this process are worth discussing. They relate mainly to the issue of having not found all the theses and dissertations I needed because of limited knowledge of where else these might be located except in the libraries.

From all the libraries I visited, I received warm welcome from the librarians, with some even having collected the theses and dissertations that were within the study period, 1995 to 2004. In some libraries I had to go to find these from the shelves by myself. In both ways of accessing these however, there happened to be a problem that not all were in the shelves that were open to the public. Some were locked in the protected archives; while some were in the lists that the libraries had but were missing from the libraries with no explanation of where they might be. It was sometimes suggested that they might have been kept by supervisors in their offices, some of whom had either retired or left the institutions. Some were in transit from the different campuses that merged and therefore could not be accessed. This meant that not all data I needed was available. It also happened in some institutions that there was more than one library where theses and dissertations were kept, but this information was not given to me by some librarians

concerned. This information was only found from some supervisors that were interviewed in those institutions, which implied extra costs of going back to make copies of those that were missed during the first phase of data collection. This is the kind of knowledge I would have had if I had been an insider in those institutions.

4.7.2 Supervision models experienced

Supervision is understood to be one of the most variable and important factors in the success of a research process as well as in the process of enculturation into a community of practice (Dysthe, Samara & Westrheim, 2006; Conrad, 2003). A community of practice according to Hartnell-Young & McGuinness (2005) refers to   a group of people who share, amongst others, the passion about a topic or a problem and who interact on an ongoing basis to deepen their knowledge and expertise. I interpret my experience with supervision during the process of my study, which has been part of a bigger project described previously, as enculturation into the research community of practice and the discussion below will show why.

It was frustrating at first when, during the beginning of the PPER, the leaders did not assign us (the postgraduate students in the project) one-on-one supervisors, but wanted us to perform collective tasks such as the development of the whole project's data collection tools. They would also want us to write together different sections of the project such as the theoretical framework and the ethical clearance. We would then meet with all of them together and present what we had been assigned to write or develop together as well as to brainstorm our thoughts and ideas about each of our individual studies that would emanate from the project. The project leaders would together give us feedback on which

we would have to go and work on together as well as suggestions on our individual studies.

With time, I learnt that we were being supervised during that process and made to learn together and from each other. Learning through supervision is described by Dysthe, Samara & Westrheim, (2006) as implying the ability to perform new activities, tasks and functions as well as to master new understandings, which is what has happened to me during this process which I describe as enculturation. I also learnt that the reason for the leaders to let us share our ideas and views with regards to our individual projects was to create a feeling of community amongst us and to develop mutual engagement and reflections about our plans at the initial stages (Dysthe, Samara & Westrheim, 2006; Ellis & Levy, 2008).

When I eventually got to work with my individual supervisors, I had already learnt a lot from other students and from other leaders who were not my supervisors. Although I did not get a chance to choose the supervisors, I was fortunate to have landed in the hands of experts in both the field of my study, as well as the broader education research field, which I also work in. I have not been an easy student to supervise due to my challenged background with regards to research, but my supervisors have been very patient with me and I learnt a lot from them. My research process has not been a straight forward step-by-step process, but the ideas and skills I attained from them as well as from the meeting with the experienced students and project leaders were very helpful. The research process included going back and forth the different chapters, trying to make it a coherent,

informative study which would make meaning to the reader and contribute to the body of knowledge in Environmental Education.

4.7.3 Working with documents

Since the design of this study was unobtrusive, relying on documents as the source of data, with no contact with the researchers whose work was reviewed, I sometimes had questions on how or why a researcher decided to research on a particular issue or use a particular methodology. For example, getting the reason why the researcher decided to use a particular methodology could not be found. This limitation warranted in-depth reading of both theses and literature, and sometimes inference on issues that could clearly not be established. For example, researchers would use some concepts such as 'participants' and/or 'informants' in a way that needed in-depth reading of the processes that were followed in a study to be able to understand whether they were practically participating in research or they were only interviewed or filled questionnaires. For the purpose of my study this was an important aspect to understand as I wanted to determine the extent at which the studies were designed to address the unfavourable environmental conditions in different environmental dimensions. I therefore realized that should it have been easy to locate the researchers whose studies I was reviewing, there are number of questions I would ask from them which the documents could not answer.

4.7.4 Being a novice researcher

In addition to the experiences I have discussed above, which also relate to being a novice researcher in a large project, I also reflect on limitations I encountered during the process of data collection. My limited experience and poor background in research, as discussed

above, has impacted on the progress of the study, and possibly unintentional errors may be identified by experienced readers throughout the text. To address this possibility, data analysis, both qualitative and quantitative, were detailed and supported by detailed and thick description and presentation of results. Moreover I avoided generalizing the findings of my analysis to contexts outside the reviewed institutions but highlighting their relevance to others as well.

Sometimes I was also disturbed by contradicting use of various research concepts by different researchers. For example, the concepts 'quantitative' and 'qualitative' would be methodologies for some and approaches for others. As a novice researcher, I was of the notion that concepts would be understood the same way by all researchers in the same field. This, however, was addressed in work on my literature survey when I started noticing that all this depended on the author/s the researcher referred to, who also use concepts differently.

4.8 CONCLUSION

In a quest to understand the trends in postgraduate Environmental Education research in terms of areas of focus and methodologies used, in this study I reviewed the Masters and PhD theses and dissertations from the two sampled institutions. This chapter first presented the context of the study, that is, its relationship with the PPER. A brief discussion of how the PPER sampled institutions for the project and the rationale for the selection of the first sample of institutions was made. This was then followed by the discussion of how I drew data from the PPER for this study and the purposive sampling of the two institutions that I regarded as information reach. I also discussed the

methodology and the methods that were used in collecting and analysing data. The final section of the chapter presented the ways in which I tried to ensure trustworthiness in this study. In the next chapter I will discuss the findings of this study.

CHAPTER 5

TRENDS IN POSTGRADUATE ENVIRONMENTAL EDUCATION RESEARCH IN TWO SOUTH AFRICAN HEIs DURING THE PERIOD 1995 TO 2004: DATA ANALYSIS

5.1 INTRODUCTION

In Chapter 2 of this research it was indicated that the human impact on natural environmental systems (in South Africa and globally) and the role that education could play in reversing such environmental destruction came to light in the 1960s (Le Grange & Reddy, 2007). In the 1960s increasing scientific and ecological problems such as land, air and water pollution, deforestation and desertification were identified and this made scientists and governments, internationally, to see the need for intervention in the form of Environmental Education. Literature reviewed in this study indicated, however, that the initial focus of Environmental Education was mainly towards the conservation of the biophysical or ecological environment and little concern was shown towards people who would be affected by these conservation measures and whose response to the environment would have some implications.

As discussed earlier in this research report, the narrow focus of Environmental Education towards nature conservation left traces of environmental degradation in South Africa, and this was worsened by Resource Capture and Ecological Marginalisation (Homer Dixon, 1994). Changing environmentalism on the other hand, especially in the 1990s, has broadened the concept of Environmental Education to include social, economic and

political dimensions in addition to the earlier biophysical dimension (O'Donoghue, 1995). Post-apartheid environmental policies are also geared towards informing education and research interventions for addressing the problems that resulted from apartheid environmental policies.

Related to these changes, the purpose of this study was to analyse postgraduate Environmental Education research in order to gain an understanding of its content and methodological focus. Environmental Education research at two institutions: the University of Johannesburg (UJ) and Rhodes University (RU) during the period 1995 to 2004, was analysed. The study was informed by, among others, the statement in 2006 by Higher Education South Africa (HESA) that research deserves to be researched (see Chapter One) to determine what is included and excluded.

The main research question informing this study was:

- What have been the trends in postgraduate Environmental Education (EE) research during the period 1995 to 2004?

This question was then divided into the following sub-questions:

    o What do postgraduate Environmental Education studies reveal in terms of research productivity during the period 1995 to 2004?

    o What have postgraduate Environmental Education studies focused on during the period 1995 to 2004?

    o What methodologies have been used in postgraduate Environmental Education research during the period 1995 to 2004

o What were the gaps or silences in postgraduate Environmental Education

research during this period?

In this chapter I present the findings from the study. First, the chapter presents a quantitative analysis of Environmental Education research productivity during the period 1995 to 2004 in the two sampled institutions. Second, the chapter discusses the focus of postgraduate Environmental Education research in relation to education sectors, participants, environmental dimensions and kind of environments (brown or green) in which research was conducted. These are discussed concurrently with the purposes for which research was conducted. Third, the research methodologies that were used by postgraduate Environmental Education researchers during this period are discussed. While these sections are discussed, the gaps in each of them will be discussed and will be dealt with in detail in Chapter 6.

5.2 TRENDS IN POSTGRADUATE ENVIRONMENTAL EDUCATION RESEARCH: 1995 TO 2004

In this section I discuss the trends in postgraduate Environmental Education research with regards to, first, the general research productivity in the two institutions sampled for this study. In the second part I discuss these with regards to research focus in the two institutions.

5.2.1 Environmental Education research productivity in the two institutions

During the first phase of data collection the PPER located and captured a total of 2358 education theses and dissertations produced from 1995-2004 from the 11 institutions sampled (Nelson Mandela Metropolitan University (Eastern Cape); Stellenbosch University (Western Cape); University of Cape Town (Western Cape); University of Fort Hare (Eastern Cape); Rhodes University (Eastern Cape); University of the Free State (Free State); University of Johannesburg (Gauteng); University of KwaZulu-Natal (KwaZulu-Natal); University of the North-West (North West); University of the Western Cape (Western Cape); University of the Witwatersrand (Gauteng).

Of the 2358 theses, 51 focus on Environmental Education research (42 Masters and 9 PhD). Thus Environmental Education research accounted for only 2% of the dissertations and theses in education from the 11 institutions. From this total postgraduate education research output, 707 were found at UJ and 133 from RU (figure 5.1). These figures reflect data that were found in the libraries of these institutions during the process of data collection (it is possible that some theses and dissertations that were not in the libraries at the time of data collection may have been missed).

Figure 5.1: Total no. of theses per institution for the period 1995-2004
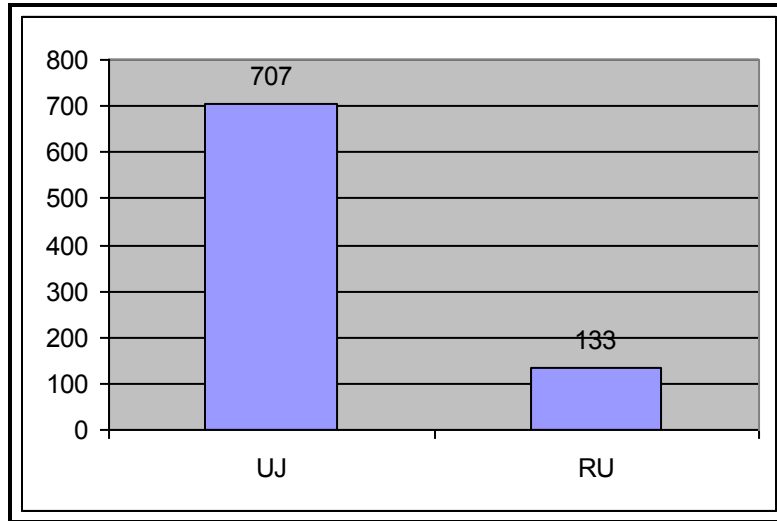
UJ produced 606 Masters and 101 PhD studies. 23 of these were on Environmental Education research in South Africa, of which four were PhD and 19 Masters (see appendix A for titles). As shown in figure 5.2 below, of the total 707 postgraduate theses and dissertations at UJ during the study period, only 3% focused on Environmental Education research.

Figure 5.2: Percentage of EE produced at UJ during the period 1995-2004
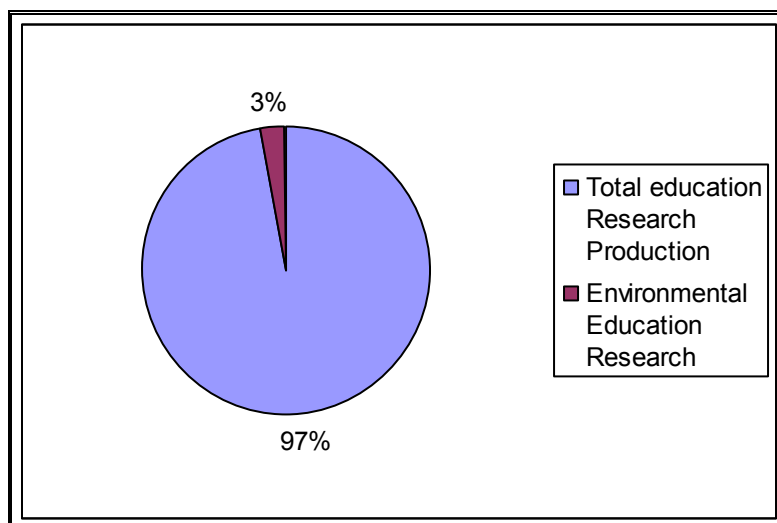
This figure indicates that only a few researchers at UJ focused on Environmental Education issues compared to the overall education research production during this study period. The implications of this trend are not favourable for Environmental Education and the environment and will be discussed in Chapter 6.

Rhodes University produced a total of 133 theses and dissertations in education research during the period 1995 to 2004 (115 Masters and 18 PhD studies). 23 of these were on Environmental Education research in South Africa (three PhD and 20 Masters). As shown in figure 5.3 below, this number of studies on Environmental Education constituted only 15% of the total education postgraduate research during this period.

Figure 5.3: Percentage of EE produced at RU during the period 1995-2004
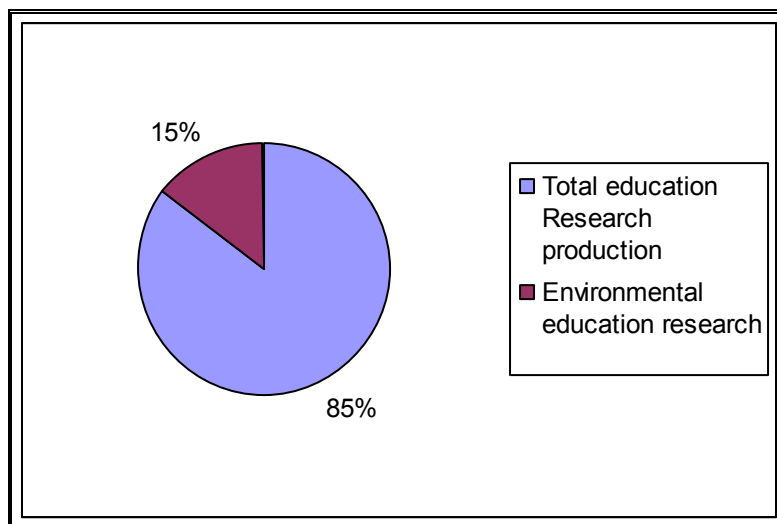
5.2.2 Focus of postgraduate Environmental Education research at UJ and RU: 1995-

2004

Since education involves different sectors, in this thesis I decided to look at the focus of postgraduate Environmental Education research in relation to the different sectors identified by the larger the PPER. However, additional sectors emerging from the data were also identified. Reading through the data, I identified seven sectors that were researched by postgraduate Environmental Education researchers during this study period (1995 to 2004). These included: Schooling, Higher Education, Service Provider, Civil Society, Government, Continuing Education and Mixed Education sector. Table 5.4 illustrates the number of studies that focused on each of these, while Appendix A lists the topics dates (years) and degrees (Masters or PhD) that were studied in these sectors.

Table 5.4 Frequencies of EE topics per sector at UJ and RU: 1995 to 2004

Sector of education researched on	Frequency		Total
	UJ	RU	
Schooling	9	8	17
Higher Education	2	4	6
Service Provider	1	4	5
Civil Society	7	3	10
Government	1	0	1
Continuing Education	1	1	2
Mixed	2	3	5
Total no. of Theses	23	23	46

This table indicates that in both institutions more focus was on Environmental Education issues related to schooling, followed by civil society Environmental Education issues (though at comparatively different proportions in the two institutions), with very limited focus on other sectors such as government and continuing education. The literature reviewed in this study suggests that Environmental Education is a relatively new concept in South Africa. As a result, many educators, especially those that were already practicing during the period of political transformation, knew very little about the integration of Environmental Education in school curriculum as stipulated in the policies discussed in Chapter 2. Less research on continuing education (for instance) is therefore a gap that may need to be addressed by future researchers because of the need for in-service training for these teachers as well as government officials.

Based on this trend, I also wanted to understand who the participants or informants were in the various studies. My belief was that this information would provide insight into whether knowledge produced through these studies responded to the environmental education needs of people in the particular sector in which research was conducted. Also, as discussed in Chapter 2, Environmental Education is meant to promote sustainable development to which different categories of people could contribute differently if involved in research. To identify these categories of people, I interrogated the sampling section of the theses and dissertations to identify words that indicate who the participants/ respondents or informants (depending on the concepts used in the studies) were. Table 5.5 below shows the categories of people that were dominantly sampled in these education sectors.

Table 5.5: Research participants in education sectors

Sector of education researched on	Participants' category	No. of studies in which the category of participants was part	
		UJ	**RU**
Schooling	Teachers	8	8
	Learners	4	1
	Principals	1	0
	Education officials (district)	1	1
	Parents	0	1
Higher Education	Students	2 (100%)	4
	Lecturers	0	3
Service Provider	EE officers	1	1
	Documents	0	1
	Labourers	0	1
Civil Society	Adults	7 (100%)	3
	Youth	0	1
Government	Local municipality authorities	1	0
Continuing Education	Teachers	1	1
Mixed	Lecturers	1	1
	Teachers	1	1
	Students	0	1
	Adults	0	1

The category of people labeled as adults in civil society and mixed sectors refers to various groups of adult people such as taxi drivers, labourers, commuters and others, as were mentioned by researchers. I decided to put them as a different category from the parents' category (in the schooling sector) because my understanding is that parents role in the schooling sector is different from the role of adults in the other education sectors I have identified such as civil society. Parents have to be part of schooling, be involved in school governance and other schooling issues that concern their children. Their

involvement in education research is therefore crucially different from the involvement of parents in the other sectors.

The common and most dominant trend in the category of adults was that they mainly belonged to the low income or poor sector of the South African population, evidenced by descriptors (from theses and dissertations) such as "people from informal settlements"; "poor, black citizens from the village"; "hawkers"; "cleaners"; "uneducated, poorly paid labourers", to mention but a few. There were only a few studies where people such as businessmen, contractors and a doctor were involved. This trend may imply a misconception that some categories of people (those with middle and high income) do not need to be part of knowledge produced through research, particularly of research in Environmental Education. Moreover, those low income groups of people that were sampled were sometimes referred to as participants, a concept which, according to Cains (2008), gives an impression that they were involved in a more extensive role than that of simply providing data. In some studies however, they were merely interviewed to determine their views, experiences or perceptions, with no explicit indication of how their situations would be changed in the process. This was particularly the case with studies that were focused on the civil society issues. Examples of topics where this was the case include:

"Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station"

"Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson"

The participants in these studies were however practically involved in many parts of decision making that would affect them and in which they would learn or contribute knowledge in. This was the case especially in those studies where action research was used as a methodology, and which were mainly in the schooling sector. The following is an example of topics in this category.

"Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials"

In this study the researcher and the participants were all involved in fieldtrips and workshops where they "explored the potential of various sites in urban environment for the teaching of ecology" (p, 32). Participants had developed worksheets to be filled at various sites. This involvement would clearly leave these participants with skills and necessary knowledge they gained from the process of the study.

Table 5.5 shows that in this schooling sector, teachers were the most chosen participants or informants (depending on their role in the studies and the way they were referred to by researcher concerned) with a few cases where learners (four at UJ and one at RU) and parents (0 at UJ and one at RU) were also informants in the studies. Generally, the participants in all these sectors were mainly adults. Considering that these participants in different sectors – principals, teachers, education officers, parents, lecturers, labourers,

can all be categorized as adults, but students (two at UJ and 4 at RU) and youth or children (0 at UJ and one at RU) were comparatively few. In Chapter 2, section 2.4.2 I have indicated the significant role that children, including school learners, can play in informing their parents and the community at large about environmental issues which they learn from school. This can be a useful contribution towards sustainable development. The identified trend therefore, where children were less involved suggests that the sustainability may not be achieved.

In Chapter 3 I suggested a need for research that produces relevant knowledge for the solution of environmental problems. In this study, I have adopted O'Donoghue's (1995) understanding of the environment as multidimensional and, as such, the thesis is informed by the assumption that that these environmental problems are also multidimensional. With this understanding in mind, I read and analysed data in terms of the environmental dimensions; biophysical, social, economic and political, as suggested by O'Donoghue (1995). Of the 46 theses and dissertations at both RU and UJ, 20% focussed on issues related to environmental dimensions (3 UJ and 6 at RU). Table 5.6 below shows the numbers of theses that focused on each of the four environmental dimensions in the two institutions, while Table 5.7 shows those which I interpreted as focusing on more than one dimension.

Table 5.6: Number of theses and dissertations focusing on the different environmental dimensions (with percentages of the total of postgraduate research production in Education in the two institutions)

Institution	Social	Biophysical	Economic	Political	Total
UJ	2	1	0	0	3
RU	3	2	0	1	6
Total	5 (11%)	3 (7%)	0	1 (2%)	9 (20%)

These figures confirm that there have been limited studies focusing directly on these environmental dimensions. Even worse, there has been no research in both institutions on the economic dimension, and none on the political dimension at UJ. However, there are studies that I interpreted as having focused on more than one dimension, where the economic and political dimensions were included (Table 5.7).

Table 5.7: Number of theses and dissertations that focused on more than 1 environmental dimension

Institution	Social and Biophysical	Social and Economic	Social and Political	Total
UJ	3	1	1	5
RU	1	0	0	1
TOTAL	4 (8%)	1 (2%)	1 (2%)	6

Examples of topics that I interpreted as focusing on more than one dimension include:

"Environmental literacy of workers as a factor in sustainable forest management (social and biophysical)"

"The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region (social and economic)"

"Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council (social and political)"

There were also some that combined the social dimension and curriculum:

"Community participation in social environmental issues in a core-plus Curriculum"

"The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project"

"Stakeholders' views on Maintaining a Sustainable Living Environment: a Community Education Perspective"

And some on curriculum and biophysical environment:

"An investigation into the use of nature reserve as a cross-curricular teaching resource"

There was therefore an evident increasing focus on the social environmental dimension during this period. There was still very little inclusion of economic (e.g. jobs and development) and political (e.g. social justice and governmental involvement) environmental issues in the research, which is another gap in postgraduate Environmental Education research (more of this in Chapter 6).

The four environmental dimensions can also be analysed in terms of "green" and "brown" problems (McDonald, 2004; Carruthers, 2006). Brown problems are those related to sanitation, public health, pollution, etc. which are mainly associated with urban areas and can affect mainly the social, economic and political dimensions of the environment. Green environmental problems are those related to depletion of natural vegetation and animals which can mainly be associated with rural areas and are mainly the biophysical dimension. Using this categorisation, I interrogated the topics to determine whether postgraduate research considered both brown and green environmental issues. Since UJ is located in a dominantly urban context and RU in a dominantly rural context, the assumption I had was that research might have considered the green and brown environmental issues in these contexts.

To identify research focusing on either green or brown issues I deductively picked the concepts from theses titles and/or abstracts which related to either of these categories (concepts such as sanitation for brown and nature conservation for green). When doing this categorisation, more focus appeared to be on the green issues, which I regard as mainly in the biophysical and this trend did not necessarily match the geographical context of the institution as assumed. UJ produced research on green environmental issues as well (see Appendix E). The trend of more research on green issues seems to contradict the analysis of the environmental dimensions in Table 5.6 above which showed less research on biophysical dimension. The apparent contradiction resulted from the fact that there were topics which included biophysical and social dimensions which were counted as a separate category above, while in this section they fit more with green than with brown issues. Eleven (48%) of the 23 studies at RU focused directly on green

issues, while one (4%) focused on brown and three (13%) focused on mixed environmental issues with topics such as:

- Using the local environment for outcomes-based education; issues raised for INSET by teachers' perceptions of agents of change
- Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy

At UJ four (17%) of the 23 studies focused on green issues, while two (9 %) focused on brown issues and three (13%) focused on a mixture of issues with topics such as:

- Stakeholders' views on maintaining a sustainable living environment: a Community Education Perspective
- The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region
- Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council

Even though there has been an identifiable increase in the focus on social environmental dimension, this section revealed that there was still more focus on green environmental issues in postgraduate Environmental Education research during this period in both institutions. These include issues such as nature conservation, invader plants, forest management, ecosystems etc. Although there were few topics on issues such as land pollution and health care, there has been very limited research on brown environmental

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issues, especially the socio-economic issues related to poverty or socio-economic imbalances during the transformation period. In other words little knowledge was produced that can be used to address these problems and theses therefore may keep increasing.

In addition, while analysing data, my attention was caught by another trend that, most researchers (figures below) did not focus directly on the four dimensions of the environment, but their topics were concerned with Environmental Education curriculum issues, resource development and professional training of environmental educators. 13 (56%) of the 23 Environmental Education studies in each of the two institutions were on curriculum issues. Appendix D shows the topics focusing on the different dimensions, including curriculum. This indicates that there was less direct focus towards the environmental dimensions compared to those focusing on curriculum issues.

Having identified the areas of focus as discussed above, and gaps thereof, I was then interested in understanding why these studies were conducted. For example, if the study was on curriculum related issues, what was its main purpose? I read the theses to get the stated purposes from the abstracts and, from some, the last chapters. I categorized these and developed six themes of research purpose:

- Theme 1: To determine environmental (education) perceptions, concerns, attitudes, views or opinions
- Theme 2: To determine the level of environmental (education) awareness, literacy, understanding or knowledge

- Theme 3: Environmental Education Curriculum, program or resource development or evaluation

- Theme 4: To explore the feasibility, possibility or potential for environmental education

- Theme 5: To identify the cause for environmental problems or challenges.

- Theme 6: To encourage the improvement and involvement on environmental issues

Table 5.8 tabulates the frequencies of topics in each of these themes in both institutions, while Appendix C lists topics under each theme.

TABLE 5.8: Themes of research purpose in the two institutions: 1995-2004

THEME OF PURPOSE	Frequency		Total
	UJ	RU	
THEME 1	7	4	11
THEME 2	2	4	6
THEME 3	7	7	14
THEME 4	0	7	7
THEME 5	5	0	5
THEME 6	2	1	3
Total No. of Theses	**23**	**23**	**46**

Although the purposes differed to some extent in these two institutions, it is generally clear that there was more focus on theme 3 and theme 1 (see Appendix C). This indicates that there was more concern with development and/or evaluation of Environmental Education curricula and programmes than other issues such as themes 5 and 6. This then may be associated with the fact that Environmental Education was relatively new in South Africa and also with the demand of education policies for the inclusion of Environmental Education in school curriculum (discussed in Chapter 2).

5.2.3 Research methodologies

Research methods that a researcher chooses to use for an inquiry are informed by how that researcher views the world (Cohen, Manion & Morrison (2007). Some researchers believe in testing the truth behind some theories through empirical research methods (e.g. by observation) using quantitative, statistical methods (Howitt & Cramer, 2000). Some seek to understand the views or experiences of the population involved in a situation while some believe in participatory methods for the intension of changing the identified situations. A review of methodologies that postgraduate Environmental Education researchers used therefore was a way of trying to understand their beliefs, and applicability of the methodologies they used towards addressing environmental problems – the concern of this study.

In Appendix B I have listed the approach, methodology and methods of data collection against each of the topics of studies I have reviewed. Figure 5.9 presents the frequencies of studies in which different methodological designs were used.

Figure 5.9 Methodological designs in postgraduate EE research in the two institutions: 1995-2004
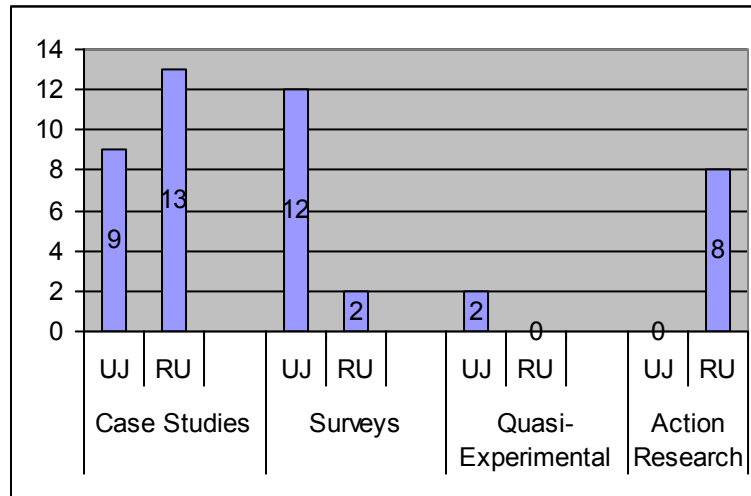
From the 46 theses and dissertations that were produced in the two institutions during the period 1995 to 2004, 22 (48%) were case studies; 14 (30%) were surveys; two (4%) were quasi- experimental and eight (17%) were action research. Figure 5.9 shows that these figures were not uniform across these institutions. For example all the action research (17%) was conducted at RU while the 4 % of quasi-experimental design was used only at UJ. The reason for these differences, which are beyond the scope of this study, may be attributed to different aspects such as: the institutional supervisory techniques; preference by researchers; and others. The concern of this study, however, was to determine how research was conducted and to relate the identified methodologies to the purpose of solving environmental problems. The dominance of case studies could imply that the researchers were more interested in seeing the researched situations through the eyes of participants, and not just to quantify them (Cohen, Manion & Morrison, 2007). This is

also supported by the fact that 72 % of the total 46 theses reviewed used qualitative approaches (Table 5.10).

Table 5.10: Approaches used in postgraduate EE research at UJ and RU 1995- 2004

Institution	Approach	Number of theses	%
UJ	Qualitative	14	61
	Quantitative	1	4
	Mixed	8	35
RU	Qualitative	19	83
	Mixed	1	4
	Not mentioned	3	13

There were no quantitative studies at RU and only one at UJ. Qualitative approaches, which were mainly used during this period, could have had their own limitations which according to Mathie & Camozzi (2005, p. 4) include the fact that:

- Data is collected from a few cases or individuals, which means that findings cannot be generalized to the larger population.

- Research quality is heavily dependent on the individual skills of the researcher.

- Rigour is more difficult to maintain, assess, and demonstrate.

- The volume of data makes analysis and interpretation time consuming.

- It is not as well understood as quantitative research. It is therefore often more difficult to convince others of the importance of its contribution.

In the studies that I reviewed, however, researchers ensured trustworthiness of their studies by using a variety of methods of data collection, such as a combination of interviews, observation and questionnaires, what several scholars have called triangulation (Bryman, 2006; Cohen, Manion & Morrison, 2007; Babbie & Mouton, 2007; Bergman, 2008). Appendix B shows that there was not even one of the 46 studies where a researcher relied on one method.

5.3 CONCLUSION

In this chapter I analysed data on Postgraduate Environmental Education research from the two institutions, University of Johannesburg and Rhodes University. I used content analysis (as defined by Cohen, Manion & Morrison, 2007) to identify different categories of data, which were then grouped into themes, for which frequencies were calculated and presented in tabular and/or graphic forms. Data analysis focused on three research questions: the foci of postgraduate Environmental Education studies; methodologies that were used and the gaps or silences in research. I first gave a general view of the quantity of postgraduate educational research that has been produced in the two institutions during the period 1995 to 2004, comparing these figures with postgraduate Environmental Education research. Generally, postgraduate Environmental Education research production was very low, especially at UJ where it comprised only 3% of the total postgraduate education research during this period.

To identify different areas of research foci, I first categorized research according to different educational sectors on which each focused. More than 36% research focused on the schooling sector, for the purpose mainly of developing or evaluating Environmental Education curriculum, program or resources. The respondents and/or participants in this sector were mainly educators. A gap was identified, that learners and parents in the schooling sector were mainly not involved in these studies and the implications of this trend were highlighted.

There was also relatively more focus of research on the civil society sector (more than 21%), mainly for the purpose of determining environmental (education) perceptions, concerns, attitudes, views or opinions of the members of different societies. The respondents were mainly members of low income population groups in this sector. A gap was identified that, although these people were sometimes referred to as participants in some studies, they were mainly just informants from which data was obtained through interviews or questionnaires. There was very little research that involved them in a ways that would change their unfavourable conditions.

I also identified another gap that research in the continuing education and government sectors has been limited during the study period. Educators and government officials may have or still need in-service knowledge on this relatively new Environmental Education that they have to integrate into education curricula.   Only one study from each of the two institutions focused on continuing education issues while basically no study focused on education government officials, who also need to be involved in training practicing teachers on environmental education.

Due to more focus on curriculum related issues as discussed above, there was less research that focused directly on the biophysical, social, economic and political environmental dimensions identified by O'Donoghue (1995). From those studies that did focus on these issues, there was still more focus on the natural environmental issues, but with a noticeably increasing interest towards the social dimension. There was however a gap with regards to research on economic issues such as job creation, and on political issues such as governance and legislation in relation to Environmental Education.

With regards to research methodologies that were used during the study period, one of this study's research questions, there was a noticeable difference in the two institutions. Besides the common higher focus on case studies during this period, studies at RU tended to use action research while UJ tended more to surveys. There were studies at RU in which researchers involved the participants in action, especially in researching curriculum and resource development issues. A gap was identified with regards to action research directed to socio-economic and political environmental problems.

The next chapter discusses these findings and interprets their implications for Environmental Education and the general environment with regards to the solution of environmental problems in this country.

CHAPTER 6

DISCUSSION AND IMPLICATIONS

6.1 INTRODUCTION

Apartheid policies in South Africa, especially those related to spatial occupation and education, resulted in environmental problems such as land degradation, pollution and many other different indicators of poverty amongst the majority of the population. Some of these problems resulted from a situation where people that had economic and institutional power decided on who should have access to the resources of this country and how they should have access, what Homer- Dixon (1994), referred to as Resource Capture and Ecological Marginalisation. This resulted not only in negative impacts on the ecosystem but in "negative socio-economic, political or psychological effects as well, normally but not exclusively in terms of damages to a local population" (Kousis, 1998, p 88). In other words, because of the interrelationship among them, the natural (biophysical), social, economic and political dimensions of the environment (O'Donoghue, 1995) were all affected.

This study has argued that knowledge produced through research can be useful in addressing these problems if it includes issues in all the environmental dimensions. The study has also argued that methodologies that are used to research environmental issues in the different environmental dimensions can be useful in addressing these problems if they involve the affected people so that they are left with necessary skills and knowledge to deal with these (Gibbons, et. al. 1996). Research therefore needs to be conducted to

determine the extent to which such studies deliver "knowledge and insight of the greatest importance to our national well-being" (HESA, 2006, p. 65).

Based on these arguments, I examined postgraduate (Masters and doctoral) research in Environmental Education in two higher education institutions: the University of Johannesburg and Rhodes University, during the period 1995-2004. The purpose of the study was to understand the focus of postgraduate research during the study period, in both content and methodologies that were used in these studies. It further aimed at identifying the gaps and silences in these areas of focus. The following research question and sub-questions formed the focus of this study:

- What have been the trends in postgraduate Environmental Education research during the period 1995 to 2004?

  - What do postgraduate Environmental Education studies reveal in terms of research productivity during the period 1995 to 2004?

  - What have postgraduate Environmental Education studies focused on during the period 1995 to 2004?

  - What methodologies have been used in postgraduate Environmental Education research during the period 1995 to 2004?

  - What were the gaps or silences in postgraduate Environmental Education research during this period?

The previous chapter presented findings in relation to the above research questions. In this chapter I discuss these findings and identify their implications for policy and

practice, as well as for future research. The chapter begins by identifying some general trends in postgraduate Environmental Education research in the 11 institutions which formed part of the initial sample of the PPER. These include:

Nelson Mandela Metropolitan University (Eastern Cape); Stellenbosch University (Western Cape); University of Cape Town (Western Cape); University of Fort Hare (Eastern Cape); Rhodes University (Eastern Cape); University of the Free State (Free State); University of Johannesburg (Gauteng); University of KwaZulu-Natal (KwaZulu-Natal); University of the North-West (North West); University of the Western Cape (Western Cape); and University of the Witwatersrand (Gauteng).

These trends are then followed by a discussion of findings to the questions of this study. I also present the implications of these findings on Environmental Education policy, Environmental Education practice and future research. To conclude the chapter I present some reflections on the research process: the challenges and the lessons I learnt from it as a novice researcher.

6.2 SUMMARY OF FINDINGS

In this section I discuss and reflect on the general trends in postgraduate environmental education research in the 11 institutions identified above during the study period. This is followed by an analysis of the findings in relation to the main areas of research focus in the two institutions, from which postgraduate environmental education research was reviewed.

6.2.1 Trends in postgraduate Environmental Education research in South African higher education institutions during the period 1995 to 2004.

As illustrated in the previous chapter, several research trends emerge with regard to postgraduate Environmental Education research during the period under study. These relate to:

1. Scarcity/dearth of research on Environmental Education
2. *Selective focus of research and gaps*
3. *Dominant methodologies and gaps*

6.2.1.1 Dearth of research in Environmental Education

Environmental education research has not been prioritised at postgraduate level in South African higher education institutions during the period 1995 to 2004. Of a total of 10 institutions that were studied during the first phase of PPER, only two institutions (Rhodes University and University of Johannesburg) had more than five PhD and masters theses and dissertations in Environmental Education. For example, during this period each of these institutions produced 23 theses and dissertations that were found from their libraries and analysed in this study (a total of 46 between the two institutions). This means that of the 133 theses and dissertations produced at RU, only 15% (23) were on Environmental Education, while a low 3% (also 23) of the 707 at UJ were on Environmental Education. In some of the 11 institutions in the PPER sample there was not even one study that focused on Environmental Education. This trend indicates that not much new knowledge on environmental education was produced in many parts of

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South Africa during this study period, which could be referred to in a quest to address the environmental problems that this country is experiencing.   This also may have contributed to environmental problems (discussed in chapter 1), which in some provinces remain high despite the change to democratic governance in this country. These included poverty, pollution, overcrowding, unemployment and land degradation.

6.2.1.2 Selective research foci

A second trend found from the analysis in this study was that postgraduate research in these two institutions tended to focus on selected sectors of education and ignored others.

Most of the studies focused on the schooling sector, with very few focusing on the other sectors (including higher education, service provider, civil society, government, continuing education, and especially non-formal education). For example, of the total of 46 studies on Environmental Education from these institutions, eight (35%) focused on schooling at RU and nine (39%) at UJ focused on schooling. These studies were mainly concerned with the development and or evaluation of Environmental Education curriculum, programmes and resources, and the problems teachers were experiencing in integrating Environmental Education into Curriculum 2005. This is understandable as research during this period may have focused on responding to government initiatives such as the National Environmental Education Project for General Education and Training (NEEP-GET) (see Chapter 2), which advocated for course development for formal and non-formal education production of resource materials by government departments and NGOs amongst others.

A predominant focus on schooling and a neglect of other sectors means that researchers understood Environmental Education as a process that has to be taught mainly to learners at school level but not through non-formal education. As much as this trend is good for school children's education on environmental issues, it is still problematic in the sense that the issues of marginalization that brought about problems in various environmental dimensions (Homer-Dixon, 1994; O'Donoghue, 1995) were not addressed by research. In other words, issues that led to some people regarding the environment as none of their concern remain unchanged, and many may still be habouring the same views about the environment and their responsibility towards it. There were no studies that could encourage participation and ownership with regards to environmental issues. Such neglect of other sectors may therefore perpetuate and in fact contribute to the increase in environmental problems in this country.

With research in the two institutions focusing more on the schooling sector, one would expect that the studies would include/involve the different role players within this sector, including teachers/educators, learners and parents more explicitly. One of the trends identified in this study however was that this was not the case in most studies. Teachers were the most visible (nine or 39% at UJ, including principals and eight or 35% at RU), with some studies working with them in developing environmental education programs and resources, while some were trying to understand the challenges the they go through while integrating Environmental Education in their curricula. Very few of the studies involved learners and parents. For example, of the total of 46 studies on environmental education from both RU and UJ, only five (four at UJ and one at RU) included learners as participants or informants, while only one at RU included parents and none at UJ. This

may imply that their role in addressing the environmental problems in those areas where their schools are located was less explored or considered.

The problem about this trend again is that learners would only acquire Environmental Education knowledge in the same way they learn all other subjects at school, with no particular skills that would empower them to address their practical problems such as poverty and joblessness which were brought about by resource capture and ecological marginalization (Homer-Dixon, 1994). Parents, as well did not learn or explore how they could be involved in their children's Environmental Education in a way that would ensure sustainable knowledge, skills, values and positive attitudes towards the environment. The implication of focusing on educators only in this sector would, in a way, also develop a misconception that environment is the concern of educators and that their responsibility as "experts" in the field would be to transmit knowledge of the environment to learners (and parents). No knowledge was produced which would guide these role players in the schooling sector to be involved in taking action and addressing problems in various environmental dimensions as identified by O'Donoghue, (1995).

As discussed in Chapter 2, O'Donoghue (1995) has developed a notion of environment as multidimensional, including biophysical, social, economic and political dimensions. One of the positive aspects of postgraduate Environmental Education research at the two institutions during the period 1995 to 2004 is that it showed some indications of the understanding of how the environmental dimensions are related. This understanding was shown, for example, by focusing research on a combination of these dimensions, including the biophysical or ecological, social, economic and political environmental

dimensions. For example, one study focused on Environmental literacy of workers (social dimension) as a factor in sustainable forest management (biophysical dimension).

There was, however, limited research whose purpose was directly on the identification of causes and/or control for environmental problems in these dimensions. This was more so for studies that focused on the economic (jobs, development, etc.) and political dimensions (environmental decision making and policy). An explanation for this trend might be the fact that, as stated above, most of the studies focused on the schooling sector. Furthermore, there was limited focus on problems such as poverty, homelessness, unemployment and unhealthy living conditions. As such, most of the studies that were not about schooling focused on 'green' rather than on 'brown' environmental issues (Carruthers, 2006). This means that research did not produce knowledge for alternative ways of addressing environmental problems which the poor communities experience. There is therefore a high possibility that, in order to make ends meet, these communities would still resort to misuse and/or overuse of environmental resources such as water, soil and forests, for which they do not have to pay. This would then result in increasing land degradation and deteriorating environmental quality as indicated in the state of the environment reports (see Chapter 1).

6.2.1.3 Dominant methodologies

A third trend identified in the analysis of Environmental Education research at UJ and RU during the period of this study relates to the dominant research methodologies employed by researchers. In particular, there have been differences with regards to dominant methodologies that were used in postgraduate environmental education

research in the two institutions during the period 1995 to 2004. For example, at UJ, 12 out of 23 (52%) studies produced were surveys and 9 (39%) were case studies. In contrast, at RU 13 out of 23 (57%) were case studies, followed by action research (eight or 35%) in which the participants were actively involved.

This thesis argues that action research as a research method is more likely to assist the participants in addressing the environmental problems in their various contexts. This is because action research allows participants to be actively involved in the research process in a way that leaves them with independent decision making skills. Case studies are also useful as they focus on specific cases, with an in-depth look (potentially) at local or small samples, and as such, may illuminate environmental issues and problems impacting on communities. More use of these methods therefore would help participants address the issues of marginalization in various dimensions of the environment.

6.3 SILENCES IN POSTGRADUATE ENVIRONMENTAL EDUCATION RESEARCH AT RU AND UJ

From the literature reviewed in this study, different researchers have identified some Environmental Education issues that have been ignored by the past researches (Rickinson, 2003; Braus, 1995; Westmarland, 2001; Gough & Gough, 2004) (refer to section 2.4.2). Informed by this literature and my own experiences as an environmental educator and researcher, I regard several issues as important to research if we are to adequately and successfully address environmental problems in South Africa. These issues include: the role of women and gender in Environmental Education; cultural

diversity and its possible impact in Environmental Education, and the integration of Environmental Education in subjects that were traditionally distanced from it. In this section I discuss these issues and explain their possible contribution in addressing environmental problems in South Africa.

First, studies at RU and UJ ignored the role of women with regards to environmental and Environmental Education issues. There were neither studies that focused on gender issues, or specifically on women and girls, nor studies in which women or girls were specifically the participants. Participants or informants were sometimes generally referred to as community members or parents with no mention of specific gender. This is problematic because research that is not specific to women may come up with generalized findings which overlook the problems specific to women and/or girls (Westmarland, 2001). This is particularly so with South African women and girls who are likely to be the most directly affected by resource capture and ecological marginalization, both economically and socially. For example, the literature reviewed in Chapter 2 literature revealed that during the apartheid era women in South Africa were forbidden to work and girls underwent double oppression as they were also affected by marginalizing social beliefs which excluded them from getting education and skills. Due to patriarchy, women were not given enough chance to own and take responsibility for land and other resources. Thus, quite a number of women in South Africa are uneducated, have no skills and knowledge that can change their situations with regards to poverty and other environmental problems. The problem with ignoring these issues in research is that women will remain marginalized and will not be able to participate maximally in addressing the environmental problems that they are faced with. They need special

empowerment with skills and education, which this study believes would be done through involving them as participants in researching environmental issues that affect them.

Secondly, from the reviewed RU and UJ studies, researchers have avoided making reference to races they were researching. Participants would only be referred to as teachers, workers, neighbours, etc. I believe that the issue of race is one of the crucial areas that may not be ignored when it comes to environmental problems and research in South Africa owing to this country's racially divided past highlighted in Chapter 2. Apart from unequal distribution of services that may still be the problem in South Africa, there still is a difference in the way different races behave towards the environment, regardless of the provision of equal education that has been adopted during the beginning of democracy. The environmental attitudes that were created by resource capture and ecological marginalization seem to be recurring. It is still common to see some people from the formerly marginalised races ignoring the rubbish bins but throwing rubbish carelessly around. I believe therefore that there is valuable knowledge that needs to be produced which can be used to mend this gap and which can be useful in the solution of these problems. Such knowledge may include issues such as recycling, reuse and reduction of waste and this may be more useful if the people concerned participate in the research process.

Thirdly, from my experience as an environmental educator and literature reviewed in this study it is a fact that Environmental Education has traditionally been associated with few school subjects such as biology, agriculture and geography. This was because of its

narrow focus on the biophysical dimension only. I indicated in Chapter 2 that some policies during the beginning of democratic governance in South Africa proposed that Environmental Education should be integrated within all subjects in a way that would allow each to develop its own unique orientation towards environmental issues, concerns and processes (Environmental Education Policy Initiative, (EEPI, 1995). There has been silence in postgraduate Environmental Education research reviewed in this study on issues related to integration of Environmental Education in those subjects that were formerly distanced from it. It happened that the subjects on which any issues regarding Environmental Education were researched were the ones which have always been associated with it, science, agriculture and geography. The implication of this silence may be that learners (and teachers) who do not choose the subjects that are associated with Environmental Education may still be regarding environmental issues as none of their concern, which would then contribute to continuing environmental problems in this country.

In the section below I discuss the findings presented above in relation to the theoretical literature reviewed in the earlier chapters of this study.

6.4 DISCUSSION

As discussed above, this study aimed to understand and interpret issues that were researched by postgraduate Environmental Education researchers in the two institutions during the period 1995 to 2004, and the methodologies that were used in the process of such research. I wanted to understand the ways in which postgraduate Environmental Education researchers constructed and gave meaning to research priorities and

appropriate methodologies for conducting research. My assumption was that the review of postgraduate Environmental Education research would reveal the ways in which the research priorities were understood. These research priorities, through the choice of research topics, would also reveal the general understanding of what Environmental Education is understood to be and/or should be. The study therefore is located within the interpretive research paradigm in which "knowledge is constructed….by description of people's intentions, beliefs, values, and reasons, meaning making and self-understanding" (Henning, et. al. 2005, p. 20).

In particular, four main concepts and theories have framed this study. First, the study is framed by the notion that environmental problems experienced in South Africa today are the result of pre-apartheid and apartheid principles and policies in which powerful white government excluded black communities from their environmental rights and placed them in marginal, congested spaces. These practices are referred to by Homer-Dixon (1994) as Resource Capture and Ecological Marginalisation. This marginalisation was justified understood (amongst others) by these governments as a way of protecting the natural environment through conservation. On the contrary it resulted in land degradation, poverty, joblessness and other environmental problems (see Chapter 2). In other words, overpopulation of those marginal lands in which black people were placed led to the spread of problems beyond the natural environment. Because of the way in which black people were deployed to those marginal lands the natural environment became the only viable option they could access without censure which led to it being over utilised in different ways. This marginalisation also led to some black people

regarding the environment as none of their concern due to the way the white government treated them.

This spread of environmental problems emanating from apartheid policies led to the adoption of the second concept that informed this study; that of environment as multidimensional, including biophysical, social, economic and political dimensions as understood by O'Donoghue (1995). Thus environmental problems are multidimensional and have to be addressed as such, through education and production of new knowledge by research.

Thirdly, this study regards the decade 1995 to 2004 as the period of transformation in South Africa, having been characterised by change and restructuring in governmental and non-governmental policies as a way of addressing the problems that were brought about by the past governance of this country. Based on the inequities that were brought about by resource capture and ecological marginalization (Homer-Dixon, 1995), this study argues that research during this transformation period would have to produce knowledge meant to address those issues of inequality so that all South Africans live in decent and healthy environments. In other words, knowledge that would have to be produced in the higher education institutions would have to be relevant to the needs of the society.

This view led to the adoption of Gibbons et al's (1996) understanding knowledge production as a means to address problems identified by researchers. Thus, through knowledge produced from research, various population groups may come to understand their roles and responsibilities and commit to changing the negative environmental

conditions that are experienced in this country (see Chapter 1), especially if they have been trained or participated in research that focused on changing these situations. As such, in this study I posit that the postgraduate Environmental Education research can be transformational through producing useful knowledge for the solution of multidimensional environmental problems which have been generated by resource capture and ecological marginalization in South Africa. The findings presented in Chapter 5 indicate various trends with regards to the research questions that were based on these arguments.

Gaps in focus

The first question related to the focus of postgraduate Environmental Education research in the two institutions, UJ and RU, in terms of content. Findings to this question indicate that, firstly, the researchers' understanding of Environmental Education in the two institutions studied made them focus their studies more on schooling issues. This predominant research focus indicates that researchers believed that for Environmental Education to be effective, it needs to be taught to school children. This research may also have been responding to government policies that encouraged the integration of Environmental Education to education curricula. The problem with this kind of predominating focus, however, is that it does not seem to address the issues of marginalization which, according to theories above, led to problems in the various environmental dimensions. If people were treated in a way that made them see environment as not their own, knowledge needs to be produced that will change their perceptions about it and encourage them to regard it as their own.

From the reviewed studies, there was no indication of intention to encourage participation and feeling of ownership with regard to environmental issues in the different dimensions. Instead participation that was encouraged was that of the development of curriculum by teachers for teaching school children. However, the issues of ecological marginalization and resource capture placed some of these school children in poverty stricken environments, in the midst of a variety of multi-dimensional environmental problems. As such, what can help in addressing these problems is if learners and parents are also involved in and participate actively in research and are empowered to be able to deal with them. From the findings discussed in Chapter 5, this was not the case. This leads to the conclusion that even if children are taught about the environment or in the environment, there will always be negative impacts if their social, economic and political problems such as poverty and joblessness are not addressed. If learners and their parents are not empowered to be able to deal with the situations in which they find themselves because of resource capture and ecological marginalisation, they will always overuse and/or misuse those environmental resources that are freely available to them.

In addition, literature reviewed in this study indicated that the environment can be a "political space, a critical venue where civil society is voicing its concerns" (Miltteman, 1998, cited in Cock & Fig, 2001, p.1). From this perspective on the environment, some actions of civil society can be seen as negative. For example, currently people who are not satisfied with their salaries and/or working conditions in different governmental and business sectors have been seen emptying rubbish bins on the streets in different areas of South Africa. This is an indication that some people still regard those environments as more government's space than their concern. This is the attitude which was created by

resource capture and ecological marginalisation as discussed above, which, according to Cock & Fig, (2001) made people regard environment as not their own.

I believe that it is through Environmental Education, informed by relevant research, that people can develop an attitude of ownership and participate positively with regards to environmental issues. This also indicates that Environmental Education cannot be only a school issue, but different sectors (including business, higher education, government, civil society, non-governmental organisations, etc.) should be considered as an important part of Environmental Education and be involved in research. As discussed in Chapter 5 the number of studies focusing on these sectors was very small, with more focusing on schooling sector. The problem about this gap is that environmental problems will continue and may even increase for as long as people in other sectors are not educated to regard the environment as their own, and are not made to participate in research activities that are meant to change negative environmental conditions in South Africa.

Furthermore, to address environmental problems, research could also involve different government sectors which are responsible for service delivery, particularly to those people that were affected by ecological marginalization and resource capture, both in rural and urban areas. However, as indicated above and in Chapter 5 very little research (one study from each of the two institutions) focused on government issues. This trend can also be attributed to researchers' predominant understanding of environmental education as having to focus more on school children.

The problem about this gap in research focus is that the marginalized people will remain marginalized and environmental problems will continue increasing if no knowledge is produced for, by and/or with government officials in different sectors to meet the needs of the poor. Learners may be taught for example that they should not dump their rubbish anywhere but should use rubbish bins. The fact however is, if these bins have not been provided in their areas, no transformation will take place. The issues such as pollution will remain high as reported in Chapter 1. Even if learners can be taught at school to develop vegetable gardens to address the problem of hunger, if they do not have money to buy seeds they need government assistance. The government therefore can play an important role in addressing environmental problems and needs to have been included in research during this study period. This need was possibly overlooked.

Research on the integration of Environmental Education in all school subjects was also overlooked in the two institutions. This gap may imply that some educators and learners may still be looking at Environmental Education and environmental issues in a biophysical lens, that is, regarding it as only the natural environment which 'does not concern them'. These educators and learners therefore may not be aware that they also have a role to play with regard to Environmental Education and issues through their various subjects. Learners who do not choose those subjects that are regarded as environmental may still not be participating towards the solution of environmental problems, as they would be regarding that as the duty of those who are doing certain subjects.

In addition to misconceptions that learners could have about Environmental Education, there was also limited research that focused on the in-service training of teachers on Environmental Education issues during the study period in the two institutions. With Environmental Education having been a relatively new concept in the South African formal education, educators must have been in need of knowledge on how Environmental Education relates to their subjects and how they could integrate it. This lack of new knowledge implies that educators could also not participate towards the solution of environmental problems through their practice.

Gaps in methodologies

The second research question relates to methodologies that were used in postgraduate Environmental Education research in the two institutions during the period 1995 to 2004. Firstly, the findings discussed in Chapter 5 indicate that at UJ surveys were understood to be the best methodology, with 12 (52%) of the 23 studies having used this. Although survey research methodology has advantages, such as the ability to describe characteristics of a large population, in this study its limitations have been interpreted as having an impact on the increasing environmental problems in the contexts where it has been used. For example, Esposito & Murphy (1999) posit that survey research provides information that does not give deep interpretation of the situation or phenomena under investigation.

Findings from this study indicate that surveys at UJ were used mainly to determine the views, perceptions and experiences of respondents, with regards to school Environmental Education issues. In other words, the focus was not directed on changing the situations in

the environmental dimensions as having emanated from resource capture and ecological marginalization. Even for the few studies that focused on these, such as pollution in taxi ranks, there was no indication of the purpose of facilitating participation of respondent in a way that would leave them with an attitude of ownership with regards to the polluted environments. The methodology that was used meant that only the views of people affected by this problem were recorded. This methodology therefore did not assist these people to address their problems.

Secondly, a large number of studies at RU utilized case studies (56 %) and action research (34%). As indicated above, there are advantages in using case studies and action research as research methods. For example, with action research participants are actively involved and get empowered with skills and knowledge to deal with their situations. With the studies conducted at RU, however, the problem identified in this study is that these methodologies were used mainly to research schooling issues. Their focus was on participation of educators, especially in the development of resource materials and curriculum for the schooling sector. As much as this is a good trend for the schooling sector, still the methodologies were not focused directly on solving the multidimensional environmental problems. The focus was based on the understanding that Environmental Education should be taught to school children.

Silences around gender and race

One of the issues identified in the review of postgraduate Environmental Education research from the two institutions was the exclusion of women. This exclusion may imply that their role in addressing problems, especially social problems such as poverty and the HIV/AIDS pandemic will always be limited. No studies focused on educating or

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empowering women, especially black women who were the victims of both patriarchy and racism, including environmental racism, as discussed in Chapter 2, to be able to participate creatively and positively on environmental issues. Chapter 5 indicated that in some studies the participants were adults, sometimes referred to as 'poor citizens from the village' (see Appendix A). But no study directly focused on producing knowledge that would address problems faced by women in their different contexts. Their contribution in solution of environmental problems in this country was therefore overlooked in the reviewed studies.

Also, the issue of race which has been avoided in many of the theses and dissertations reviewed in this thesis may contribute in the increasing environmental problems in this country. I have indicated above that there is still a difference in the way different races behave towards the environment, regardless of equal education that has been adopted during the beginning of democracy. In other words, the remnants of attitudes that were developed by the marginalization of black races in South Africa are still evidenced by these different behaviours. South Africans cannot just pretend as if there are no racial issues with regards to environmental problems, otherwise these problems will continue as long as valuable knowledge is not produced which can be used to mend this gap and which can be useful in the solution of these problems.

The focus and methodologies that were used in postgraduate Environmental Education research therefore left some gaps which may have contributed to the trends that were reported in the state of the environment reports discussed in chapter 1. Unless these gaps

are addressed in Environmental Education through research, education and policy, environmental problems will persist in South Africa.

6.5 IMPLICATIONS OF THE RESEARCH FINDINGS

The literature reviewed in this study indicated that Environmental Education research needs to produce knowledge that can be used to address the multi-dimensional environmental problems experienced in the country. The findings from this study have revealed that there are gaps in postgraduate Environmental Education research from the two institutions that were reviewed. This section presents the value of this thesis in relation to those identified gaps, to the readers in different Environmental Education sectors, including policy makers, Environmental Education practitioners, future researchers and the general public. It highlights the areas that, if considered, will help enrich Environmental Education practice, research and policy and therefore contribute in the solution of environmental problems.

6.5.1 Implications for Environmental Education policy

To limit environmental problems in South Africa, policies related to Environmental Education should be explicit about issues that affect the marginalized. Firstly, if the policies are not explicit about the relationship between service delivery and those environmental problems that have been reported as increasing in South Africa, people will always resort to overuse and misuse of the environment in a way that will lead to its degradation in different ways. For example, Environmental Education policies can indicate what should be done about issues such as overpopulation and unhealthy living conditions in the informal settlements, and how research can contribute to such strategies.

Secondly, considering the impact of the past apartheid practices on people's attitudes towards the environment, policies should indicate how different categories of people should participate in Environmental Education issues in a way that will make them regard the environment as their own.

Thirdly, those policies that have to do with Environmental Education curriculum should not only spell out the importance of Environmental Education in all the four dimensions of the environment: biophysical, social, economic and political, but should be clear about implementation strategies as well. For example, some policies have indicated that Environmental Education should be an integral part of all education sectors and levels. The findings from this study however indicate that this may not be happening as some higher education institutions in South Africa have not produced postgraduate Environmental Education research during the decade of transformation. As the main producers of new knowledge, higher education institutions should be provided with policies that will ensure that research is conducted towards the reduction of the issues of marginalization and the resultant environmental problems.

6.5.2 Implications for Environmental Education Practice

The findings from this study suggest that Environmental Education may still be mainly taught at school level. This assumption is based on the fact that more research in the two institutions focused on the schooling sector. For transformation to take place and to eliminate the remnants of marginalization in South Africa, Environmental Education, including all its four dimensions, should be taught to all people and in all contexts. This means that even the adults in both rural and urban areas need to be taught Environmental

Education to be able to participate in addressing environmental problems and develop the attitude of ownership towards the environment. Research therefore can produce knowledge on how this inclusion of all categories of people in Environmental Education practice can be done.

Secondly, Environmental Education should not only be taught through certain subjects or learning areas at school and higher education level, but should be across the curriculum. This way, all learners and students will be aware of their different roles in addressing environmental problems in this country. The focus of research on only a few subjects suggests that some subjects are still distanced from Environmental Education practice.

6.5.3 Implications for future research

It would be a loss in the Environmental Education area if the findings from this study, especially the gaps identified, would be ignored by future researchers. Informed especially by the trends with regards to research productivity, silences and gaps that were identified from the reviewed postgraduate Environmental Education theses, the following are the identified implications for future research in Environmental Education in South Africa.

First, because environmental problems are not limited to those areas where Environmental Education research was produced during the period 1995 to 2004, there is a general need for more production of Environmental Education knowledge from different regions of South Africa. There is still a need in some, if not all regions and areas for research that will assist people to integrate Environmental Education in their different

sectors and disciplines. If this happens, environmental problems will be tackled at different dimensions and at different sectors. This way they can be reduced.

Second, those school subjects and learning areas that used to be distanced from Environmental Education, such as history, mathematics, business studies, to mention but a few, should be involved in Environmental Education future research to avoid the possibility of some learners growing up with the notion that Environmental Education is for a particular group of people in their communities. If this happens, both learners and educators involved in those subjects and learning areas will begin to understand the environment as multidimensional and to take their part in addressing the problems in the different dimensions where problems exist.

Thirdly, learners and parents and parents have not been much involved in postgraduate research from the two institutions reviewed in this study. They should be an integral part of future research to ensure that Environmental Education is for sustainable development. If methodologies that are used in research encourage their participation, these people can be empowered with knowledge and skills to be able to deal with multidimensional environmental problems that they encounter in their everyday life. Through knowledge they can get from such participation, they can also learn to be independent, than relying on government subsistence.

Fourth, the issues of gender and racial differences were overlooked in the studies reviewed in this thesis. Future research should consider the importance of these aspects in addressing environmental problems in this country. Based on the racial and sexist

discrimination which have shaped environmental issues in this country, black people in general and black women in particular were robbed of opportunities to learn about environmental issues. Research therefore cannot always be generalized to all South Africans, and the issues of race and gender should not be avoided in research. Women are the most affected by the issues of marginalization because social practices have placed them in a position of having to ensure that their children are provided with food and other needs even in the poor conditions under which they live. If these categories of people therefore, blacks and women, can be empowered with knowledge and skills through participation in research, their problems might be reduced.

Fifth, different institutions have used different methodologies, some of which do not involve the participation of people on the issues that affect them. The methodologies that are chosen in future should include those that encourage participation of communities that are affected by environmental problems so that these people are empowered in different ways that will make them deal accordingly with these problems.

Sixth, this study focused only on the two institutions which produced postgraduate Environmental Education research from the first phase of the PPER. This focus did not imply lack of postgraduate research in the second phase institutions such as UNISA and University of Pretoria, to mention but a few, but was due to the time limits for this study. There is still a need for research on other institutions that were not included in this study so that a complete national trend in postgraduate Environmental Education research is identified and suggestions are provided towards the solution of environmental problems.

Seventh, the research implications stated above can be considered by some future researchers, but the value and contribution of such research can be minimal if it is not adequately disseminated. To address this possible gap, there should be research that produces knowledge on how knowledge produced through postgraduate Environmental Education research can be disseminated to those people that were not part of the research process. If that happens, the findings from research can be used to address problems in all dimensions of the environment.

6.6 CONCLUSION

Referring to Homer-Dixon's (1994) theory of resource capture and ecological marginalization, this study has been informed by the notion that environmental problems that exist in South Africa, and which have been reported as increasing in many parts of the country, are the result of apartheid practices which placed many black communities in marginal lands and robbed them of environmental skills and knowledge. Secondly, informed by O'Donoghue's (1995) conceptualization of the environment, the study has understood environment as multidimensional, including biophysical, social, economic and political dimensions. As such the effects of resource capture and ecological marginalization have become multidimensional and need to be addressed as such.

Thirdly, following Gibbons, et. al. (1996) view that research can be useful in addressing problems generally, the study has argued that unless postgraduate Environmental Education and research focus on addressing issues created by marginalisation in South Africa, these will keep increasing.

With these understandings in mind, this study focused on the review of postgraduate Environmental Education research from the University of Johannesburg and Rhodes University during the period 1995 to 2004, the decade that has been understood as transformational in this study due to the changes that characterised it. The study aimed to understand the focus of postgraduate Environmental Education research in these two institutions with regards to both content and methodologies used.

Having analysed data through content analysis, findings were discussed and their implications on policy, Environmental Education practice and future research were discussed. This section discusses the conclusions about these findings together with implications.

First, this study concluded that the researchers' understanding of Environmental Education as having to be taught to school learners created some gaps in research during this study period. I first list these gaps and then present their implication with regards to environmental problems in South Africa. They include the following facts: First, other areas or sectors such as government and non-governmental organisations whose responsibility is to provide services to the marginalised were overlooked. Secondly, some groups of people such as learners, parents and women were not made to participate in research in a way that would empower them with skills and knowledge to be independent and understand their responsibilities with regards to environmental issues. Thirdly, some school subjects and learning areas were still distanced from Environmental Education research. This suggests that learners and educators involved in those subjects and

learning areas may also still be distancing themselves from environmental issues. As such, environment can still be viewed as biophysical in some sectors of education.

Referring to these gaps, the study concluded that limited knowledge was produced that can address problems in the four dimensions of the environment and therefore multidimensional environmental problems will still continue in the post-apartheid era. Further discussion was made which highlights the implications of these findings to various groups of people, including future researchers, practitioners, and policy makers. These implications include the fact that future research can address these identified gaps, practitioners can include all dimensions in their practice and not only focus on schooling, and policy makers be explicit about the issues of service delivery to the marginalised communities. The study concluded that if these issues are addressed then environmental problems can be reduced.

Second, the study found that methodologies that were used in the two institutions studied differed. Some did not encourage informants to participate in the studies. As such, this study concluded that some methodologies were not practically transformational. They did not leave people with necessary skills and knowledge with regards to addressing the environmental problems they are faced with in their different contexts. They also did not create the attitude that the environment is everybody's responsibility and as such everybody should regard it as their own. The study then concluded that if the problems that were created by resource capture and ecological marginalisation to the black communities of South Africa, future Environmental Education research should use

research methodologies that encourage participation and encourage responsibility to the participants.

While this study has identified that postgraduate Environmental Education research content and methodologies that were used at RU and UJ did not fully address the issues of marginalisation and resultant problems, further research can confirm these findings by reviewing research from other institutions as well.

REFERENCES

Agyeman, J. (2003). "Under-participation" and ethnocentrism in Environmental Education research: Developing "culturally sensitive research approaches" [Electronic Version]. *Canadian Journal of Environmental Education*, *8*, 80-94. Retrieved 15th September 2008, from http://jee.lakeheadu.ca/index.php/cjee/article/viewFile/239/97

Alison, L. J., Snook, B., & Stein, K. L. (2001). Unobtrusive measurement: using police information for forensic research. *Qualitative Research, 1*(2), 241-254.

ANC. (1994). *The Reconstruction and Development Programme*. Johannesburg: Umanyano Publications.

Anderson, D., & Grove, R. (Eds.). (1987). *Conservation in Africa: People, policies and practice*. Cambridge: Cambridge University Press.

Babbie, E., & Mouton, J. (2007). *The practice of social research*. Cape Town: Oxford University Press.

Ballantyne, R. R., & Packer, J. M. (1996). Teaching and learning in Environmental Education: Developing environmental conceptions. *The Journal of Environmental Education, 27*(2), 25-32.

Beinart, W. (1992). Transkeian smallholders and agrarian reform. *Journal of Contemporary African Studies, 2*(2), 178-199.

Bergman, M. M. (2008). *Advances in mixed methods research: Theories and applications*. London: Sage.

Birdsall, C., Boletsi, M., Sapir, I., & Verstraete, P. (2007). Inside knowledge: (Un)doing methodologies, imagining alternatives. Amsterdam: University of Amsterdam.

Blignaut, J. B. (1992). Existing constraints and attitudes towards the implementation of Environmental Education in Cape schools. *South African Journal of Education, 12*(3), 251-256.

Bonner, P. (1995). African urbanisation on the Rand between 1930s and 1960s: Its social character and political consequences. *Journal of Southern African Studies, 21*(1), 115-129.

Braus, J. (1995). Environmental Education. *BioScience, 45*, S45-S51.

Breen, L. J. (2007). The researcher 'in the middle': Negotiating the insider/outsider dichotomy. *The Australian Community Psychologist, 19*(1), 163-174.

Bryman, A. (2004). *Social research methods* (2nd ed.). Oxford: Oxford University Press.

Bryman, A. (2006). *Mixed methods*. London: Sage.

Cains, J. (2008). Research ethics terminological issues: Participants/subjects or respondents? Retrieved 11th October, 2007, from http://dx.doi.org/10.1080/1350462042000258224

Callaghan, N., Hamber, B., & Takura, S. (1997). A triad of oppression: Violence, women and poverty [Electronic Version]. Retrieved 15th June 2008, from http://www.csvr.org.za/wits/articles/artgend.htm

Carruthers, J. (2006). Tracking in game trails: Looking afresh at the politics of Environmental History in South Africa. Liverpool: University of Liverpool.

Chawla, L. (2006). Research methods to investigate significant life experiences: Review and recommendations. *Environmental Education Research, 12*(3-4), 359-374.

Cheong, I. P., & Treagust, D. F. (2001). *Multiple research approaches for research in Environmental Education and application of findings*. Paper presented at the Australian Association for Research in Education conference.

Chisholm, L. (Ed.). (2004). *Changing class: Education and social change in post-apartheid South Africa*. Cape Town: HSRC.

Čiegis, R. & Gineitienė, D. (2006). The role of universities in promoting sustainability. *Engineering economics, 3* (48).

City of Cape Town. (2009). *State of Cape Town 2008: Development issues in Cape Town*. Cape Town.

City of Johannesburg. (2008). *State of the Environment Report 2008*. Johannesburg.

Cock, J., & Fig, D. (2001). The impact of globalisation on environmental politics in South Africa, 1990-2002. *African Sociological Review, 5*(2).

Cock, J., & Koch, E. (Eds.). (1991). *Going green: People, politics, and the environment in South Africa*. Cape Town: Oxford University Press.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). New York: Routledge.

Conrad, L. (2003). Five ways of enhancing the postgraduate community: Student perceptions of effective supervision and support. Milperra: Griffith University.

Cresswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks: Sage.

Daszko, M., & Sheinberg, S. (2005). Survival is optional: Only leaders with new knowledge can lead the transformation [Electronic Version]. Retrieved 20th July 2008, from http://www.mdaszko.com/theoryoftransformation_final_to_short_article_apr05.pdf

Department of Education. (1995). *White Paper on Education and Training.* Retrieved 20th November 2007, from http://www.info.gov/whitepapers/1995/education1.htm

Department of Education. (1996). *Green Paper on Higher Education Transformation.* Retrieved 4th March 2008, from http://www.polity.org.za/html/govdocs/green_papers/hegreenp.html?rebookmark=1#_Toc374340698

Department of Education. (2002). *Revised National Curriculum Statement.* Retrieved 4th March 2008, from http://education .pwv.gov.za.

Department of Environmental Affairs and Development Planning. (2009). *Guideline on need and desirability: NEMA EIA Regulations Guideline and Information Document Series.* Western Cape DEA & DP. Retrieved 20th July 2009, from http://www.capegateway.gov.za/other/2009/9/guideline_on_need_and_desirability (may_2009).pdf

Department of Environmental Affairs and Tourism. (1997). *White Paper on Environmental Management Policy.* Retrieved 4th March 2008, from http://www.deat.gov.za/PolLeg/WhitePapers?EnvMgmt.htm.

De Vos, A. S., Strydom, H., Fouche, C. B., & Delport, C. S. L. (2002). *Research at grassroots: For the social sciences and human service professions* (2nd ed.). Pretoria: Van Schaik.

Dinham, S., & Scott, C. (2001). The Experience of disseminating the results of doctoral research. *Journal of Further and Higher Education 25*(1), 45-55.

Durning, A. B. (1990). Apartheid's Environmental Toll. *World Watch Institute.* Retrieved 20th July 2007, from http://www.groundwork.org.za/Booklets?BK3.pdf

Dysthe, O., Samara, A., & Westrheim, K. (2006). Multivoiced supervision of Master's students: a case study of alternative supervision practices in higher education. *Studies in Higher Education, 31*(3), 299-318.

Ellis, T. J., & Levy, y. (2008). Framework of problem-based research: A guide for novice researchers on the development of research-worthy problem. *Informing Science: the International Journal of an Emerging Transdiscipline, 11*, 17-33.

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El Zain, M. (2008). The political potential of displacement to urban areas: How has the "ethnic discourse" transformed the culturally polarized milieu in the Sudan? [Electronic Version]. *The Peace and Conflict Review*, *1*. Retrieved 11th January 2009, from http//www.review.upeace.org/pdf.cfm?

Environmental Education Policy Initiative. (1995). *Environmental Education policy Options for Formal Education in South Africa*. Retrieved 4th March 2008, from http://education.pwv.gov.za.

Esposito, L., & Murphy, J. (1999). Desensitising Herbert Blumer's work on race relations. *The Sociological Quarterly, 40*(397-410).

Feinberg, H. M. (1993). The 1913 Native Land Act in South Africa: Politics, race, and segregation in the 20th century. *The International Journal of African Historical Studies, 26*(1), 65-109.

Ferreira, J. L. (2007). *An unorthodox account of failure and success in Environmental Education.* Griffith University.

Fiedeldey, A., Fiedeldey van Wyk, C., Marais, J., Van Staden, F., & Willers, V. (1998). *Human values, attitudes and perceptions of the environment: The South African PAGEC study*. Pretoria: University of Pretoria.

Fien, J. (1993). *Education for the environment: Critical curriculum theorising and Environmental Education*. Victoria: Deakin University Press.

Flepp, C. (1985). Women under apartheid; a triple oppression [Electronic Version]. *UNESCO Courier*. Retrieved 17th October 2009, from http://findarticles.com/p/articles/mi_m1310/is_1985_April/ai_3709373/

Gangloff, D. (2007). Public relations and Environmental Education [Electronic Version]. Retrieved 13th December 2008, from http://www.reuters.com/article/pressRelease/idUS86391+15-Jul-2008+PRN20080715

Gibbons, M., Nowotny, H., Limoges, C., Schwartzman, C., Scott, P., & Trow, M. (1996). *The new production of knowledge:The dynamics of science and research in contemporary societies*. London: Sage.

Giliomee, H., & Schlemmer, L. (1989). *From Apartheid to Nation-building*. Cape Town: Oxford University Press.

Godemann, J. (2008). Knowledge integration: a key challenge for transdisciplinary cooperation *Environmental Education Research, 14*(6), 625-641.

Goldin, I. (1987). *Making race: the politics and economics of coloured identity in South Africa*. Cape Town: Maskew Miller Longman.

Gough, A., & Gough, N. (2004). Environmental Education research in Southern Africa: dilemmas of interpretation [Electronic Version]. *Environmental Education Research*, *10*, 409-424. Retrieved 11th October 2007, from http://dx.doi.org/10.1080/1350462042000258224

Gough, N. (1999). Rethinking the Subject: (de) constructing human agency in Environmental Education research. *Environmental Education Research, 5*(1), 35-48.

Gough, S. (2006). Locating the environmental in Environmental Education research: What research, and why? *Environmental Education Research, 12*, 335-343.

Gonzalez-Gaudiano. (2007). Education, environment and sustainability. *Southern African Journal of Environmental Education, 24*, 97-107.

Gray, M. (2008). *Knowledge production in social work: The 'gold standard' of mode 2?* Paper presented at the '34th biannual congress of the International Association of Schools of Social work' held in Durban, South Africa, on the 20-24 July 2008 (unpublished).

Hallowes, D. (Ed.). (1993). *Hidden faces: Environment, justice: South African and the Global context*. Scottsville: Earthlife Africa.

Harling, K. (2002). An overview of case study [Electronic Version], 7. Retrieved 9th April 2008, from http://www.farmfoundation.org/news/articlefiles/284-1_harling.pdf

Hartnell-Young, E., & McGuinness, K. (2005). Applying a communities of practice model to research partnerships. Melbourne: University of Melbourne.

Harvey, L. (Ed.) (2004). Analytic quality glossary: *Quality Research International*. Retrieved 21st June 2009 from http://www.qualityresearchinternational.com/glossary/

Henning, D. (2002). *Buddhism and deep ecology*. Bloomington: 1stBooks.

Henning, E., Janse van Rensburg, E., Wilhelm, & Smit, B. (2005). *Finding your way in qualitative research* (3rd ed.). Pretoria: Van Schaik Publishers.

HESA. (2006). *Spirit of inquiry: Knowledge creation in South African higher education*. Pretoria: HESA.

Hodgkinson, H. L., & Thelin, J. (1971). Survey of the applications and uses of unobtrusive measures in field of social service. Los Angeles: Carlifornia University.

Homer-Dixon, T. (1994). Environmental scarcity and violent conflict: Evidence from cases. *International security, 19*(1), 5-40.

Horrell, M. (1978). *Bantu Education to 1968*. Johannesburg: South African Institute of Race Relations.

Howitt, D., & Cramer, D. (2000). *First Steps in Research and Statistics: A practical workbook for Psychology students*. London: Sage.

Irwin, P. R. (2005). Environmental Education research in southern and eastern Africa: a Directory. Grahamstown: Rhodes University.

Irwin, P. R., & Lotz-Sisitka. (2005). A history of Environmental Education in South Africa. In C. Loubser (Ed.), *Environmental Education: Some South African perspectives*. Pretoria: Van Schaik publishers.

Janse van Rensburg, E. J. (1994). Social Transformation in response to the environment crisis: The role of education and research. *Australian Journal of Environmental Education, 10*(3), 1-20.

Janse van Rensburg, E. J. (1995). *Environmental Education and research in southern Africa: A Landscape of shifting priorities*. Grahamstown: Rhodes University.

Jickling, B. (2007). Research in a changing world: Normative questions and questions that matter. *Southern African Journal of Environmental education, 24*, 108-118.

Kellert, S. R., & Khan, P. H. (2002). *Children and nature: Pschological, sociocultural, and evolutionary investigations*. Miami: MIT Press.

Khan, F. (2002). The roots of environmental racism and the rise of environmental justice in the 1990s. In D. A. McDonald (Ed.), *Environmental Justice in South Africa* (pp. 15-48). Cape Town: University of Cape Town Press.

Kousis, M. (1998). The environmental movement revisited: the challengers and the challenged in an era of ecological marginalization and sustainable development. *Sociologia Ruralis, 38*(1), 86-108.

Le Grange, L. (2000). *Educational research as democratic Praxis*. Stellenbosch: Konrad Adenhauer Publishers.

Le Grange, L., & Reddy, C. (2007). Learning of environment(s) and environment(s) of learning. *Southern African Journal of Environmental Education, 24*, 76-81.

Le Grange, L. (2010). The environment in the Mathematics, Natural Sciences, and Technology Learning Areas for General Education and Training in South Africa. *Canadian Journal of Science, Mathematics and Technology Education, 10, 13-26.*

Le Roux, K. (2000). *Environmental Education processes: Active learning in schools*. Scottville: Pietermaritzburg: University of Natal Press.

Le Roux, C., & Ferreira, J. G. (2005). Enhancing environmental education teaching skills through In-Service Education and Training. *Journal of Education for Teaching, 31,* 1- 14

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills: Sage.

Lotz-Sisitka, H. (2002). Curriculum patterning in Environmental Education: A review of developments in formal education in South Africa. In E. Janse van Rensburg (Ed.), *Environmental Education, ethics and action in southern Africa* (pp. 97-120). Pretoria: Human Sciences Research Council.

Makhado, N. D. (2002). *Challenges educators experience in the provision of Environmental Education in schools in Curriculum 2005*. Johannesburg: University of Johannesburg.

Malone, E. L. (1999). Reclaiming silenced voices through practices of education and Environmental Popular Knowledge production. *Canadian Journal of Environmental Education, 4*, 231-243.

Matthiesen, J. K., & Richter, A. W. (2007). Negotiating access: Foot in the door...or door in the face. *The Psychologist, 20*(3), 144-147.

Mathie, A., & Camozzi, A. (2005). Qualitative research for tobacco control. International Development Research Center.

McDonald, D. (Ed.). (2002). *Environmental justice in South Africa*. Athens: Ohio University Press.

Merriam, S. B., Johnson-Bailey, J., Lee, M., Kee, Y., Ntseane, G., & Muhamad, M. (2001). Power and positionality: negotiating insider/outsider status within and across cultures. *International Journal of Lifelong Education, 20*(5), 405-416.

Mosothwane, M. (2007). The role of indigenous/local knowledge in sustaining environmental quality and its implications for Environmental Education teaching [Electronic Version]. *Pakistan Journal of Social Sciences*, *4*, 725-738. Retrieved 17th October 2009, from http://medwelljournals.com/fulltext/pjss/2007/725-738.pdf

Moyer, R. (1975). MUSEA: Moyer unobtrusive survey of environmental attitudes. Greeley: University of Northern Collorado.

Msila, V. (2007). From Apartheid education to the Revised National Curriculum Statement: Pedagogy for the identity formation and nation building in South Africa. *Nordic Journal of African Studies, 16*(2), 146-160.

Mwaura, C. (2005). *Kenya and Uganda pastoral conflict case study*. Retrieved 22nd June 2008 from
http://hdr.undp.org/en/reports/global/hdr2005.pdf

National Environmental Management Amendment Act. (1998). *Section 1 Act 107 of 1998,* Retrieved 21st August 2007, from
http://www.info.gov.za/gazette/acts/2003/a46-03.pdf

National Environmental Education Project-General Education and Training. Retrieved 17th November 2008, from
http://www.deat.gov.za/ProjProg/2003NEEP/capacity_building_21052003.html

Norms and Standards for Educators. (2000). Retrieved 21st August 2007 from
http://www.polity.org.za/htmlgovdocs/notices/2000/not0082.html

Nutley, S., Walter, I., & Davies, H. (2002). From knowing to doing: A framework for understanding the evidence-into-practice agenda [Electronic Version]. *Research and Policy in Development*. Retrieved 12th November 2007 from http:www.st-andrews.ac.uk/~ruru/publications.htm.

Nuttall, T. (1996). The leaves in the trees are proclaiming our slavery: African Trade Union Organisation, 1939- 1949. In P. Maylam & I. Edwards (Eds.), *The people's city: Africa Life in Twentieth Century Durban*. Pietermaritzburg: University of Natal Press.

Obol, C., Allen, I., & Bach, H. S. (2003). Environmental Education policy processes in the southern African region [Electronic Version]. *Southern African Journal of Environmental Education*, 20. Retrieved 10th December 2007 from
http://www.eeasa.org.za/publications/f1.pdf.

O'Donoghue, R. (1995). *Environment and methods*. Howick: Share-Net.

O'Donoghue, R. (2006). Locating the environmental in Environmental Education research: A review of research on nature's nature, its inscription in language and recent memory work to the natural world. *Environmental Education Research, 12*(3-4), 345-357.

Percival, V., & Homer-Dixon, T. (1998). Environmental scarcity and violent conflict: The case of South Africa [Electronic Version]. *Journal of Peace Research* 35, 279-298. Retrieved 2nd July 2007, 2008 from http://links.jstor.org/sici?sici=0022-3433%28199805%2935%3A3%3C279%3AESAVCT%3E2.0.CO%3B2-F.

Peters, M. A. (2005). Environmental Education and Education for Sustainable Development [Electronic Version]. *Policy Futures in Education*, *3*, 239-242. Retrieved 08th March 2008, from
http://www.umce.ca/cours/jplitalien/nesdec/researchComiler.pdf

Polk, M., & Knutsson, P. (2008). Participation, value rationality and mutual learning in transdisciplinary knowledge production for sustainable development. *Environmental Education Research, 14*(6).

Pullen, R., Ortloff, V., Casey, S., & Payne, J. B. (2000). Analysis of academic misconduct using unobtrusive research: A study of discarded cheat sheets [Electronic Version]. *College Student Journal*. Retrieved 18th May 2008, from http://findarticles.com/p/articles/mi_m0FCR/is_4_34/ai_69750209/pg-8/

Ramphele, M., & McDowell, C. (Eds.). (1991). *Restoring the land: Environment and change in post-apartheid South Africa*. London: The Panos Institute.

Ravinborg, H. M. (2003). *From water 'wars' to water 'riots'?* Paper presented at 'Danish Institute for International studies the International Conference, held at Copenhagen, Denmark, December, 2003.

Reddy, T. (2004). *Higher education and social transformation: South Africa case study*: Council on Higher Education. Retrieved 14th August 2008, from http://www.che.ac.za/documents/d000066/HE and SocialTransformationReport_25Feb2004.pdf

Rickinson, M. (2003). *Making sense of research in Environmental Education*. Paper presented at the American Educational Resarch Association.

Robottom, I. (2005). Critical Environmental Education research: Re-engaging the debate [Electronic Version]. *Canadian Journal of Environmental Education*, *10*, 62-78. Retrieved 10th June 2008, from http://www.deakin.edu.au/dro/view/DU:30003233

Robottom, I. (2007). Re-badged Environmental Education: Is ESD more than just a slogan? *Southern African Journal of Environmental Education, 24*, 90-96.

Schreuder, D. (1995). *Environmental Education at the crossroads: Rhetoric and reality in educational reconstruction in South Africa*. Paper presented at the NAAEE Annual Conference. Retrieved 15th June 2007, from http://eeasa.org.za/publications/2-EEASA.pdf.

Schulze, S. (2003). *Environmental Education research*. Pretoria: UNISA.

Seekings, J., & Nattrass, N. (2006). *Class, race, and inequality in South Africa*. Pietermaritzburg: University of KwaZulu-Natal Press.

South African Constitution, (1996). *Bill of Rights.* Retrieved 08 July 2007. from http://www.info.gov.za/documents/constitution/1996/96cons2.htm#24

South Africa Environment Outlook. (2002). *State of the Environment*. Retrieved 15th May 2007, from

http://www.environment.gov.za/HotIssues/2007/staeoftheenvironment2007/SAE
O%20Response820Compendium.doc

Taylor, A., Millei, Z., Partridge, L., & Rodriguez, L. (2003). The getting of access: the
trials and tribulations of the novice researcher [Electronic Version]. *Educational
Research*, *14*. Retrieved 13th February 2009, from
http://www.iier.org.au/iier14/taylor.html

Tilbury, D. (2004*).* Rising to the Challenge: Education for Sustainability in Australia.
Australian Journal of Environmental Education, 20(2), 103-114.

UNESCO. (2008). United Nations Decade of Education for Sustainable Development
(DESD 2005-2014). Retrieved 20th July 2008. from
http://unesdoc.unesco.org/images/008/00805eo.pdf

UNESCO-UNEP. (1987). International strategy for action in the field of Environmental
Education and training for the 1990s. Retrieved 10th August 2008. from
http://unesdoc.unesco.org/images/008/00805eo.pdf

United Republic of Tanzania Research and Analysis Working Group. (2008). Children's
perceptions of education and their role in society. *Views of the children 2007.* Dar
es Salaam.

United States Environmental Health Division. (2002). *Cancer and the Environment*.
Retrieved 1st December 2009, from
http://www.health.state.mn.us/divs/eh/harzardous/topics/cancerenvt.pdf

Van Louw, T., & Beets, P. A. D. (2008). The transformation of higher education: Context
of the establishment of the Center for Leadership and Management in education at
Stellenbosch University. *South African Journal for Higher Education, 22*(3), 473-
483.

Wagiet, R. (1997). *Environmental Education: a strategy for primary teacher education.*
Grahamstown: Rhodes University.

Westmarland, N. (2001). The Quantitative/Qualitative debate and feminist research: A
subjective view of objectivity [Electronic Version]. *Qualitative Social Research*,
2. Retrieved 18th July 2007 from
http://www.qualitative-research.net/index.php/fqs/article/view/9742125.

Whyte, A. V. (1995). Environment, reconstruction, and development: A report from the
International Mission on Environmental Policy. *Building A New South Africa, 4*.

Yates, J. S. (2004). *Doing social science research*. London: Sage.

Yero, J. L. (2002). The meaning of education [Electronic Version]. *Teachers' mind
resources*. Retrieved 1st February 2008, from http://www.TeachersMind.com

Yin, R. K. (2003). *Case study research* (3rd ed.). London: Sage.

APPENDIX A: EDUCATION SECTORS RESEARCHED ON

Institution	Year	Degree	Topic	Sector	Participants
UJ	1996	PhD	Environmental Education offered by Delta Environmental centre-an evaluative case study of programme in environmental education	Service Provider	Environmental education officers
	1997	Masters	Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park: Working towards an Environmental Education model	Civil society	People from informal and formal settlements; tourist destination representatives
	1997	Masters	The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	Civil Society	Venda speaking people, recently completed standard 10
	1998	PhD	A curriculum framework for informal urban agriculture	Mixed	Community leaders and members, agricultural and horticultural employers, lecturers, students and trainers in agriculture
	1998	Masters	The environmental literacy level of pre-service teacher trainees at selected campuses of Vista University	Higher education	Historically disadvantaged teacher trainees
	1999	Masters	Community participation in social environmental issues in a core-plus curriculum	Civil Society	Parents

	1999	Masters	Environmental Education in Curriculum 2005: A case study in the Northern Cape	Schooling	Teachers
	1999	Master	The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special reference to teachers in the Alrapark cluster	Schooling	Teachers
	2000	Masters	Community sensitivity regarding animal cruelty in a number of Thohoyandou villages	Civil Society	Poor, black citizens from the village
	2000	Masters	Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	Government	Local municipality authorities
	2000	Masters	Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	Schooling	Black female and male teachers
	2000	Masters	Barriers to teacher involvement in environmental education curriculum development in the Northern province	Schooling	Teachers
	2000	Masters	The environmental education programme in three INSET venues of teachers	Continuing Education	Teachers and INSET trainers
	2001	Masters	Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	Civil Society	Ttaxi drivers, commuters, hawkers, cleaners, businessmen
	2001	Masters	Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	Schooling	Learners and teachers

	2001	Masters	Students' experiences and critical viewpoints pertaining the further diploma in environmental education presented at RAU Centre for Distance Education	Higher Education	Former FDEE male and female students
	2001	Masters	The teaching of environmental studies in grade 4 with special reference to Man'ombe Circuit	Schooling	Black learners; principals and area manager
	2001	Masters	Teachers' views on implementation of environmental education in senior phase around Itsoseng	Schooling	Teachers
	2002	Masters	Environmental literacy of workers as a factor in sustainable forest management	Civil society	Uneducated, poorly paid, mainly contract labour; and contractors
	2002	Masters	Stakeholders' views on maintaining a sustainable living environment: a community education perspective	Civil Society	Community leaders
	2002	Masters	Challenges educators experience in the provision of Environmental Education at schools in C2005	Schooling	Experienced educators
	2003	PhD	The development of skills in physical science through environmental education – a case study	Schooling	Learners
	2004	PhD	Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	Mixed	Teachers

RU	1996	PhD	Detached harmonies: A study in/on developing social processes of Environmental Education in eastern southern Africa	Mixed	Document analysis
	1996	Masters	Student-teachers' perspectives of the role of the environmental education in geography education	Higher Education	Students and lecturers
	1996	Masters	Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials	Schooling	Teachers
	1996	Masters	An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board	Service Provider	Present and past chief executives and directors
	1996	Masters	A pilot study of secondary teachers' understanding of population dynamics	Schooling	Teachers
	1996	Masters	An investigation into the use of nature reserve as a cross-curricular teaching resource	Schooling	Municipal nature reserve officer, biology and geography teachers, learners
	1997	Masters	Participatory programme development at an Environmental Education centre through action research involving secondary school teachers	Mixed	Teachers
	1997	PhD	Share-Net: A case study of Environmental Education resource material development in a risk society	Service Provider	Documents
	1997	Masters	Environmental perceptions and knowledge among political leaders in the	Civil Society	Political leaders

			Eastern Cape province and some implications for environmental policy		
	1997	PhD	Environmental Education: a strategy for primary teacher education	Schooling	Teachers
	1997	Masters	Student teachers' conceptualisation of 'significant' animals	Higher Education	Tsonga-speaking students
	1998	Masters	Using local environment for outcomes-based education: issues raised for INSET by teachers' perceptions of agents of change	Continuing Education	Teachers
	1999	Masters	An exploration of environmental understanding among primary health care providers in an Eastern Cape community	Civil society	Xhosa speaking volunteer community lay health workers, health care professionals-with rural upbringing, a mental health community field worker, a white female medical doctor
	1999	Masters	An examination of the facilitatory role for Environmental Education of conservancies	Service Provider	Farmers and farm labourers
	1999	Masters	Through our eyes: Teaching using cameras to engage in Environmental Education curriculum development process	Schooling	Teachers and curriculum implementers
	1999	Masters	Dramatic learning: A case study of theatre for development and	Schooling	Teachers

			Environmental Education		
	2000	Masters	Environment as integrating organiser: A case study of Curriculum 2005 in KwaMhlanga, South Africa	Schooling	Teachers from under-resourced, overcrowded schools
	2000	Masters	Materials in flexible learning teacher education courses in Environmental Education: An evaluative case study	Higher Education	Teachers, Teacher educators, course coordinators
	2001	Masters	Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson	Civil Society	Afrikaans speaking elderly and younger community members
	2001	Masters	Towards a broader socio-ecological education: A case of school based curricular reform	Mixed	Lecturers
	2002	Masters	The use of Environmental Education learning support materials in OBE: the case of the Creative Solutions to Waste Project	Schooling	Teachers
	2003	Masters	Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT)	Service provider	Staff members; practising environmental educators
	2003	Masters	A resource-based learning approach to professional development: The case of the Rhodes ACEE	Higher Education	Course students, tutors, developers, race and gender not mentioned

APPENDIX B: PURPOSE OF RESEARCH

Topics and purposes of Research at UJ: first 5 years of study period-1995-1999

Topic	Purpose	Approach; Methodology and Methods of data collection
1996: Environmental Education offered by Delta Environmental Centre – an evaluative case study of programme in environmental education	To evaluate the EE programme	Qualitative; case study; interviews; questionnaire; document analysis
1997: Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park: Working towards an EE model	To determine the level of environmental literacy of the Kruger national park neighbours	Mixed; case study; interviews; Questionnaires
1997: The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	To improve people's perceptions with regards to eco-tourism	Quantitative; quasi-experimental; closed-question questionnaire
1998: A curriculum Framework for Informal Urban Agriculture	To develop a curriculum framework for a distance education course in sustainable urban agriculture – to train the trainers of urban farmers	Mixed; survey; questionnaire, focus group discussion
1998: The environmental literacy level of pre-service teacher trainees at selected campuses of Vista University	To determine the level of environmental literacy of historically disadvantaged teacher trainees	Qualitative; survey; questionnaires; interviews; documents
1999: community participation in social environmental issues in a core-plus curriculum	To encourage parental involvement in school EE programmes	Qualitative; case study; interviews
1999: Environmental Education in Curriculum 2005: A case study in the Northern Cape	To investigate ways in which EE could benefit and support C2005 to investigate needs, problems and possible solutions for teachers	Mixed; case study; questionnaire; structured, semi-structured and focus group interviews; informal discussions; observations; workshops
1999: The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special		Mixed; survey; documents; interviews; questionnaires

reference to teachers in the Alrapark cluster		

The second 5 years of study UJ: 2000-2004

Topic	Purpose	Methods
2000: community sensitivity regarding animal cruelty in a number of Thohoyandou villages	To develop a programme for ensured protection of bio-diversity-inform the communities about the importance of nature	Qualitative; survey; interviews; observation
2000: Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	To establish sustainable development agreement or LA 21 charter	Qualitative; case study; documents; workshops,
2000: Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	to determine awareness of teachers concerning the threats associated with alien plants	Qualitative; survey; observation; descriptive field notes; unstructured interviews
2000: Barriers to teacher involvement in environmental education curriculum development in the Northern province	To uncover barriers towards the meaningful involvement and subsequent participation of teachers in environmental education curriculum development processes	Qualitative; case study; Questionnaire; interviews
2000: The environmental education programme in three INSET venues of teachers	To investigate problems affecting environmental education training programmes for INSET educators	Qualitative; survey; documents; observation, questionnaires, interviews
2001: Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	To identify cause and control factors concerning littering at the rank	Mixed; survey; questionnaire, interviews and observation

2001: Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	To contribute to the improvement of the health of students and teachers at a particular high school, with regard to sanitation and water supply	Qualitative; descriptive survey; interviews; observation; questionnaires
2001: Students' experiences and critical viewpoints pertaining the further diploma in environmental education presented at RAU Centre for Distance Education	To evaluate the effectiveness of FDEE for teachers and to identify its weaknesses and strengths	Mixed; survey; questionnaires, semi-structured interviews, non-participant observation
2001: The teaching of environmental studies in grade 4 with special reference to Man'ombe circuit	To investigate how environmental studies is treated in grade 4	Qualitative; survey; In-depth, focus group interviews
2001: Teachers' views on implementation of environmental education in senior phase around Itsoseng	To investigate teachers' views on the integration of environmental education within the existing learning programme in the senior phase of primary schooling	Qualitative; survey; interviews
2002: Environmental literacy of workers as a factor in sustainable forest management	To investigate and identify trends in the development of sustainable forest management in the SA forest industry	Mixed; survey; open-ended interviews; observations; questionnaire
2002: Stakeholders' views on Maintaining a Sustainable Living Environment: a Community Education Perspective	To understand the views of stakeholders in a low-cost housing area on their role in maintaining a sustainable living	Qualitative; case study; Semi-structured interviews
2002: Challenges Educators experience in the provision of EE at schools in C2005	The examination and analysis of hindering factors to the successful implementation of EE in schools	Qualitative; phenomenological case study; observation; focus group and individual interviews; questionnaire; documents
2003: The development of skills in physical science through environmental education – a case	To develop a programme/model to enable curriculum designers and	Mixed; quasi-experimental; questionnaires; interviews; media footage; observation

study	physical science teachers to effectively utilise resources available to them	
2004: Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	Teachers' perceptions about EE programme	Qualitative; phenomenological case study; interviews

First 5 years of study period Rhodes 1995-1999

Topic	Purpose	
1996: Detached Harmonies: A study in/on developing social processes of EE in eastern southern Africa	To explore social processes in EE; to examine wilderness experience and environmental awareness and behaviour	historical; document analysis
1996: Student-Teachers' perspectives of the role of the environmental education in geography education	To explore student-teachers' perspectives of the role and value of EE in secondary school Geography	Qualitative; case study; semi-structured interviews; workshops; observation
1996: Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials	To examine the potential of urban environment for the teaching of ecology for socially just and sustainable living	Qualitative; action research; semi-structured interviews; workshops; field trips
1996: An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board	To establish a platform upon which future developments in interpretation may be built	Qualitative; case study; documents; interviews; questionnaire
1996: A pilot study of secondary teachers' understanding of population dynamics	To establish the views of secondary school biology teachers about the teaching of population dynamics	Mixed; survey; questionnaires; Workshops

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1996: An investigation into the use of nature reserve as a cross-curricular teaching resource	To develop the use of the Queenstown Nature reserve as a cross-curricular teaching opportunity, and as an ecological resource for education	Qualitative; action research; interviews; workshops
1997: Participatory Programme Development at an Environmental Education Centre Through action research Involving Secondary School Teachers	To develop a program with the teachers which could benefit both the teachers and the Environmental Education and resources Unit	Qualitative; Emancipatory action research; interviews Dairy Workshops Presentations
1997: Share-Net: A case study of Environmental Education Resource material development in a risk society	To review and illuminate the development of Share-net, an informal resource materials network- for the Wildlife and Environment Society	Qualitative; case study; document analysis
1997: Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy	To share views on environmental issues, concerns and strategies for improved environmental understanding and management and policy change	Qualitative; survey; semi-structured interviews
1997: Student teachers' conceptualisation of 'significant' animals	To explore the potential contribution of socially constructivist approaches to teaching and learning Environmental Education-to study the conceptualisation of animals perceived as significant by a group of	Qualitative; phenomenological case study; interviews

	Tsonga-speaking tertiary students, and to seek insights into the formative influences on those conceptualizations.	
1997: Environmental Education: a strategy for primary teacher education	To explore the potential/identify strategy for the implementation of education for sustainable living	Approach not mentioned; case study; Semi-structured interviews; document analysis
1998:Using local environment for outcomes-based education: issues raised for INSET by teachers' perceptions of agents of change	To explore the perceptions of teachers regarding educational change	Qualitative, action research; interviews; questionnaire; workshops
1999: An exploration of environmental understanding among primary health care providers in an Eastern Cape community	To explore environmental understanding among health care practitioners in a rural community	Qualitative; participatory action research; semi-structured interviews, participant observation, focus group discussions
1999: An examination of the facilitatory role for EE of conservancies	To explore: the possibility within the conservancy movement for the facilitation of EE	Qualitative; case study; semi-structured interviews; observations
1999: Through our eyes: Teaching using cameras to engage in EE curriculum development process	An exploration of the potential for engaging teachers in school-based EE curriculum development processes by using camera	Approach not mentioned; action research; image generation by camera; tape recordings of cluster meetings; cluster meeting notes; questionnaires; semi-structured interviews; observations; informal discussions
1999: Dramatic learning: A case study of theatre for development and EE	An exploration of the potential for engaging teachers in school-based EE curriculum development processes by using camera	Qualitative; action research; individual and focus group interviews; group discussions; questionnaires; workshop

Second 5 years of study Rhodes: 2000-2004

Topic	Purpose	
2000: Environment as integrating organiser: A case study of Curriculum 2005 in KwaMhlanga, South Africa	Exploration of how teachers work with environment as phase organiser and their understanding of a phase organiser and the notion of 'integration'.	Qualitative; case study; Questionnaires, interviews, observations, document analysis
2000: Materials in flexible learning teacher education courses in environmental education: An evaluative case study	exploration of how courses and materials were developed, selected, used and adapted or developed to support the course orientation and intended outcomes	Qualitative; case study; document analysis; questionnaire; focus group interviews; participant observation
2001: Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson	To establish what knowledge, practices and skills people had in the past; who still holds this knowledge and whether it is passed on generationally	Qualitative; ethnographic case study and historical; document analysis, participant observation, unstructured interviews, focus group interviews
2001: Towards a broader socio-ecological education: A case of school based curricular reform	To highlight the role of EE in educating communities with ecological issues	Qualitative; participatory action research; discussions, documents
2002: The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project	To establish what learner support materials were used in primary schools and how they were used with a view to improve materials and provide guidelines for continuous development	Qualitative; participatory action research; interviews; observations; questionnaires; workshop
2003: Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT)	To explore a viability and possible need for an EE framework strategy within the EWT	Qualitative; case study; questionnaires, semi-structured interviews, document analysis

2003: A resource-based learning approach to professional development: The case of the Rhodes ACEE	An exploration of resource-based learning-adaptive use of learning support materials in different work contexts	Qualitative; phenomenological case study; focus group interviews; semi-structured interviews; document analysis

APPENDIX C: TOPICS ON EACH THEME OF RESEARCH PURPOSE

THEME 1: Determination of Environmental (Education) perceptions, concerns, attitudes, views or opinions

TOPICS

UJ	RU
Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park: Working towards an EE model	Student-teachers' perspectives of the role of the environmental education in geography education
Community sensitivity regarding animal cruelty in a number of Thohoyandou villages	Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy
Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	A pilot study of secondary teachers' understanding of population dynamics
Stakeholders' views on maintaining a sustainable living environment: a community education perspective	Using local environment for outcomes-based education: issues raised for INSET by teachers' perceptions of agents of change
Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	
Teachers' views on implementation of environmental education in senior phase around Itsoseng	
The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	

THEME: 2 Determination of the level of Environmental (Education) awareness/literacy/understanding/knowledge

Environmental literacy of workers as a factor in sustainable forest management	Detached Harmonies: A study in/on developing social processes of EE in eastern southern Africa
The environmental literacy level of pre-service teacher trainees at selected campuses of Vista University	An exploration of environmental understanding among primary health care providers in an Eastern Cape community
	Environment as integrating organiser: A case study of Curriculum 2005

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	in KwaMhlanga, South Africa
	Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson

THEME 3: **Environmental Education Curriculum/program/resource development or evaluation**

Environmental Education offered by Delta Environmental Centre-an evaluative case study of programme in environmental education	An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board
A curriculum Framework for Informal Urban Agriculture	An investigation into the use of nature reserve as a cross-curricular teaching resource
Environmental Education in Curriculum 2005: A case study in the Northern Cape	Participatory Programme Development at an Environmental Education Centre Through Action Research Involving Secondary School teachers
The teaching of environmental studies in grade 4 with special reference to Man'ombe circuit	Share-Net: A case study of Environmental Education Resource material development in a risk society
The development of skills in physical science through environmental education – a case study	Materials in flexible learning teacher education courses in environmental education: An evaluative case study
The environmental education programme in three INSET venues of teachers	A resource-based learning approach to professional development: The case of the Rhodes ACEE
Students' experiences and critical viewpoints pertaining the further diploma in environmental education presented at RAU Centre for Distance Education	The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project

THEME 4: **Exploration/examination of feasibility/possibility/potential for Environmental education**

	Student teachers' conceptualisation of 'significant' animals
	Environmental Education: a strategy for primary teacher education

	An examination of the facilitatory role for EE of conservancies
	Through our eyes: Teaching using cameras to engage in EE curriculum development process
	Dramatic learning: A case study of theatre for development and EE
	Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT)
	Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials

THEME 5: **Identification of cause and control for environmental problems/ challenges/ contribution to sustainable environmental management**

The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special reference to teachers in the Alrapark cluster	
Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	
Barriers to teacher involvement in environmental education curriculum development in the Northern province	
Challenges Educators experience in the provision of EE at schools in C2005	
Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	

THEME 6: **Encouragement of improvement and involvement on environmental issues**

Community participation in social environmental issues in a core-plus curriculum	Towards a broader socio-ecological education: A case of school based curricular reform
Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	

APPENDIX D: ENVIRONMENTAL DIMENSIONS RESEARCHED

UJ

Topic	Researched dimension
Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park:	Social and Biophysical

Working towards an EE model	
Community sensitivity regarding animal cruelty in a number of Thohoyandou villages	Social and Biophysical
Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	Biophysical
Stakeholders' views on maintaining a Sustainable Living Environment: a Community Education Perspective	Social and Curriculum
Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	Curriculum
Teachers' views on implementation of environmental education in senior phase around Itsoseng	Curriculum
The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	Social and Economic
Environmental literacy of workers as a factor in sustainable forest management	Social and Biophysical
The environmental literacy level of pre-service teacher trainees at selected campuses of Vista University	Curriculum
Environmental Education offered by Delta environmental centre-an evaluative case study of programme in environmental education	Curriculum
A curriculum Framework for Informal Urban Agriculture	Curriculum
Environmental Education in Curriculum 2005: A case study in the Northern Cape	Curriculum
The teaching of environmental studies in grade 4 with special reference to Man'ombe circuit	Curriculum
The development of skills in physical science through environmental education – case study	Curriculum
The environmental education programme in three INSET venues of teachers	Curriculum
Students' experiences and critical viewpoints pertaining the further diploma in environmental education presented at RAU Centre for Distance Education	Curriculum
The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special reference to teachers in the Alrapark cluster	Curriculum
Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	Social and Political
Barriers to teacher involvement in environmental education curriculum development in the Northern province	Curriculum
Challenges educators experience in the provision of EE at schools in C2005	Curriculum
Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	Social

Community participation in social environmental issues in a core-plus curriculum	Social and Curriculum
Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	Social

RU

Student-teachers' perspectives of the role of the environmental education in geography education	Curriculum
Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy	Political
A pilot study of secondary teachers' understanding of population dynamics	Curriculum
Detached Harmonies: A study in/on developing social processes of EE in eastern southern Africa	Social
An exploration of environmental understanding among primary health care providers in an Eastern Cape community	Social
Environment as integrating organiser: A case study of Curriculum 2005 in KwaMhlanga, South Africa	Curriculum
Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson	Social
Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials	Curriculum
An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board	Social and Biophysical
An investigation into the use of nature reserve as a cross-curricular teaching resource	Curriculum and Biophysical
Participatory Programme Development at an Environmental Education Centre Through Action Research Involving Secondary School Teachers	Curriculum
Share-Net: A case study of Environmental Education Resource material development in a risk society	Curriculum
Materials in flexible learning teacher education courses in environmental education: An evaluative case study	Curriculum
A resource-based learning approach to professional development: The case of the Rhodes ACEE	Curriculum
Using local environment for outcomes-based education: issues raised for INSET by teachers'	Curriculum

perceptions of agents of change	
The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project	Social and Curriculum
Student teachers' conceptualisation of 'significant' animals	Biophysical
Environmental Education: a strategy for primary teacher education	Curriculum
An examination of the facilitatory role for EE of conservancies	Biophysical
Through our eyes: Teaching using cameras to engage in EE curriculum development process	Curriculum
Dramatic learning: A case study of theatre for development and EE	Curriculum
Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT)	Curriculum and biophysical
Towards a broader socio-ecological education: A case of school based curricular reform	Curriculum

APPENDIX E: RESEARCH ON GREEN OR BROWN ENVIRONMENT

Institution	Year	Topic	Context
UJ			

	1997	Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park: Working towards an EE model	Green
	1997	The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	Mixed
	1999	Environmental Education in Curriculum 2005: A case study in the Northern Cape	
	1999	The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special reference to teachers in the Alrapark cluster	
	2000	Community sensitivity regarding animal cruelty in a number of Thohoyandou villages	Green
	2000	Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	Mixed
	2000	Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	Green
	2000	Barriers to teacher involvement in environmental education curriculum development in the Northern province	
	2000	The environmental education programme in three INSET venues of teachers	
	2001	Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	Brown
	2001	The teaching of environmental studies in grade 4 with special reference to Man'ombe circuit	
	2001	Teachers' views on implementation of environmental education in senior phase around Itsoseng	
	2001	Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	Brown
	2002	Environmental literacy of workers as a factor in sustainable forest management	Green
	2002	Stakeholders' views on Maintaining a Sustainable Living Environment: a Community Education Perspective	Mixed

	2002	Challenges Educators experience in the provision of EE at schools in C2005	
	2003	The development of skills in physical science through environmental educationa – a case study	
	2004	Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	
RU	1996	Detached Harmonies: A study in/on developing social processes of EE in eastern southern Africa	Green
	1996	Student-Teachers' perspectives of the role of the environmental education in geography education	
	1996	Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials	Green
	1996	An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board	Green
	1996	A pilot study of secondary teachers' understanding of population dynamics	Green
	1996	An investigation into the use of nature reserve as a cross-curricular teaching resource	Green
	1997	Participatory Programme Development at an Environmental Education Centre Through Action Research Involving Secondary School Teachers	
	1997	Share-Net: A case study of Environmental Education Resource material development in a risk society	Green
	1997	Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy	Mixed
	1997	Environmental Education: a strategy for primary teacher education	

	1997	Student teachers' conceptualisation of 'significant' animals	Green
	1998	Using local environment for outcomes-based education: issues raised for INSET by teachers' perceptions of agents of change	Mixed
	1999	An exploration of environmental understanding among primary health care providers in an Eastern Cape community	Brown
	1999	An examination of the facilitatory role for EE of conservancies	Green
	1999	Through our eyes: Teaching using cameras to engage in EE curriculum development process	
	1999	Dramatic learning: A case study of theatre for development and EE	
	2000	Environment as integrating organiser: A case study of Curriculum 2005 in KwaMhlanga, South Africa	
	2000	Materials in flexible learning teacher education courses in environmental education: An evaluative case study	
	2001	Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson	Green
	2001	Towards a broader socio-ecological education: A case of school based curricular reform	Green
	2002	The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project	Brown
	2003	Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT)	Green
	2003	A resource-based learning approach to professional development: The case of the Rhodes ACEE	

APPENDIX F: THEMES OF RESEARCH PURPOSE

Institution	Sector	Topic	Purpose
UJ	Schooling	Environmental Education in Curriculum 2005: A case study in the Northern Cape	Theme 3
		The impact of the Learning for Sustainability Project on teachers and Curriculum 2005 with special reference to teachers in the Alrapark cluster	Theme 5
		Teachers' views on planting of alien invader plants at schools around the Orionocco area in Bushbuckridge	Theme 1
		Barriers to teacher involvement in environmental education curriculum development in the Northern province	Theme 5
		Teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge	Theme 6
		The teaching of environmental studies in grade 4 with special reference to Man'ombe circuit	Theme 3
		Teachers' views on implementation of environmental education in senior phase around Itsoseng	Theme 1
		Challenges Educators experience in the provision of EE at schools in C2005	Theme 5
		The development of skills in physical science through environmental education - a case study	Theme 3
Service provider		Environmental Education offered by Delta Environmental Centre – an evaluative case study of programme in environmental education	Theme 3
Civil society		Concerns and attitudes of the southern neighbours of the Kruger National Park towards the park: Working towards an EE model	Theme 1

	The relationship between environmental literacy and perceptions with regard to Eco-tourism by Vhavendas in the Eastern Soutpansberg Region	**Theme 1**
	Community participation in social environmental issues in a core-plus curriculum	**Theme 5**
	Community sensitivity regarding animal cruelty in a number of Thohoyandou villages	**Theme 1**
	Concerns and perceptions of taxi drivers and hawkers regarding littering at Mabopane station	**Theme 5**
	Environmental literacy of workers as a factor in sustainable forest management	**Theme 2**
	Stakeholders' views on Maintaining a Sustainable Living Environment: a Community Education Perspective	**Theme 1**
Mixed	A curriculum Framework for Informal Urban Agriculture	**Theme 3**
	Teachers' perceptions of continuous and professional teacher development programmes in Environmental Education and the extent to which it influences their teaching	**Theme 1**
Higher education	The environmental literacy level of pre-service teacher trainees at selected campuses of Vista University	**Theme 2**
	Students' experiences and critical viewpoints pertaining the further diploma in environmental education presented at RAU Centre for Distance Education	**Theme 3**
Government	Implementation of Local Agenda 21 planning process in urban settings: A case study in greater Johannesburg Metropolitan council	**Theme 5**
Continuing Education	The environmental education programme in three INSET venues of teachers	**Theme 3**

RU	Schooling	Teaching the principles of ecology in the urban environment: an investigation into the development of resource materials 21	**Theme 4**
		A pilot study of secondary teachers' understanding of population dynamics 3	**Theme 1**
		An investigation into the use of nature reserve as a cross-curricular teaching resource 10	**Theme 3**
		Environmental Education: a strategy for primary teacher education 17	**Theme 4**
		Through our eyes: Teaching using cameras to engage in EE curriculum development process 20	**Theme 4**
		Dramatic learning: A case study of theatre for development and EE 19	**Theme 4**
		Environment as integrating organiser: A case study of Curriculum 2005 in KwaMhlanga, South Africa 6	**Theme 2**
		The use of environmental education learning support materials in OBE: the case of the Creative Solutions to Waste Project 14	**Theme 3**
		Using local environment for outcomes-based education: issues raised for INSET by teachers' perceptions of agents of change	**Theme 1**
Mixed		Detached Harmonies: A study in/on developing social processes of EE in eastern southern Africa 4	**Theme 2**
		Participatory Programme Development at an Environmental Education Centre Through Action Research Involving Secondary School Teachers 11	**Theme 3**
		Towards a broader socio-ecological education: A case of school based curricular reform 23	**Theme 6**

Higher education	Student-teachers' perspectives of the role of the environmental education in geography education 1	**Theme 1**
	Student teachers' conceptualisation of 'significant' animals 15	**Theme 4**
	Materials in flexible learning teacher education courses in environmental education: An evaluative case study 13	**Theme 3**
	A resource-based learning approach to professional development: The case of the Rhodes ACEE 13	**Theme 3**
Service provider	An investigation into the development, principles and practice of environmental interpretation in South Africa: A case study of the National Parks Board 8	**Theme 3**
	Share-Net: A case study of Environmental Education Resource material development in a risk society 12	**Theme 3**
	An examination of the facilitatory role for EE of conservancies 18	**Theme 4**
	Developing an Environmental Education strategy framework: A case study of the Endangered Wildlife Trust (EWT) 21	**Theme 4**
Civil society	Community knowledge, cohesion and environmental sustainability: An educational case study in Clarkson 7	**Theme 2**
	An exploration of environmental understanding among primary health care providers in an Eastern Cape community 5	**Theme 2**
	Environmental perceptions and knowledge among political leaders in the Eastern Cape province and some implications for environmental policy 2	**Theme 1**

UNIVERSITY OF KWAZULU-NATAL
ETHICAL CLEARANCE APPLICATION FORM
(HUMAN AND SOCIAL SCIENCES)
Inquiries:
Ms Phumelele Ximba
Tel: 260 3587
Email: ximbap@ukzn.ac.za

PLEASE NOTE THAT THE FORM MUST BE COMPLETED IN TYPED SCRIPT; HANDWRITTEN APPLICATIONS
WILL NOT BE CONSIDERED

SECTION 1: PERSONAL DETAILS

1.1 **Full Name & Surname of Applicant :** Robert Balfour
1.2 Title (Ms/ Mr/ Mrs/ Dr/ Professor etc) : Prof
1.3 Student Number (where applicable) :
    Staff Number (where applicable) : 105421
1.4 School : School of Language, Literacies, Media & Drama Education
1.5 Faculty : Education
1.6 Campus : Edgewood
1.7 Existing Qualifications :
1.8 Proposed Qualification for Project :
    (where applicable)
2. **Contact Details**
    Tel. No. : 031 260 3138
    Cell. No. :
    e-mail : balfourr@ukzn.ac.za
    Postal address (in the case of students
    and external applicants) :

3. **SUPERVISOR/ PROJECT LEADER DETAILS**

NAME	TELEPHONE NO.	EMAIL	DEPARTMENT / INSTITUTION	QUALIFICATIONS
3.1 Professor Robert Balfour	031 260 3138	balfourr@ukzn.ac.za	Language, Literacies, Media & Drama Education	PhD
3.2 Professor Relebohile Moletsane	031 260 1024	Moletsaner@ukzn.ac.za	Post-Graduate Studies and Research	PhD
3.3 Dr Peter Rule	033 260 6187	rulep@ukzn.ac.za	Adult and Higher Education	PhD
3.4 Dr J. Karlsson	031 260 1398	karlsson@ukzn.ac.za	Education, Leadership, Management and Policy Studies	PhD
3.5 Dr G Pillay	031 260 7698	pillaygv@ukzn.ac.za	Professional Development	PhD

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NAME	TELEPHONE NO.	EMAIL	DEPARTMENT / INSTITUTION	QUALIFICATIONS
3.4 Thabisile Nkambule	0734935098	thabzeni@yahoo.com	UKZN	M Phil.
3.5 Primmithi Naidoo	0724930280	primn@webmail.co.za	UKZN	M Ed.
3.6 Brenda Davey	0845535351	bdavey@telkomsa.net	UKZN	M Ed.
3.7 Serufe Molefe	0722455112	serufemolefe@hotmail.com	UKZN	B Ed Hons
3.8 Nomanesi Madiya	0837689908	nomanesi@mweb.co.za	UKZN	B Ed Hons
3.9 Liile Lekena	0786658690	liilel@yahoo.co.uk	UKZN	B A Hons

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