# Opportunities for the inclusion of Environmental Education in the Namibia Senior Secondary Certificate, Geography, Grade 11-12: A case study from Namibia

Submitted in partial fulfilment of the requirements for the degree of

Master of Education

(Environmental Education)

Rhodes University

by

**Helena T. Ashipala**

**13A7187**

Supervisor:

Professor Rob O'Donoghue

February 2021

## ABSTRACT

Geography is widely recognised in Namibia as a subject within the curriculum that has been framed for understanding and resolving environment issues and sustainable development. It is in this light that this study examined the inclusion of opportunities for environmental education (EE)[1] embedded in the Grade 11-12 Geography curriculum in the Namibian context. This study is undertaken as a case study of two schools in the Omusati region in northern Namibia. It investigated opportunities for EE that are embedded in the Geography curriculum using action competence as a lens to review the curriculum and how teachers are working with it in two rural school contexts. This study employed qualitative methods, specifically semi-structured interviews, an analysis of curriculum documents, classroom observations and focus group interviews. Ethical issues were taken into consideration throughout the study. The key findings from the study are:

1. The specification of EE has mainly emerged as a series of concerns that present as topics to be taught and compared with similar concerns in other parts of the world;
2. Teachers have little experience of what and how to teach and inform environmental education within their classrooms;
3. Learners are not actively involved in seeking and probing environmental concerns or in seeking solutions to these.

These findings have been used to make recommendations that teachers:

1. Revisit and review the curriculum documents to carry theory into classroom practice;
2. Encourage learners' participation to enhance their interest and emotional responsibility in environmental education.

The study concludes by calling for further research into EE in Geography. This can be used to improve EE in the region where this study was conducted and beyond.


[1] In this study Environmental Education (EE) and Education for Sustainable Development (ESD) are used interchangeably. The Namibian curriculum that was originally informed by action competence and EE now works with the UNESCO global concept of ESD.

## ACKNOWLEDGEMENTS

First of all I would like to thank the omnipotent Almighty for the health and strength to be able to do what I do.

I express my immense gratitude to my ever inspiring supervisor, Professor Rob O'Donoghue, for his guidance, motivation and encouragement. My thesis work would not have been possible without his constant support and active guidance.

To the participants in this study, the teachers and learners. You did not have to allow me to sit in your classrooms and follow you around but you did and because of you, this study was possible. For that, I will forever be grateful.

My fellow EE master students, who became family. You guys made the sleepless nights both on and off campus bearable with the critical discussions and friendship. The Makana sisters, you guys made my stay in South Africa homely and more than just studying.

I will forever be indebted to Lameez and the whole Eksteen family, who took me in as a stranger from Namibia and made me part of their wonderful family. Mommy, Dad, Lameez and Deen. Thank you. We will always be family. Love you!

My sincere gratitude to my colleagues, who did not complain about taking over my classes when I was away for classes in South Africa or collecting data for this study. I appreciate you and trust the team I play for always. Thanks guys, remain blessed. Mrs Rauha Mushona, I am grateful for your unwavering support, trust and love. Thanks mom.

Lastly, to my amazing family, my parents, my siblings, my husband and kids who supported me unconditionally, babysitting and all, I can never put in words or repay you, your support, love, trust in me has been my true strength. This work is dedicated to you (we have been through a lot but we have all pulled through and still going strong). Thank you.

# CONTENTS

## List of Tables



## List of Figures

# CHAPTER 1: **INTRODUCTION**

## 1.1 History and context of environment education in Namibia

There were major changes in Namibia following the country's independence in 1990 and the education curriculum was part of this. Although a school curriculum response to environmental concern started a long time ago globally, in Namibia this only started seriously from about 1990.

Environmental education (EE) is supported and included in the Namibian constitution (Article 95):

> The state shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at … maintenance of ecosystems, essential ecological processes and biological diversity of Namibia; utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future. In particular the government shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibia territory. (Namibia, 1990, p. 3)

Article 95 laid the foundations for the incorporation of EE into the curriculum. The Ministry of Basic Education Arts and Culture, now Ministry of Education, has also shown commitment to the concept of environmental education as is evident in several aims of the basic education system, as listed below:

> 3.10.1 Develop an understanding of the dynamic interdependence of living and non-living things and the environment
>
> 3.10.2 Develop a sense of responsibility for restoring and maintaining ecological balances through the sustainable management of natural resources
>
> 3.10.3 Promote the learners' involvement in practical activities to pressure and sustain the natural environment; and
>
> 3.10.4 Lay a foundation for informed and responsible attitudes and choices towards the balance of population growth, ecological sustainability and quality of life for all Namibians.
>
> (Namibia, Ministry of Basic Education, Arts & Culture [MBEAC], 1997, p. 8)

A cross curricular approach to environmental education is promoted by the Ministry of Education and Culture. This means that teachers of all subjects, at all levels (i.e. junior primary, senior primary, junior secondary and senior secondary), need to incorporate environmental issues into their teaching.

This change developed around a call by UNESCO for environmental awareness education which led to an introduction of environmental education across the curriculum in Namibia (Kanyimba, 1999). In support for environmental education, the Ministry of Environment established the Namibian Environmental Education Network (NEEN) in 1990, although it was officially only launched in 1991 (NEEN policy, 1999). The work of NEEN involved bringing environmental education into all education sectors. The NEEN policy statement (1999) maintains that:

> Namibia will actively encourage, support and implement environmental education as a means of achieving and fulfilling article 95 of the constitution. Environmental education should aim to empower Namibians, from all sectors, to critically evaluate environmental information and options, to make informed decisions, and to take actions that will contribute to the goal of environmental and Economic sustainability. (p.2)

The Ministry of Environment is also responsible for drawing up the Green Plan. This document aimed to reflect Namibia's commitment to the protection and improvement of the environment in 1992 and included the incorporation of EE into the school curriculum.

The Enviroteach project to resource environmental learning in formal education followed and was concluded in 1999. An outcome of these processes and a series of conferences is a Namibian perspective on environmental education as a cross curricular issue at each grade level.

The history outlined above illustrates how environmental education has emerged as a policy imperative to be included in the curriculum. This study focuses on the Geography curriculum, Geography is a practical course designed to enhance scientific knowledge about physical, environmental and human processes (National Institute for Education Development [NIED], 2009). Ketlhoilwe (2008) emphasised that to strengthen teaching and learning processes for quality education on environment and sustainability in southern Africa, pedagogical and contextual issues need to be researched on these matters.

Uugwanga (1998) noted that opportunities for education are still unequal among schools. Namibia is however making progress in developing the desired kind of education. The quality

education debate led to Namibia's first education conference that was held from 27 June - 1 July 2011. This attracted many experts in education, both national and international. The aim of the conference was to provide a platform for all stakeholders to interrogate the education system in Namibia and contribute towards improved learning outcomes at all levels of education. It was noted that "Quality education is an effective means to fight poverty, build democracies, and foster peaceful societies, quality education empowers individuals, gives them a voice, unlocks their potential, opens pathways to self-actualization and broadens perspectives to open minds to a pluralist world" (Lupele & Sisitka, 2012, p. 38).

This conference also brought about changes to the curriculum in 2014 that have already been implemented and environmental education is still a cross curricular issue. Another objective of the education conference was to develop a road map providing strategic direction to the Ministry of Education to take up its role as a catalyst in realising Vision 2030. Vision 2030 was adopted in 2004 by the government and it focuses on eight themes to realise the country's long term vision. According to the Vision 2030 document (2004, p. 10) these themes are:

- Inequality and social welfare;
- Human resources development and institutional capacity building;
- Macro-economic issues;
- Population health and development;
- Namibia's natural resources sector;
- Knowledge, information and technology; and
- Factors of the external environment.

Working with all these themes, Namibia can be transformed into a knowledge based society.

Against this historical evidence of the central role of environmental education in Geography and the Namibian curriculum as a whole, I became interested in exploring how an action competence imperative for environmental education across the curriculum was playing out.

## 1.2 Motivation for the study

My initial motivation came from my role as a teacher. I was interested in what learners were taking back to their communities, apart from achieving points to continue to university level. I have been a Geography teacher for the past ten years. Part of my work involves teaching learners about the world that surrounds us and also supporting an environmental club. I started to wonder what kind of teacher I was. I remember reading a handout and feeling confused about whether I was a positivist or a constructivist. I use a syllabus all the time with guidelines of what learners should know, doesn't that make me a positivist? Or am I a constructivist because I use learner-centred education encouraging learner discussion although I mark learners wrong if they don't give the correct answer? Was the syllabus holding me back, or if I was following the intended curriculum as I should, how has it prepared learners for the changes that occur in society, particularly with regard to the environment? With these questions in mind, I needed to find a platform to investigate.

My second motive has been the need for more information about the state of Namibia's environmental education. Considerable emphasis and recognition have been given to EE and this had led to the development of NGOs trying to support EE, but evidence of change in schools is lacking.

My third motive has been my children. My seven-year old asks many questions when elders talk about the way places looked in the past, and especially when reference is made to different wild fruits that are no longer around in the community. It is disturbing knowing that my children will not ever know some of these and I am worried about the environment they will grow up into.

## 1.3 Aims of the study

The study aimed to investigate an action competence perspective on environmental education reflected in the Namibian curriculum and textbooks in a context of school Geography teaching.

To achieve this, the investigation looked at action competence roots of the inclusion of environmental education as a cross curricular concern (Chapter 2). Then, working with the concept of action competence as an analytical lens, the study investigates how environmental education is presented in the Geography curriculum and textbooks (Chapter 4). A second phase of the study generates data on how teachers are working with the curriculum and textbooks in

their lesson planning and then probes how environmental education is playing out in learning experiences amongst Grade 11-12 Geography students.

The research question developed to guide the study thus became:

> How is environmental education embedded in the curriculum and textbooks and how is this playing out in action competence in the two cases of Geography teaching examined in the study?

## 1.4 Research goals

This research was framed around the concept of action competence and how this had informed the Namibian policy and curriculum context. Working from how this perspective was embedded in the curriculum allowed me to explore how environmental education opportunities are being realised within the Geography curriculum. This investigative research was thus guided by the following research question:

> What opportunities are there for environmental education in the Grade 11-12 Geography curriculum and how are these currently being realised?

Other questions for framing the data generation were:

- How do policy, curriculum documents and textbooks frame environmental education?
- How are teachers developing opportunities for action centred environmental education in their work with the current Geography curriculum?
- How is the creation of opportunities for environmental education lesson planning being carried over into teaching and learning interaction that foster investigation, envisioning the need for change and taking action to foster change?

The first question focuses on the policy documents and how the concept of action competence had been used to frame environmental education in the curriculum. This is key in probing how policy frames and encourages action competence through environmental education and how this is translated into the textbooks that are being used in schools. For the realisation of this particular goal, it was necessary to do a document analysis of the curriculum, the Geography subject policy, the Geography syllabus as well as textbooks being used in selected schools.

The second question seeks to explore the role of teachers and how they incorporate environmental education within their teaching to foster environmental learning and action

competence. Teachers were thus interviewed and their lesson plan were analysed to get a better idea on how environmental learning opportunities are being taken up and developed by the teachers.

The third question is centred on the actual teaching and learning taking place and how this frames and fosters action competence. Observations of what is taking place within the classroom as well as focus group interviews with the learners were necessary to probe how environmental education opportunities were playing out for learners.

The research process thus examines the framing of environmental education from policy into teaching and learning materials and this is followed through into how teachers are working with these in teaching and learning practices to foster learning with action competence.

## 1.5 Structure of the study

The study is organised into seven chapters. The first chapter of the thesis provides the necessary background of the study. It introduces the reader to the study and provides a general background.

In **Chapter 2** a literature review explores the key concepts that have been identified for the proposed study, namely environmental education, curriculum as well as the Geography education in which this study is embedded. This chapter also presents the action competence roots of environmental education as a cross-curricular concerns. This embedded theoretical framework is developed for the investigation, analysis and write-up.

**Chapter 3** aims at providing an overview of how the study was carried out as a two-phase investigative study. It describes who was involved and also how the data were collected and analysed. Aspects of validity and ethical considerations are also highlighted in this chapter.

**Chapter 4** uses document analysis to investigate the curriculum and textbooks so as to establish if and how an implicit policy concern for action competence came to be embedded in the policy and materials for Geography teachers to work with in schools.

**Chapter 5** deals with data presentation and provides an analysis on how teachers and learners are engaged in environmental education and how the teaching and learning processes are playing out to develop action competence.

**Chapter 6** develops analytical statements based on the evidence of the curriculum embedding of action competence and how this is playing out in the data presented in Chapters 4 and 5.

**Chapter 7** provides a summary of and conclusions from this thesis with suggested recommendations for further studies and research.

# CHAPTER 2: **LITERATURE REVIEW**

## 2.1 Introduction

This study aims to explore how environmental education processes have come to be enacted in the Geography Grade 11-12 curriculum. It uses the concept of action competence as an analytical lens. In this chapter, I begin to examine environmental education and curriculum as key elements of this study. This is then related to the curriculum in Namibia and the Geography curriculum in particular. Finally, a theoretical framework for the study is presented. Action competence is reviewed from both a global and a Namibian perspective, to gain an understanding about the processes that can shape action competence.

## 2.2 Conceptualisation of environmental education and curriculum

### 2.2.1 Environmental education

Environmental education as the key concept in this study is defined as education that helps individuals to become more knowledgeable about their environment and to develop responsible environmental behavior and skills so that they can improve the quality of the environment (UNESCO, 1978; Nordström, 2006). In Namibia, the curriculum policy has been framed around international definitions of environmental education and the intention of developing the action competence implicit in Article 95 of the Constitution and specified in NEEN (1999) , namely:

> ….to critically evaluate environmental information and options, to make informed decisions, and to take actions that will contribute to the goal of environmental and economic sustainability. (p.2)

This process of defining environmental education across the curriculum was initiated by UNESCO. For the purposes of this study, a definition of environmental education is used that has been provided by IUCN. This has been widely used in Namibia and is foundational to education policy. IUCN (as cited in Neal & Palmer, 1990, p. 2) maintains that:

> Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental

> education also entails practice in decision making and self-formulation of a code of behavior about issues concerning environmental quality.

The need for environmental education was realised and emphasised at the United Nations Conference on Human Environment held in Stockholm in 1972. At this conference it was recommended that:

> The organizations of the UN system especially the United Nations Educational Scientific and Cultural Organization (UNESCO) and the other International agencies concerned should after consultation and agreement take the necessary steps to establish an international programme in environmental education, interdisciplinary in approach, in schools and out of school encompassing all levels of education. (UNESCO, 1972, p. 19)

As a result, the National Environmental Assessment Policy for sustainable development advised that environmental learning programmes should aim to empower Namibians from all sectors to critically evaluate environmental information and options, to make informed decisions and to take actions that will contribute to the goal of environmental and economic sustainability (Ministry of Environment & Tourism, 1995).

UNESCO also further elaborated on the pedagogy of education for sustainable development:

> … stimulates learning and promotes core competencies such as critical and systematic thinking, collaborative decision-making and taking responsibility for present and future generations through the integration of critical issues, such as climate, change, biodiversity, disaster risk reduction (DRR), and sustainable consumption and production (SCP), into the curriculum, it designs teaching and learning in an interactive, learner-centred way that enables exploratory, action –oriented and transformative learning to inspire learners to act for sustainability and by so doing empowers them to transform themselves and the society they live in: motivating learners to adopt sustainable lifestyles. (UNESCO, 2014, p.12)

There are different ways to consider the environment. One way is to see environment as an *entity* (Tani, 2006). When the environment is perceived as an entity, the environment is taken to be something which is not looked at or attached to a person but completely separate from a people (Kimaryo, 2011). One can compare this perception to our daily understanding of the

environment to the way we see the moon, the stars or the sun (ibid.). We usually see them as objects which are out there. This way of perceiving the environment can be referred to as an 'objective view' of the environment. It implies that knowledge about the environment can be obtained through scientific research (ibid.).

An alternative way of perceiving environment is where environment is viewed as an *experienced phenomenon*. In this view, environment is seen as a space which surrounds an individual with the individual at the centre of that space (Kimaryo, 2011). This means it can be seen as a setting for people's lives. This is a 'subjective view' of the environment because it gives the notion that humans have control over the environment (ibid.). This is illustrated in studies on humans' connectedness to nature. A respondent in such a study said, "When I think of my place on earth, I consider myself to be a top member of the hierarchy that exists in nature" (Mayer & Frantz, 2004, p. 315).

A third view of environment, according to Tani (2006), is that environment is a *socially or culturally produced or constructed phenomenon*. According to this view, humans are an integral part of the environment and they shape it through their social and cultural behavior. This implies that knowledge about the environment depends on an understanding of humans and social and cultural aspects and not only of the environment itself. This perspective on humans constructing our ways of knowing and doing things together implies that we need a curriculum to be able to develop the action competence to be able to sustain ourselves and our surroundings going forward.

The roots of this develops from the Tbilisi Declaration in October 1977 and Agenda 21 of 1992 These had significant impact in shaping environmental education as part of the Namibian curriculum. In formal education, the teaching of EE is based on the principles of the Tbilisi Declaration (Enviroteach, 1995; NEEN, 1999), and thus EE should:

1. Consider the environment in totality, including natural and built, technological and social, political, moral, cultural, historical, and aesthetic aspects;
2. Be a continuous lifelong process – it should begin at pre-school level and continue through all formal and non-formal stages;
3. Be interdisciplinary in its approach, drawing on the specific content of each discipline to make a holistic and balanced perspective;

4. Examine major environmental issues from a local, national, regional and international point of view so that learners receive insights into environmental conditions in other geographical areas;

5. Focus on current and future environmental situations, while taking into account the historical perspective;

6. Promote the value and necessity of local, national and international co-operation in preventing and solving environmental problems;

7. Explicitly consider environmental aspects in plans for development and growth;

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

9. 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 earlier years;

10. Help learners discover the symptoms and real causes of environmental problems; and

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

Environmental education in Namibia is taught across the curriculum. It is important to explore whether or not it has an impact on a child's life. Orr (2004), drawing on Ralph Waldo Emerson, concluded:

> We are shut up in schools and college recitations rooms for ten or fifteen years, and come out at least with a bellyful of words and do not know a thing. We cannot use our hands, or our legs, or our eyes or our arms. We do not know an edible root in the woods. We cannot tell our course by the stars, nor the hour of the day by the sun. (p. 18)

I could see a Namibian child in the description above. Namibian children attend school from Grades 1-12 and write exams at the end of each year. They are assessed according to what they put on paper, but what qualities are measured at the end of the day? By who? Have they actually learned anything? Vygotsky (1978) emphasised that learning in itself is not really development but properly organised learning will result in mental development. This could be the focus point for environmental education in the Namibian curriculum.

### 2.2.2 Curriculum

Defining curriculum is not easy because of the different settings of schools. Carl (1995, p. 32) contended "curriculum is thus a broad concept which includes all planned activities which take place during the normal school day". However, Catling and Davidson, (2000) argued that the curriculum developers and those who deliver it should move away from defining curriculum simply as syllabus content and recognise the need to consider the process of teaching and learning within a curriculum. In the context of this study, the curriculum refers to all school subjects, aims, goals and objectives, methods of teaching, evaluation, learners' experiences and all activities (planned and unplanned), which are intended for the education of school learners in Namibia. The research focus here is on the processes of environmental education in the Geography curriculum and the extent to which the teaching and learning practices are enabling action competence.

Environmental education has been included in the school curriculum as a result of international organisations realising the effect of human impacts on the environment (UNESCO, 1972), thus environmental education is incorporated across the curriculum. Kimaryo (2011) indicated that in designing the curriculum for environmental education scholars, researchers and policy makers should use an approach which is holistic in nature.

### 2.2.3 Teaching and learning in Geography

An understanding of the way Geography is taught in schools is crucial to this research. Lambert and Balderstone (2005) indicated that it is of great importance for teachers to take into account the requirements of the curriculum when planning in Geography. Butt (2002, p. 100) noted that teaching sustainable development in Geography depends not only on high quality subject matter knowledge but also on modern pedagogical content knowledge. He suggested that Geography teachers need to adopt and adapt different teaching strategies to address and promote variations in the learning styles of their learners. Teaching methods were also discussed by Haubrich (2007), who indicated that group work and discussions are good teaching and learning methods in studying ecological issues. Haubrich(2007) further noted that co-operation and sharing their own experiences and reasoning in a group, helps students understand their own thinking. Enquiry based learning is also recommended as learners easily develop creative thinking through investigation. Lambert and Balderstone (2010, p.187) stated that in undertaking Geographical inquiry, learners should be taught to:

1. Ask geographical questions beginning with how, why, and what
2. Suggest the appropriate order of investigation by gathering views and factual evidence regarding a local issue and deriving a conclusion from the views and the evidence.
3. Collect , record and present evidence
4. Analyse and evaluate evidence as well as draw and justify conclusions
5. Appreciate the connection between learner's own values and those of their society with contemporary social, environmental, economic and political issues.
6. Communicate in ways appropriate to a given task and audience by producing leaflets, drawing sketch maps and producing persuasive writing about a place they investigate.

These perspectives on how Geography ought to be taught were useful for considering the day-to-day methods used in the teaching and the extent to which a curriculum developed around the ideal of student action competence was being realised in the ways in which Geography is being taught in the schools investigated in the case study.

2.2.2.1 Geography as an environment and sustainability medium

Geography is one of the subjects capable of educating individuals on environment if carefully implemented in the curriculum (Tshiningayamwe, 2017). This supports the Lucerne declaration on geographical education to "integrate sustainable development into teaching of geography at all levels and in all regions of the world" (Reinfried, 2009, p. 229). The Lucerne declaration outlined a global curriculum, particularly for Geography, through which ESD can be taught. T Lucerne declaration brings forth an approach which focuses on the interconnectedness of the physical and the human systems that shape our earth (Reinfried, 2009).

Haubrich (1994) indicated that Geography education promotes understanding, tolerance and friendship amongst all nations, racial, and religion groups. Geography education is relevant to the development of all responsible citizens both in the present and future world and this also resonates well with the international charter on geographical education, though written many years ago, that geography is a powerful medium for promoting the education of individuals and a major contributor to international, environmental and development education.

**2.2.2.2 The Namibian Senior School Geography curriculum**

Independence in 1990 bestowed upon Namibian leaders a massive challenge to reform and invigorate basic education. Clearly, many people saw this as an opportunity for great progress,

for the establishment of the rights of people, for free access to relevant education, for equity and equal opportunities, for affirmative measures, and for lifelong learning. With all these concerns, came recognition of the importance of environmental education across the curriculum, which is also evident in the Geography syllabus.

Adopted from the Geography syllabus (NIED, 2009), the Namibian national curriculum guidelines are to:

- Recognize that learning involves developing values and attitudes as well as knowledge and skills;
- Promote self-awareness and an understanding of the attitudes, values and beliefs of others in a multilingual and a multicultural society;
- Encourage respect for human rights and freedom of speech;
- Provide insight and understanding of crucial "global" issues in a rapidly changing world which affect quality of life: the AIDS pandemic, global warming, environmental degradation, maldistribution of wealth, expanding and increasing conflicts, the technological explosion and increased connectivity;
- Recognise that as information in its various forms becomes more accessible, learners need to develop higher cognitive skills of analysis, interpretation and evaluation to use information effectively; and
- Seek to challenge and to motivate learners to reach their full potential and to contribute positively to the environment, economy and society.

These guidelines set a platform for individual subjects, so they can inform the curriculum. In support of the national guidelines for curriculum, the Geography curriculum is then a study of the Earth and the interactions between humans and nature and it examines humans in their interdependent relationship with the earth (NIED, 2009). Geography particularly enhances scientific knowledge about physical, environmental and human processes.

The NSSC (Namibia Senior Secondary Certificate ) Geography syllabus from the 2009 NIED syllabus encourages learners to acquire and develop:

- A knowledge and understanding of the terminology, concepts and systems fundamental to a study of physical and human geography;

- A sense of place and an understanding of relative location on a local, regional and the relationship among the dynamic nature of such distributions;
- An understanding of the relationship and interactions of people and their environment in response to physical and human processes in Namibia and internationally;
- An awareness of spatial distributions of phenomena on the earth's surface and the relationships among the dynamic nature of such distributions;
- An appreciation of the potentialities and limitations of the physical environment for human activities;
- A critical awareness of different ways of life to foster positive attitudes towards other people, gender and societies with different social, economic and political circumstances;
- A critical awareness of the factors and processes which act upon physical and cultural environmental systems which bring about change;
- An understanding of aspects of the contemporary world which are changing;
- An awareness of societies which are undergoing rapid social and economic changes;
- An appreciation of how human use and abuse of the environment can lead to various forms of environmental enhancement and degradation;
- A caring attitude towards the environment and sustainable management of natural and human resources;
- Skills in geographical observation, analysis and communication with assistance of informal technology; and
- Understanding of HIV and AIDS and the impact of HIV and AIDS on development.

To address the above goals, the Geography syllabus consists of four broad themes which are:

1. The physical world;
2. Economic development and the use of resources;
3. Population and settlement studies; and
4. Research techniques and map reading skills.

Under these broad themes, there is provision for environmental education in the sub-themes listed below:

- Waste
- People and resources
- Biodiversity

- Resources and health
- Economic activity
- Development and environment
- Environmental services
- Population dynamics
- Environmental threats and benefits
- Global economy
- HIV/AIDS

Themes 1, 2 and 3 are broad themes which are sub-divided into topics such as agriculture, industry, tourism etc. Catling and Davidson (2000) stated that the Geography curriculum for the twenty-first century must be focused on pupil learning and provide opportunities for critical inquiry.

**Table 2.1: Trends in teaching and learning Geography in schools since the 1960s** (Ballantyne & Gerber, 2004, p. 58)

| | |
|---|---|
| Nature of Geography and its educational potential | • Geography as the link between the physical and human sciences<br>• Teaching key fact and concepts<br>• Method of spatial study based on observation, recording and analysis<br>• Focus on teaching about the character of places, similarity and differences, environment systems<br>• Geography methods, textbooks from universities emphasised teaching through fieldwork , local and sample studies<br>• Little concern for rationale/ principles for different teaching methods |
| Geography as a medium for education | • Using the key questions of geographical enquiry such as: What? Where? How? Why? What impact?<br>• Teaching key concepts<br>• Learning experiences in classrooms or libraries field and community locations<br>• Enquiry learning to develop knowledge , skills and values<br>• Use of various perspectives for teaching, e.g. critical, developmental and multicultural |

| | |
|---|---|
| Learning focus | • Focus on the learning process as applied to Geography<br>• Learner negotiation and decision making<br>• Learner as facilitator of student learning through problem solving, conflict resolution, spatial planning<br>• Importance of collegial, cooperative learning based on teams or groups<br>• Developing learner abilities through stimulating and challenging geography lessons<br>• Intentional learning behaviours |
| Focus on pedagogy and knowledge management | • Broad repertoire of teaching styles and strategies<br>• Artistry in successful geography teaching<br>• Knowledge creation and teamwork<br>• Knowledge and information networks<br>• Managing communities of practice<br>• Linking knowledge management to tasks and purposes<br>• Creating a knowledge sharing culture<br>• Promoting knowledge transfer through teaching and learning Geography |

The above table shows the possibilities that lie within a proper Geography curriculum. Geography in this form was seen to have the potential to enhance environmental education, as it is a link between the physical and human which ultimately is the environment. Geography as a medium for addressing environmental concerns has been globally recognised, as illustrated the Lucerne Declaration (2007). The Lucerne Declaration on geographical education for sustainable development is an attempt to recognise sustainable development in the pedagogies of Geography all over the world (Reinfried, 2009).

Anyolo (2011) indicated that in Namibian schools particularly, teachers view ESD as simply knowledge attainment about the environment and that teachers lack an understanding of the importance of ESD in developing attitudes necessary for proper caring for the future through the environment. Suggestions have been made by Anyolo (2011) to either implement ESD as a subject or for it to be integrated with other subjects. Namibia has shown considerable engagement with environmental education as a co-curricular issue and a recent study done by Tshiningayamwe (2017) has indicated that, Geography as a school subject can make a positive impact towards ESD, through development for teachers and finding and engaging appropriate pedagogy.

Earlier Gerber (2000) had suggested that if Geography is properly handled and its contents broadened, it could serve well as an environmental education medium. Supporting Geography as a medium of ESD can raise issues linked to ethics as to whether one is imposing environmental issues on people. This challenge to the Earth Charter initiative which started in 1997 was finally presented in 2000. The primary concern was for people to realise the intrinsic value of nature and it set up certain rules for saving the world.

## 2.3 Namibia's socio-ecological issues and risks

Namibia's population as recorded in 2014 is 2.4 million people (Namibia, National Planning Commission, 2014). Environmental problems are evident in some areas which could be due to the nature and location of Namibia as a country. According to Enviroteach (1995), a resource supporting environmental education in the Namibian curriculum, the following facts about Namibia can be noted:

1. Namibia has a population growth rate of approximately 3.1 % a year. This means that the total population can be expected to double within the next 20 years. This will bring with it increased pressure on natural resources, the economy, social services, etc. these increased demands superimposed upon current poverty, land degradation and inadequate health and social services are likely to have serious implications unless something is done to remedy the situation well in advance. Creating an environmentally literate population is part of a number of long term solutions to the problem.
2. Estimates indicate that 70% of the Namibian population is directly dependent on the land for a living. We cannot afford to damage our natural resources in any way since this will jeopardise our survival in the future. Current trends indicate that with an increase in the population we can expect land mismanagement and degradation to escalate substantially as pressure on the land increases. Everyone needs to be environmentally aware so that they can manage Namibia's natural resources appropriately.
3. Namibia is the driest country south of the Sahara, making the environment particularly sensitive to mismanagement and degradation. As population figures increase, so does the likelihood of environmental damage. Our fragile environment dictates that development needs to be especially sensitive and ecologically appropriate.
4. Namibia is a country that is highly dependent on the environment for the development of its economy. It is important for policy and decisions to be informed by environmental

knowledge and awareness since thoughtless development can be detrimental to the environment over the long term. Without a basic understanding of the environment there can be no appropriate development on sustainable use of Namibia's resources.

***Figure 2.1: Annual rainfall in Namibia, 2011*** (adopted from Namtranslations, 2011)

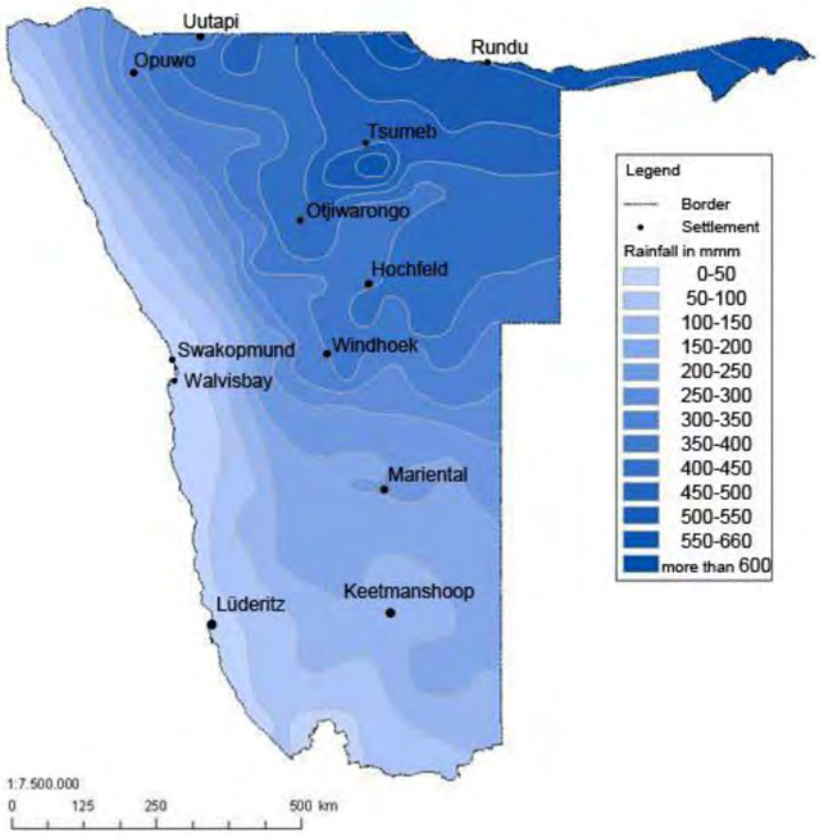
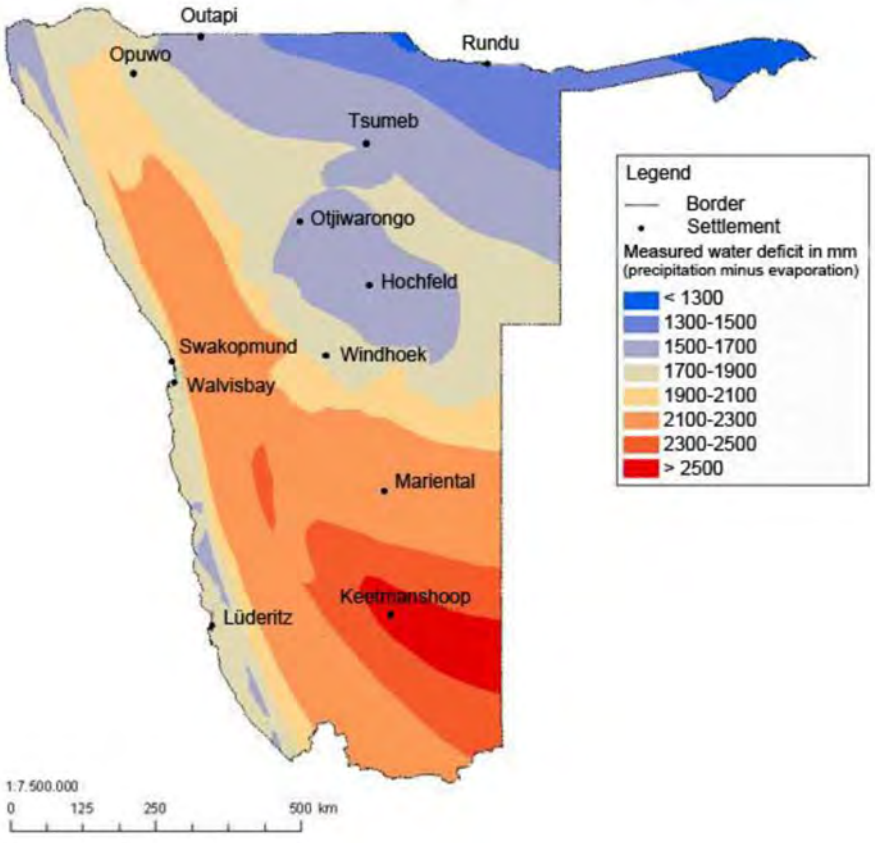


***Figure 2.2: Water deficit in Namibia 2011*** (adopted from Namtranslations, 2011)




The maps above show that Namibia is dry and as such is particularly vulnerable to climate change and other environmental issues. It can be assumed that more frequent and continuous periods of drought will arise. Due to the increase of drought, deserts like the Namib will probably spread (Msangi, 2007). Thus desertification can be expected in Namibia and droughts are already occurring.

This knowledge base in Geography was seen as an important foundation for environmental education within which student competence would merge to live in and resolve this complex web of environment and sustainability concerns.

UNEP (2008) also identified and described the following environmental issues as common in Namibia:

- Land degradation and desertification – desertification is the foremost environmental problem in Namibia. Despite the scarcity of arable land, almost half of the population

is involved in agriculture. Evidence of desertification includes declining groundwater levels, soil erosion, reduced soil fertility and loss of woody vegetation.

- Aridity and water scarcity – water availability is the single greatest factor limiting development in Namibia. Extreme temporal variability and uneven spatial distribution of water resources constrain livelihoods. There are limited perennial surface water sources. Groundwater accounts for roughly half of all water consumption.
- Threats to loss of biodiversity – Namibia is home to abundant biodiversity, including unique desert-adapted ecological communities and productive coastal fisheries. The Succulent Karoo of the Namib Desert is one of the few arid biodiversity hotspots in the world. It contains the richest collection of succulent flora. Threats to this region include grazing, agriculture, and mining. Namibia also has one of the largest remaining populations of black rhinos, a highly endangered species threatened primarily by poaching. Namibia's fisheries are some of the most productive in the world. (UNEP, 2008, p. 257)

Climatic vagaries such as droughts, alternating with floods, have led to the loss of top rich soil through soil erosion and sedimentation rendering large tracts of land worthless to those dependent on exploiting an area's bio-resources (Msangi, 2007).

Population pressure and human activities include overcultivation (exhausts the soil), overgrazing (removes vegetation cover that protects soil from erosion), deforestation (removes trees and vegetation that binds soil to land) and poorly designed irrigation (turns croplands saline resulting in land degradation) (Msangi, 2007).

The HIV/AIDS pandemic has also greatly affected Namibia and has significantly compounded the problem of non-management of agricultural land and hence its degradation through severe loss of mature population and subsequently, loss of farm labour and agricultural knowledge (Shikongo, 2005).

Based on all these concerns, a form of environmental education is required that fosters change by building the competence of pupils to take positive action towards a more sustainable future. This has been a theme in emerging responses to issues and risks in Namibia.

## 2.4 How Namibia is responding to these issues and risks

Environmental education is a concern for the world at large and thus many conferences have been held all over the world to respond to environmental concerns. Conferences that have had an impact on Namibia include the Tbilisi Declaration (1977) and the Earth Summit's Agenda 21 (1992) which have led to the establishment of many environmental awareness projects. The Ministry of Basic Education Arts and Culture (MBEAC), in particular their National Institute for Education Development (NIED) with support from Ibis, has played a prominent role in supporting the Life Science Project and the school-based Forest Awareness and Tree Planting Project (FATPP). Furthermore, the Ministry of Basic Education and Culture, communities and the Ministry of Environment and Tourism (MET) have jointly established the Maria Mwengere Environmental and Cultural Exchange Centre in Kavango Region. Other significant environmental education initiatives include: the Desert Research Foundation's (DRFN) Enviro Teach Project, the Rossing Foundation's Environmental Education Clubs, the establishment of the Waterberg and Namutoni Environmental Education Centres by the MET, support to teachers in Kunene Region from Integrated Rural Development and Nature Conservation and the establishment of the Namibian Environment Education Network (NEEN).

### 2.4.1 The Enviroteach project

Enviroteach is an environmental education programme of the Desert Research Foundation of Namibia (DRFN) that received financial support from the Swedish International Development and Co-Operation Agency (Sida). The project worked closely with the National Institute for Educational Development (NIED) in addressing environmental education issues (Enviroteach, 1999).

The Enviroteach project has undergone a number of phases, each with their own objectives but all with a common overall objective of establishing EE in formal education. The Enviroteach programme was concluded in 1999 after it had successfully implemented EE in the six Colleges of Namibia. The aim was to sensitise teacher educators involved in Basic Education Training Diploma (BETD) and students enrolled for the BETD to environmental issues and to encourage them to promote learner-centred education, activities-based lessons and cross-curricular approaches to teaching using environmental education at all levels of the formal system.

### 2.4.2 The Life Science project

The Life Science (LS) project was started in 1991 and led to Life Science becoming a fully developed subject which teachers could teach. According to Van Harmelen (2000, p. 2), the major components of the LS project were:

- Curriculum development and the production of learning materials. In this regard the project assisted NIED, as members and conveners of various ministerial working groups and curriculum co-coordinating committees in the development and revision of syllabuses for LS Grades, 8-10 and Grades 4 -7, Environmental Studies Grades 1-3 and Agriculture Grades 7-10. The Life Science project developed and distributed textbooks and other learning support materials.
- The supply of teaching equipment to schools/ institutions. The project identified, purchased and distributed basic laboratory and field equipment to all upper Primary and Junior Secondary Schools and to Teacher Training Colleges and Teacher Resource Centres.
- In-service and Pre-service Teacher education. All teachers of Life Science were reached through in-service development either at national, regional or local workshops, cluster meetings and/ or school visits. A special programme to support pre-service educators was undertaken during 1997 and 1998. The in-service programme was designed to develop subject knowledge and teachers' pedagogical knowledge, through enhancing their methodological and didactic skills to enable them to adopt a learner centred approach.

Today, Life Science is a promotional subject at the junior secondary phase, Grades 8-10. The components listed above helped the nation to fully tackle science from all perspectives at the junior level and to instill environmental values in young children.

## 2.5 Theoretical framework

### 2.5.1 Action competence and its importance in the Namibian Geography curriculum

This study of environmental education in the Geography curriculum is framed around the concept of knowledge on environment and sustainability and a developing competence to understand and take action to put things right. This is embodied in the notion of action competence that refers to an individual's ability to act at personal and societal levels in

identifying and addressing environmental issues and problems (Jensen, 1995; Schnack, 1994). In other words, action competence refers to students' ability to learn about concerns in ways that enable them to act with reference to environmental concerns as a process that has developed through environmental education in this case, in the Geography curriculum. Jensen and Schnack (2004a) explained action competence as a process in which students identify problems, make decisions about solutions and take action to solve those problems. In a similar way, Keen (1992) referred to competence as:

> the ability to deal with non-routine and abstract work processes, handle decisions and assume responsibility of those decisions, operate in ill-defined and ever changing environments, work in groups, work within expanding geographical and time horizons. (p. 112)

The Namibian curriculum (Namibia, 2010) described competence as "[comprising] the cognitive, effective and or practical skills which a learner is to demonstrate as a result of the teaching/ learning process and which will be assessed" ( p. 19).

Action competence as a process develops through four interlinking dimensions namely:

- **I**nvestigation,
- **V**isioning,
- **A**ction, and
- **C**hange.

The elements of IVAC will be individually discussed and have been used to frame analysis in the study. Action competence is said to develop when students make a conscious decision themselves as to what they want to investigate and how it can be achieved, developing a sense of responsibility and subsequent commitment and motivation (James, 2009). Working from this perspective, action competence is used as an analytical lens for exploring if and how environmental education processes in the Geography curriculum are worked with to enable learners to learn about and act to change the Namibian social-ecological landscape with an understanding of its environmental concerns.

The Namibian Geography syllabus (NIED, 2009) states that projects given in Geography should promote learners' curiosity so that they can be able to solve problems. In support of my use of the concept of action competence as a lens, Geography is examined as a subject that fosters environmental education through:

- Promoting investigation;
- Envisioning;
- Action; and
- Becoming involved in change.

The Geography syllabus currently deals with investigation of many general issues. The education policy emphasises that a learner-centred approach should be incorporated in all teaching and learning and this could create a platform for action. This suggests that in the teaching and learning of environmental education, learners should be helped to develop action competence so they can become involved, investigate issues, reflect critically, make informed decisions and act accordingly.

The education policy emphasises that a learner-centred approach should be incorporated in all teaching and learning undertakings, and this could create a platform for action.

Sometimes it is believed that if we gain knowledge about a given problem, then we automatically become competent in solving and handling that problem (Schnack, 2000). But knowledge is not enough and critical thinking is a basic condition for developing action competence. In developing action competence, an individual has to think critically (Breiting & Wickenberg, 2010). For environmental education, Robottom and Hart (1993) noted that one has to expose the basis of his/her ideas or assumptions so that they can be critically analysed through arguments and critique. These processes are reflected in the IVAC pedagogy for critical environmental education.

### 2.5.2 The IVAC model of pedagogy

The perspective on an action competence pedagogy encompassing investigations, visions, action and change, enabled this study to probe for environmental education using action competence as an education disposition that frames learning to change as the emerging capability to investigate and envision change that is accompanied by the capacity to act and give effect to change. It is therefore necessary to understand the IVAC framework as a vantage point on classroom pedagogy and its embedded environmental education processes shaping action competence. Table 2.2 below demonstrates a model for fostering the development of action competence.

**Table 2.2: The IVAC model for contemplating environmental education pedagogy**

| A. Investigation of a theme | B. Development of visions | C. Action and change |
|---|---|---|
| ❖ Why is this important to us?<br>❖ What is its significance to us/others? - Now/in the future?<br>❖ What influence do lifestyle and living conditions have?<br>❖ What influences are we exposed to and why?<br>❖ How were things before and why have they changed? | ❖ What alternatives are imaginable?<br>❖ How are the conditions in other schools, countries and cultures?<br>❖ What alternatives do we prefer and why? | ❖ What changes will bring us closer to the visions?<br>❖ Changes within ourselves, in the classroom, in the society?<br>❖ What action possibilities exist for realising these changes?<br>❖ What barriers might prevent actions from resulting in change?<br>❖ What actions will we initiate?<br>❖ How will we evaluate those actions? |

*adapted from Jensen (1994)

The IVAC model for contemplating the pedagogy for engaging environmental and sustainability concerns in classrooms is an enabling framework that can be used practically in schools.

### 2.5.3 Namibia and action competence

The concept of action competence is ideal for researching and reflecting on environmental education practices in a classroom setting in Namibia. It is "neither a teaching method nor an objective to be reached" (Schnack, 2010, p. 107) but it can provide a critical vantage point on both. In this study I have used it as a research lens to look into the methods and outcomes of environmental education in Geography classroom settings. It is important to emphasise that the action competence approach is about democratic, participatory and action oriented teaching-learning that can then help students develop their potential and play active roles in finding solutions (ibid.).

It can be argued that Namibia, as a country that gained its independence 30 years ago, has already seen considerable development of action competence – to work towards independence,

people took care of the land, of each other, of the environment united by solidarity in post-colonial togetherness. In 2016 Namibia introduced the Harambee Prosperity Plan. *Harambee*, a Swahili term, recognises post-colonial solidarity and the plan urged the people of Namibia to continue to work for a better future). Harambee advocates a sense of "collective ownership" (Harambee Prosperity Plan, 2016, p. 5) in the fight against poverty and inequality and in taking care of one another and resources. Issues of environmental concerns can be considered in the same light of Harambee and solidarity togetherness.

# CHAPTER 3: **METHODOLOGY**

## 3.1 Introduction

In this study, using action competence as a lens, I have set out to investigate how opportunities for environmental education are being realised within the Geography curriculum. The purpose of this chapter is to provide a clear overview of how the research was conducted. The chapter thus outlines the methods, techniques and procedures used to generate and analyse data that allowed the researcher to arrive at the findings of the study.

## 3.2 Research orientation

In this study, I sought to identify opportunities for environmental education. Many different methods could have been used but as I wanted to consider experiences, the study is rooted within an interpretive paradigm. As stated by Cohen, Manion and Morrison (2011, p. 17), "the central endeavour in the context of the interpretive paradigm is to understand the subjective world of human experience". The interpretive paradigm is well suited to the study because it seeks to probe the feelings and experiences of teachers and learners in relation to environmental education as a process that is integral to the curriculum and anchored in action competence's IVAC process as highlighted in section 2.5.2.

## 3.3 Research methodology

This research was undertaken as a qualitative case study. Leedy and Ormrod (2010) highlighted the importance of the case study methodology in that it promotes understanding of a specific situation under study and is useful for investigating focused instances of human interaction. The qualitative approach tends to be used in research that is about investigating experiences (Cohan, Manion & Morrison, 2000), in order to make a thorough study of a particular situation or practice. Therefore, a qualitative approach is appropriate to this study in investigating practices, understanding, experiences and perceptions of teachers. In this study, the interactions of interest are the opportunities that teachers create for environmental education in the Geography curriculum context under review. It was also important to assess the extent to which the teaching and learning interactions are engaging action competence.

Cohen et al. (2011, p. 289) noted that "case studies investigate and report the real-life, complex dynamic and unfolding interactions of events". The case study was developed to focus on the real-life curriculum contexts of specific aspects of environmental education and its outcomes.

## 3.5 Research site and participants

The study was conducted in the Okahao district secondary schools of Namibia. There are two secondary schools in Okahao, which is located in Ongandjera, in the Omusati region of northern Namibia. Okahao is a small town which recently started to grow. Most (90%) of the learners in these schools are from around Ongandjera, an area rich in biodiversity (both flora and fauna). Okahao was a village for the families of Ongandjera kings and now it is one of the newly proclaimed local authorities in Omusati region. According to the population census of 2018, the population of the Okahao town is 17548. Okahao is well equipped with infrastructure and services that include the national electricity system by NORED, telecommunications, schools and a hospital. The main source of water comes from Ruacana (Kunene river). The people of Okahao mainly cultivate crops and practice animal husbandry, mainly on a subsistence basis (Local Economic Development of Okahao, 2012). Okahao has six schools, which include two secondary schools, one combined, one primary, one private school & kindergarten (Okahao, 2016). Most of the children attending these schools come from rural villages of Ongandjera where their source of energy is wood. This study seeks to educate and recognise the vulnerability of such learners and advocates for better care of the environment through school learning experiences.

The schools were purposely selected as a location for the study because of the accessibility to the researcher and also the targeted participants of which the study seek to inform are mainly part of schools. Secondary school children are older and are able to relate to many situations, practices reflected in the Geography curriculum that can help them develop better attitudes and practices towards the environment through action competence. I also assumed that the location of the school would influence the teacher's practices of environmental education. There were no differences in the structure of the two schools under study although one was better performing. The participants in the study were the Geography teachers and learners in the senior phase (Grade 11-12). Both schools have two classes each studying Geography at a senior level in different fields of study.

## 3.6 Data collection methods

In this section, I explain how the data were collected in this study. Different data collection methods were used – this is important in qualitative research as it helps the researcher to collect more data than would have been possible using a single research method. Kane and Brun (2001) also supported the use of multiple methods since this provides "stronger information than using a single technique" (p. 108). Collection of data was done in two phases:

**Phase 1**

The first Phase involved document analysis of the curriculum, syllabus, subject policy and textbooks was done. This was to investigate if environmental education was part of the curriculum, and how is it then framed in the Geography subject policy, syllabus and textbooks and lastly, how teachers are translating this into their lesson plans.

**Phase 2**

This phase involved interviews with teachers, observations and focus group interviews to explore if and how opportunities were being created during the Geography lessons and what visions have been developed to foster action and change.

The various data collection methods used in this research are detailed below:

### 3.6.1 Document analysis

Maree (2011) referred to document analysis as the "analysis of all types of written communication that may shed light on the phenomenon that you are investigating" (p. 82). In understanding how policy and curriculum frame environmental education, current national curriculum for education, the Geography (11-12) syllabus for senior secondary, the subject policy as well as the textbooks being used by learners, were thoroughly analysed. This depth reading of the policy documents gave me a frame of reference for identifying how teachers were seeing and taking opportunities for environmental education in their topic selection for environmental education investigations in their lesson plans.

#### *3.6.1.1 Curriculum*

The curriculum is the official policy for formal education in Namibia. It informs schools on how to "organise the teaching-learning process and provides a coherent framework" (p. 1) for all schools in the country to ensure consistency. It was necessary to do an analysis for the

curriculum in the study to draw out the issues and concerns of the country and the world that have then been translated into the curriculum for the Namibian children.

*3.6.1.2 The syllabus*

A syllabus is a document that communicates course information and defines expectations and responsibilities. The syllabus indicates how the intended curriculum is categorised into individual topics that are taught to the learners to achieve the common objectives for the curriculum. This research analysed the Geography syllabus.

*3.6.1.3 The subject policy*

The subject policy analysed was Social Sciences within which Geography is specified as a subject. The document specifies the number of lessons to be taught for each subject. Table 3.1 gives an indication of the number of lessons in which Geography at a senior level is to be taught.

**Table 3.1: Number of lessons in which Geography at a senior level is to be taught**

| Subject | Grade | 5 day cycle | 7 day cycle |
|---|---|---|---|
| Geography | 11-12 | 6 | 7 |

The policy also highlights the importance of a syllabus (further analysed in this chapter). Teachers should be teaching what is listed in the syllabus and not simply what is in the textbook. The policy document tasks teachers to develop a scheme of work. The scheme of work should be used by the teacher to "plan teaching and learning for the year"(p. 3). The scheme should be developed by teachers using a syllabus and not textbooks.

Planning by teachers should include well prepared lesson plans and homework that should be given each day. The document further highlights that teachers should also ensure maximum time on tasks i.e. when lessons are planned, they should give enough time for tasks. Teachers should also be creative and innovative with respect to different teaching and learning materials. Resources bought by the school or provided by the government should be well taken care of. Together these materials should enhance learning and make teaching activities fun for the learners.

The subject policy also makes provision for classroom displays, for example, pictures, wall charts, artifacts: “Learners will learn better because they can see the same thing over a period of time which makes it easier to remember and understand” (p. 5).

*3.6.1.4 The textbook*

The textbooks analysed were the Geography NAMCOL (Namibia College of Open Learning) guides that the schools use in teaching Geography at the senior phase. Namibia was faced with the problem of providing secondary education for large numbers of learners who could not be accommodated in the formal school setting. The learners who belong to this group include:

- Young people who live far from schools, especially in rural areas;
- Young people who have been forced out of school because they did not have sufficient points to continue or repeat courses; and also
- Employed or unemployed adults who left school without getting a secondary school qualification.

These materials were initially developed for the NAMCOL scholars but recently they have become the books that the government provides to schools everywhere.

The key documents analysed were given a code for easy data analysis. The coding system used for documents was as follows:

- Curriculum – D1
- Syllabus – D2
- Subject policy – D3
- Textbook – D4

### 3.6.2 Interviews

Interviews are an effective and common mode of gathering data in an inquiry (Fontana & Frey, 2003). Cohen et al. (2007) identified four types of interviews: informal conversational interviews, standardised open-ended interviews, closed quantitative interviews and semi-structured interviews. I used semi-structured interviews with the Geography teachers. As a researcher I talk to and listen to the teachers and learners. The semi-structured interviews were chosen particularly for the researcher to be able to probe further teachers’ understanding and perceptions of the environmental education within their schools

Through interviews one is able to generate data or measure what the person knows, their preferences, attitudes and beliefs (Cohen & Manion, 1994). Being a full-time teacher myself, it was not easy to find time for interviews, however, teachers agreed to do the interviews in the evening as many reside on the school premises. At times it was difficult for teachers to remember particular lessons. An interview schedule with guiding questions was used (see Appendix 4) to keep the interview on track. Three teachers were interviewed for this study, one secondary school have two teachers teaching geography at the senior level and the other have only one teacher. Each teacher was interviewed once.

As Gay and Airasian (2003) noted, "interviews permit researchers to obtain important data they cannot acquire from observation" (p. 209). During the interviews, I asked open-ended questions to allow interviewees to express their views on particular aspects of the lessons as well as common themes emerging from the lessons. Each teacher was interviewed individually. Interviews were necessary to identify how teachers were selecting topics and developing environmental education opportunities.

### 3.6.3 Observation

This study is deeply rooted in the concept of action competence. Observing how the Geography teachers took up opportunities for environmental education was necessary. The observations were focused on finding evidence of action competence namely, investigation, visioning, action and change (IVAC). In developing my observation schedule, I had to clearly understand and reflect on the features of a lesson that could be considered part of action competence. O'Donoghue and Lotz-Sisitka (2006) explained that early experiential learning interventions were planned on the assumption that children were learning simply because they were involved in an action. In the teaching and learning of environmental education, learners should be helped to develop action competence so they can become involved, investigate issues, reflect critically, and make informed decisions for acting accordingly.

The education policy emphasises that a learner-centred approach should be incorporated in all teaching and learning undertakings, and this could create a platform for action. The main focus of this study was how teaching and learning is helping learners to develop various competences to be able to take action in different contexts. My observations were guided by an observation schedule in order that I did not miss any key observable issues (see Appendix 3). The observations focused on what teaching methods were being used in the classroom, what

instructions were given, the type of questions asked and activities given. I also looked at the type of answers learners gave, the choices learners make and the participation of learners in the classroom etc.all these were necessary in shedding light on action competence.

According to Cohen et al. (2011, p. 456), "the distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather live data from natural occurring social situations". What people do may differ from what they say they do (Robson, 2002). Through observation one is able to compare what teachers say with what they actually do in classroom. O'Sullivan (2006) also pointed out that lesson observations in research can answer what, how and why questions.

### 3.6.4 Focus group interviews with learners

Two focus group interviews were conducted, one at each school with Grade 11-12 learners, in groups of five or six. Hitchcock and Hughes (1995) stated that small friendship grouping of this size appears to be more productive and also allow a free flow of ideas. The focus group was used to explore what Geography learners had done in class and whether they had any visions of building on what they had learned. A set of questions was drawn up to guide the focus group interview.

Sixteen learners took part in the focus group interviews in total. The first focus group took place on the 21 July 2006 and the second on 25 July 2016. Learners were audio recorded and these discussions were then transcribed. Permission was sought from the principals of the schools for the researcher to carry out research at the school. Learners' permission was requested from their parents (see Appendix 2B) and only those who voluntarily agreed took part in the interviews.

## 3.7 Data analysis

The study generated data from different sources to address each of the three developing questions so as to track environmental education from curriculum through teacher planning into lessons and the associated learning activities as these played out in classroom practice. I used action competence as a theoretical lens to analyse the data, guided by Jensen's (2004a) IVAC framework (see section 2.6).

Table 3.2 that follows shows the indicator framework for identifying the development of action competence in learners.

**Table 3.2: Indicator framework for identifying development of action competence in learners**

| |
|---|
| ❖ **Knowledge and understanding of the problem**: students require knowledge on which to base sound reasoned decisions. This knowledge could include technical, social, political, historical and economic factors. |
| ❖ **Commitment to solve the problems**: students require commitment and values that motivate them to participate in contributing to changes in society. |
| ❖ **Participation**: students require skills in making decisions in ways that is consultative, democratic, collaborative and co-operative. |
| ❖ **Emotional response**: in order to be able to decide the appropriate action to take and their own personal responsibility and commitment, students need to understand their attitudes and values towards issues. |
| ❖ **Interest in the future**: an interest in the future and capacity to predict what change might be possible in a given context. |
| ❖ **Planning and taking action**: students require the skills and confidence to identify and problems, set goals, gather information, communicate and manage time and logistics to take action (indirect or direct) |

*adapted from Jensen & Schnack (1997) and Eames et al. (2006)

The above framework was used to analyse data in phase 1 to ascertain if the policy documents foster action competence. Phase 2 data was analysed using the IVAC model for contemplating environmental education pedagogy (as found on page 25).

## 3.8 Validity

Validity questions whether the research process generated the data it was expected to measure. Validity refers to whether the data collected and analysed is trustworthy. Cryer (2000, p. 76) described a piece of research as being valid if it "does what it is intended to do". Moore (1998, p. 163) described validity as "the degree to which an evaluative device measures what it is supposed to measure".

In order for me to ensure validity as a participant observer in the study, I was guided by action competence as specified in the curriculum and then used the same to explore what was happening in the classroom teaching and learning context. IVAC allowed me to track with the curriculum emphasis on investigative work, how it valued action and set out to develop competence to do something about the concerns under investigation.

Phase 1 served to establish how action competence was specified for environmental education while in Phase 2, I explored how this specification was playing out in classroom practice.

My observations were guided by an observation schedule; I also looked at other sources of information such as documents. I further validated the data by adopting Creswell's (2008) suggestions to determine accuracy of findings: member checking and triangulation. I organised interviews, made observations, held focus group interviews and undertook document analysis.

## 3.9 Ethical considerations

The anonymity of all research participants was ensured throughout the research process. Prior to commencement of the study, formal consent was obtained from all participants (teachers) as well as the principals of the schools where the research took place. Permission to carry out the research was also obtained from the Circuit Inspector.

The Circuit Inspector, the principals of the two schools, the two teachers and the learners were informed about the purpose of the study. They were also informed that they would be kept anonymous. All the participants took part in the research through voluntary informed consent. During observation and interviews, permission was asked from the participants to make audio recordings which were securely stored.

## 3.10 Challenges and limitations

The researcher, being a teacher, experienced problems regarding scheduling during the collection of data. This study was conducted in Okahao circuit secondary schools only, thus the data cannot be used to make assumptions and generalise for the rest of the Geography teachers nor the schools in Namibia.

## 3.11 Conclusion

It was the purpose of this chapter to describe the design of the data collection and analysis process. The next chapter presents and discusses the generated data.

# CHAPTER 4: **DATA PRESENTATION**

## 4.1 Introduction

The aim of this study was to work with the concept of action competence as an analytical lens to investigate how opportunities for environmental education are playing out in the Namibian Geography curriculum in the study context. In this chapter, I first present data generated through an analysis of education policy documents and the Geography textbooks. This served to establish how the concept of action competence has emerged in the Namibian curriculum context and to scope the embedded opportunities for environmental education in the Geography curriculum.

Chapter 5 then reports on an analysis of data generated in relation to classroom practice in Grade 11-12 Geography. Here, semi-structured interviews, lesson observations as well as focused group interviews with pupils were used to establish how the curriculum opportunities were playing out in classroom contexts.

An interpretative analysis of data was developed using action competence as an analytic framework. The literature review (see Chapter 2, section 2.1) uncovered how action competence was a key orientating concept in the framing of environmental education in the Namibian curriculum. Six interlinked concepts contribute to action competence. These are embedded in the curriculum, syllabus, subject policy and textbooks. The document analysis process generated evidence of the inclusion of:

- Knowledge and understanding of the problem (see section 4.2);
- Emergent emotional responses (see section 4.3);
- Participation in learning actions that produce competence (see section 4.4);
- Commitment to solve environmental problems (see section 4.5);
- Interest in the future sustainability (see section 4.6); and
- Planning and taking action individually and together on material practices (see section 4.7).

## 4.2 The specifications of knowledge and understanding of the problem

### 4.2.1 The curriculum

Namibia's curriculum for basic education describes the goals, aims, competencies, core skills and key learning areas that a Namibian child is expected to learn. The purpose of the curriculum is to ensure that all children throughout the country are taught the same intended curriculum. Recognition of knowledge and understanding for the main risks and challenges facing Namibia are essential. These challenges and risks are listed in an educational policy document (Namibia. Ministry of Education, 2009, p.4):

- The challenges and risks we face if we do not care for and manage our natural resources;
- Those caused by HIV/AIDS;
- Those caused by pollution, poor sanitation and waste;
- The challenges and risks to democracy and social stability caused by inequity and governance that ignores rights and responsibilities;
- The challenges and risks of living in an information society; and
- The challenges and risks we face from globalisation.

In light of these challenges, the curriculum prepares for a knowledge based society. A knowledge based society is one where "knowledge is created, transformed and used for innovation to improve the quality of life" (ibid., p. 2). The curriculum envisions a caring society to "foster the highest moral and ethical values of reliability, co-operation, democracy, tolerance, mutual understanding and service to others, to develop the learners' social responsibility towards other individuals, family life, the community and the nation as a whole" (ibid., p. 9). The document takes into account learners' prior knowledge and that knowledge is not learnt on its own and should lead to new understanding.

The approach to new knowledge involves the integration of information and communication technologies (ICTs) as a tool in fostering teaching and learning. Environmental education is seen as cross-curricular.

Four pillars of knowledge identified in the document are listed on page 6:

- Conducive economic incentives and institutional set-up. These must encourage knowledge creation and the efficient and effective use of knowledge for development.
- A knowledge and innovation system with a national vision and strategy for knowledge and research development, through public and private investment and entrepreneurship. A culture of learning needs to be developed, which promotes creativity and knowledge production.
- Education and human resources developed by wide and inclusive access to high quality education and training. This means that different learning opportunities in formal and non-formal education need to be well coordinated.
- Dynamic ICT infrastructure that can facilitate effective communication, as well as easy access to, and processing and dissemination of, information and knowledge.

Individual development for each and every learner is what the curriculum hopes to achieve. To develop "a flexible, enquiring mind, critical thinking skills, the capacity to adapt to new situations and demands and to learn continuously in one's own initiatives. It will develop individual understanding, creativity, the ability to construct alternative solutions to problems and to make independent, informed decisions in real-life structures" (ibid., p. 9).

The learning areas include social sciences within which Geography is a subject and the rationale for social sciences in the curriculum is that social sciences is key for "learning and understanding the development of society, the mechanisms of globalization, learners explore and come to/understand interactions in social, cultural, economic, civic and political spheres and the relationships between people and their environments" (p. 13).

The knowledge and understanding aspect of action competence is evident within the documents that were analysed. The curriculum encourages knowledge creation as it thoroughly highlights the main challenges of Namibia that should be addressed, therefore the curriculum encourages learners to be taught the same intended curriculum to achieve a "flexible enquiring mind".

Crucial global issues in the curriculum include environmental degradation and appreciation of human use is well documented. It is evident in the data that Geography as a subject is taught every day and should be done with well-prepared lessons as well as good quality homework, in order to address these challenges.

### 4.2.2 The syllabus

The syllabus recognises that learning involves developing values and attitudes, therefore the syllabus acknowledges and provide insight and understanding of crucial global issues in a rapidly changing world which affect quality of life such as "the AIDS pandemic, global warming, environmental degradation, maldistribution of wealth, expanding and increasing conflicts, the technological explosion and increased connectivity" (p. 1).

The syllabus thus fosters in learners a critical awareness of factors and processes which act upon physical and cultural environmental systems which bring about change (p. 2). An appreciation of human use and abuse of the environment can lead to various forms of environmental enhancement and degradation. Aware of the highlighted concerns in the curriculum, the learning content of Geography 11-12 syllabus includes the following broad themes:

- The physical world;
- Economic and development and the use of resources;
- Population and settlement studies; and
- Research techniques and map reading skills.

### 4.2.3 The subject policy

Given the importance of the issues outlined by the curriculum, Geography as a subject is taught each day. Teachers are guided in their duties by the policy document to meet expectations that are highlighted in the curriculum and translated within the syllabus to address the objectives of the curriculum. Therefore, the document states that teachers should have "well prepared lessons each day" and they should also set "quality homework" each day. Time on task should be maximised each day.

### 4.2.4 The textbook

For working with the syllabus, the textbook is well organised in a logical manner.

The textbooks provides a considerable amount of information, for example, the following are listed as the environmental problems associated with population growth:

- Because more arable land is needed, enormous pressure is placed on natural environment and wetlands.

- Natural resources (such as wood, water, soil, oil, etc.) are used faster than they can be replaced.
- More areas are cleared for living space which leads to an increase in surface runoff and also increases the rate of soil erosion.
- Animal and plant species becomes extinct.
- Increase in industrialisation leads to more pollution.
- Surface mining and road construction projects leave large scars on the landscape.

The textbook also highlights environmental problems associated with tourism:

- Loss of farmland, forest, swamp land and other natural landscapes may occur as a result of the demand for extra land for leisure and tourism. Higher prices for land may encourage these changes in land use.
- There may be an increase in visual, water, air and noise pollution.
- Increased congestion may become a problem in some areas as tourist numbers increase.
- The human environment may be affected as well as the natural environment.

Another topic in the textbook directly related to the environment is environmental benefits and threats. This topic highlights threats to the environment and gives a case study related to each threat. It was evident however that materials provided do not address local environmental issues and much international material has been used. Examples are given below.

Global warming is one of the threats listed and below is a case study to go with the topic (p. 324)

**Case study: The impacts of global warming on Bangladesh**

Bangladesh has some of the richest farmland in the world. This densely populated area lies on the low-lying deltas of the rivers of Ganges and Brahmaputra which have built up the land by depositing vast amounts of silt they carry on their way to the bay of Bengal. Every year these rivers flood. It is normal for half of Bangladesh to be under water during the monsoon period. Other causes of floods in Bangladesh include:

- Deforestation that on the foothills of the Himalayas
- The shape of the bay of Bengal increases the force of the waves on the coast of Bangladesh
- Regular cyclones bring high waves, storm surges and heavy rainfall

Global warming can worsen Bangladesh's problem. An increase in sea temperatures will cause the water to expand, resulting in a further threat to low-lying areas, such as Bangladesh. A recent study predicted that an increase in overall world temperatures of 4 degrees Celsius would lead to a 100 cm rise in sea level. Higher sea levels and higher sea temperatures would lead the following in Bangladesh:

- More frequent and more destructive cyclones
- Increased coastal erosion
- Increased evapotranspiration causing a reduction in the river flow
- Fresh water supplies in wells and ground water to be polluted by salt water
- Habitats and the mangrove forest along the coast to be managed
- Increased pressure on the land and its resources

**Reducing the impact**

The Bangladesh flood action plan (FAD) was put in place by the Indian government, the world bank and other foreign aid donors. The main aim of FAD is to raise and strengthen the sea defenses along the coast and the riverbanks in an effort to reduce the damage caused by the floods.

The following learner activity (p. 325) follows the case study on the impacts of global warming on Bangladesh.

**Activity**: Read the case study about the impact of global warming on Bangladesh and answer these questions.

1. Name two natural causes and two human causes contributing to floods in Bangladesh.
2. Describe the effects of flooding in Bangladesh.
3. Suggest three ways in which global warming can worsen flooding in Bangladesh.
4. What is the main function of the FAD? Do you think it will be able to succeed? Motivate your answer.

Other examples included in this topic and their case studies are:

- Acid rain: Acid rain in Scandinavia
- Pollution: Pollution of the North Sea
- Extractive industries: St Lucia area in South Africa
- Transport: Deforestation in Namibia

Activities that accompany the study of these topics are also listed below.

1. Pollution
    a) Describe which parts of the North Sea are most polluted and suggest reasons for your answer.
    b) State three different ways in which the North Sea is polluted.
    c) Suggest how pollution in the North Sea may affect the fishing and tourism industry along the coast lines.
    d) Suggest reasons why it is difficult to control the pollution of sea areas such as the North Sea.

The textbooks also include reasons why conservation of resources is necessary in Namibia, but the researcher noted that this was not recent data considering that the NAMCOL guide being analysed is the third edition, last printed in 2013. The reasons listed are:

- The world's population reached six billion in 1999, which is an increase of 60% in 35 years.
- The world loses up to 20000 species of flora and fauna per year.
- People use between ¼ and ½ of all the plants that grow on the Earth each year.
- An area of forest the size of Tunisia in north Africa is lost each year.
- People take from the seas of the world up to 30% of its production.
- The richest 20% of the world's population consume over 85% of the total resources consumed in the world.
- The numbers of very poor people in the world is expected to increase from 1,2 billion to 1,9 billion in 25 years' time.
- People have destroyed over 30% of the natural world since 1970.
- Double the amount of freshwater is being used, compared with 1960.
- Emissions of carbon dioxide ($CO_2$) have doubled since 1960 and contribute to global warming.

The textbook has not listed any investigation to be done by learners, although theme 4 in the syllabus focuses on practical investigations. It has however indicated how investigations are to be carried out and what learners need to consider etc.

Shedding light on what curriculum as a document has addressed, the textbook provides information from all over the world (impacts of global warming in Bangladesh and "deforestation in the northern part of Namibia). It responds to the curriculum call to address global issues and encourage inquiries.

## 4.3 Emergent emotional responses that inform

Emotional responses contribute to learners being able to decide the appropriate action to take and their own personal responsibility and commitment. It is important that learners come to understand their attitudes and values towards issues.

### 4.3.1 The curriculum

In preparing learners for an emotional response within education, the curriculum makes provision for education to foster a caring society. In developing a caring society, the curriculum fosters the highest moral and ethical values of reliability, co-operation, democracy, tolerance, mutual understanding and service to others, to develop the learners' social responsibility towards other individuals, family life, the community and the nation as a whole.

The curriculum also focuses on individual development. Learners are to be educated in literacy, numeracy, science and technology. Basic education also aims to "develop a flexible, enquiring mind, critical thinking skills, the capacity to adapt to new situations and demands and to learn continuously on one's own initiative, it will develop individual understanding, creativity, and the ability to construct alternative solutions to problems and to make independent informed decisions in real-life situations".

### 4.3.2 The syllabus

The Geography syllabus strives for learners to grow and be able to make decisions. One of the assessment objectives is judgement and decision making.

Through their Geographical education learners should be able to:

1. Reason and make judgements (including evaluation and conclusions) which demonstrate where appropriate:

    a) A sensitivity to and concern for landscape and the environment;

    b) An aesthetic appreciation of the earth including its people, places, landscapes, natural processes and phenomena;

    c) An appreciation of the attitudes, values and beliefs of cultural, economic, environmental, political and social issues which have a geographical dimension;

d) An awareness of the contrasting opportunities and constraints of people living in different places and under different physical and human conditions;

e) A willingness to review their own attitudes in the light of new knowledge and experiences.

2. Recognise the role of decision making within a geographical context as affected by

   a) The physical, cultural, economic and political contexts in which decisions are made;

   b) The values and perceptions of groups and individuals;

   c) The choices available in the process of decision making and influences and constraints within which they operate.

3. Recognise, analyse, discuss and evaluate strategies for sustainable development.

## 4.4 Participation in learning actions that produce competence

### 4.4.1 The curriculum

To help learners develop competencies which the curriculum describes as "the cognitive, effective and or practical skills which a learner is to demonstrate as a result of the teaching/ learning process and which will be assessed" (p. 19). The competencies could be achieved through a wide repertoire of teaching roles. A "high degree of participation, contribution and production" are necessary but also keeping in mind learners' own needs, pace of learning, experiences and abilities" (p.26).

To promote change and growth , the curriculum highlights multiple techniques that should be used, "e.g. direct questioning, eliciting, explaining, demonstrating, challenging the learner's ideas, checking for understanding, helping and supporters, providing for active practice and problem solving" (p. 26). The curriculum also advocates for learners to be able to reflect – "if there is no reflection, there is no human learning" (p. 29) – it is by reflecting on what has been experienced that understanding grows.

Other core skills to be further explored in the syllabus's basic competencies are listed in the table below.

**Table 4.1: Basic competencies in the syllabus**

| Core skills | Basic competencies |
|---|---|
| Learning to learn | Setting goals, solving problems, evaluating and reflecting on completed processes; working effectively, independently and in groups; increasingly taking responsibility for their own learning and work |
| Personal skills | Making informed choices, decisions and judgements; evaluating beliefs and opinions; taking initiative, acting creatively, producing, innovating, etc. |
| Social skills | Showing respect, tolerance, trustworthiness, honesty, co-operating, accepting encouragement and positive criticism, showing appreciation, etc. |
| Cognitive skills | Exploring, investigating, enquiring, recognising, contextualising, hypothesising, interpreting, weighing up alternatives, analysing, synthesising, evaluating, thinking creatively, creating knowledge |
| Communication skills | Talking fluently, writing, eliciting, explaining, discussing, convincing, demonstrating, presenting, acting out, dramatising, drawing, showing, displaying, reporting, being clear, concise, expressive, meaningful, etc. |
| Numeracy skills | Estimating, approximating, measuring, calculating, tabulating, drawing graphs, charts, diagrams, shapes, figures; using instruments; being accurate, logical, solving problems, presenting information, using mathematical language, etc. |
| Information and communication technology skills | Choosing appropriate communication solutions; utilising hardware and software; evaluating information; transforming information to knowledge; following ethical practice; interacting considerately; communicating clearly, etc. |

The intended curriculum proposes that learners need to demonstrate "cognitive, effective and practical skills" and this could be achieved through a high degree of learner participation. Participation could be enhanced if educators are directly questioning learners, eliciting, explaining, demonstrating, challenging the learners' ideas, checking for understanding.

The documents further elaborated that teachers should act as facilitators only using efficient communication language and the relevant books available.

### 4.4.2 The syllabus

According to the syllabus designed for Grade 11-12 Geography, learners are to participate in topics that are designed for them to reach an appreciation of the potentialities and limitations of the physical environment for human activities. The topics are listed in the table below.

**Table 4.2: Example of topics in Grade 11-12 Geography syllabus**

| **Topic** | **General objectives: Learners will:** | **Specific objectives: Learners should be able to:** |
|---|---|---|
| The earth's structure | Understand the structure of the earth and plate movements | |
| Landforms and landscape shaping processes | Understand weathering, river, wind and marine processes | • Distinguish between weathering and erosion |

### 4.4.3 Subject policy

The subject policy highlights that Geography as a subject has to be taught six lessons in a five-day cycle of 40 minutes and seven lessons in the seven-day cycle of 45 minutes. The subject policy also emphasises the importance of teaching the intended learning described by the syllabus. Competencies in the syllabus are the "significant cognitive operations, skills, attitudes and values which all learners should be able to demonstrate which can be assessed" (p. 2). Teachers are to facilitate teaching and learning both inside and outside the classroom in order for the learners to acquire the necessary knowledge, skills, values and attitudes.

### 4.4.4 Textbooks

To ensure efficient participation of learners in the subject of Geography, the Namcol guides uses clear efficient language. The textbooks are widely available; each learner is provided with a book by the school. The textbook includes many activities for learners.

### 4.4.5 Subject policy and textbook

The subject policy and textbook ensures that the aims and objectives are upheld of the curriculum which has been translated into the syllabus. The content taught in the textbook aims to create and bring about a change in attitudes and values towards issues.

## 4.5 Commitment to solve environmental problems

### 4.5.1 The curriculum

Namibia is committed to solving environmental problems. Firstly, the curriculum highlights that it was based on the Namibian Constitution as well as the Education Act. The Constitution states that education is a right for all persons, and it is the responsibility of the government to provide education. The curriculum is also shaped by Vision 2030 which sees and describes Namibia as a society which develops from a "literate society to a knowledge based society" (Namibia, 2004 p. 2). Vision 2030 further requires education to be inclusive of special children in mainstream schools. The curriculum also emphasises a learner-centred approach for teaching and learning.

### 4.5.2 The syllabus

The syllabus provides the guidelines on what teachers are to teach to develop learners' understanding of the specific objectives required. The syllabus for the Namibian senior secondary certificate (ordinary level) is a two-year course covered in Grades 11-12. The Geography syllabus is intended to provide a platform for learners to study the Earth and the interaction between humans and ways in which humans have adapted to nature to meet their needs.

The following are the assessment objectives of the syllabus:

A) Knowledge with understanding;

B) Analysis;

C) Judgement and decision making; and

D) Investigation (enquiry, practical and presentation skills).

The following are the descriptions of each of the assessment objectives as provided by the syllabus:

**A) Knowledge with understanding**

Learners should be able to demonstrate a knowledge and understanding of

A.1. The wide range of physical and human processes shaping development of:

a) Physical, political, economic, social and cultural environments and their associated effects on the landscape;

(b) Spatial patterns and interactions which are important within such environments.

A.2 The inter-relationships between people, their activities and the subsequent impacts on the environments and an ability to seek explanation for them;

A.3 The importance of scale (local, regional or global) and the time at which spatial distributions and the working of the systems are considered;

A.4 The changes which occur through time in places, landscapes and spatial distribution.

**B) Analysis**

Learners should be able to demonstrate the ability to:

1. Extract and interpret geographical information from maps, graphs, tables, cartoons, diagrams, photographs, computers and other relevant geographical sources;
2. Use basic quantitative techniques;
3. Analyse geographical information;
4. Infer trends and consequences related to socio-geographical interactions;
5. Illustrate using labeled sketches.

**C) Judgement and decision making**

Through their geographical education learners should be able to:

1. Reason and make judgements (including evaluation and conclusions) which demonstrate where appropriate:
    a) A sensitivity to and concern for landscape and the environment;
    b) An aesthetic appreciation of the earth including its people, places, landscapes, natural processes and phenomena;
    c) An appreciation of the attitudes, values and beliefs of cultural, economic, environmental, political and social issues which have a geographical dimension;

d) An awareness of the contrasting opportunities and constrains of people living in different places and under different physical and human conditions; and

e) A willingness to review their own attitudes in the light of new knowledge and experiences.

2. Recognise the role of decision making within a geographical context as affected by

a) The physical, cultural, economic and political contexts in which decisions are made;

b) The values and perceptions of groups and individuals; and

c) The choices available in the process of decision making and influences and constraints within which they operate.

3. Recognise, analyse, discuss and evaluate strategies for sustainable development

**D) Investigation (enquiry, practical and presentation skills)**

Learners will be expected to demonstrate ability to

1. Formulate research topics;

2. Use suitable techniques for observing, collecting, classifying, presenting, analyzing and interpreting data;

3. Obtain information from a variety of sources such as maps and plans of various scales, audio-visual materials, internet and computer software, documentary materials and statistics;

4. Depict the information in appropriate forms using maps, diagrams etc.;

5. Make joined judgements and decisions; and

6. Select, use and present geographical information in an appropriate form and effective manner.

The analysis of the documents indicates that Namibia is committed to solving environmental education concerns, acknowledging a literate society and encouraging learner-centred education.

Teachers are teaching specific objectives for learners to learn. The key assessment objectives of the syllabus include making judgements and decisions. Learners should be able to reason and make judgements.

The syllabus also revealed a number of environmental concerns as part of competencies that are to be covered. Examples of these topics are widely covered under *Theme 2, Economic activities and the use of resources*. This section covers the following topics and their specific objectives:

1. Agriculture

    a) Discuss shortages of food as related to natural problems such as soil exhaustion, droughts, floods, pests and diseases;

    b) Discuss the negative impacts of agriculture on the environment for example, soil erosion, overgrazing/ overstocking, decertification, salination, deforestation and pollution;

    c) Analyse and discuss the strategies for sustainable agriculture for example plant breeding, mixed cropping, use of organic fertiliser.

2. Energy and water resources

    a) Discuss the uses of water for agriculture, domestic and industrial purposes with recognition of competition for the use of which of water which require careful management in certain areas;

    b) Identify sources of water in Namibia such as ground water and surface water and explain their significance to human activities;

    c) Discuss how the processes operating within the water cycle may affect supplies, with special reference to the causes and effects of flooding and drought;

    d) Explain the causes and consequences of water pollution on the natural and human environment;

    e) Discuss ways of improving water quantity, quality and access under the following headings: pollution control, improved sanitation, efficient distribution and desalination.

3. Environmental risks and management

    a) Describe the causes, effects of and strategies to reduce global warming by using a case study: How might global warming affect Bangladesh?

    b) Describe the process of acid rain formation and explain how this process can destroy an ecosystem by using the case study: Acid rain in Scandinavia.

    c) Describe the process of decertification and explain how this process destroys ecosystem by using the case study: The Sahel.

    d) Describe the process of deforestation and explain how this process destroys an ecosystem by using the case study: Deforestation in Namibia.

### 4.5.3 The subject policy

The social science subject policy (Namibia, 2009) document ensures that Geography and other social science subjects are taught as per ministerial guidelines.

The aims of the subject policy are to:

- Provide guidelines for subject managers in controlling teaching and learning activities;
- Guide teachers in organising their administrative duties and in planning teaching and learning to meet the expectations of the national standards and performance indicators;
- The document specifies the number of lessons each subject is to be taught – six lessons in a five-day cycle and seven in a seven-day cycle (see Table 3.1).

The policy also highlights the importance of a syllabus (further analysed in this chapter). Teachers should be teaching what is listed in the syllabus and not what is in the textbook. The policy document also accounts for teachers to develop a scheme of work. The scheme of work should be used by the teacher to "plan teaching and learning for the year" (p. 3). The scheme should also be developed by teachers using a syllabus and not textbooks.

Planning by teachers should include well prepared lesson plans and quality homework each day. The document further highlights that teachers should ensure maximum time on tasks i.e. when lessons are planned, they should give enough time for tasks, they should be creative and innovative with different teaching and learning materials, other resources bought by the or

provided by the government should be well taken care of and should enhance learning and make teaching fun.

The subject policy also makes provision for classroom displays for example, pictures, wall charts, and artefacts. “Learners will learn better because they can see the same thing over a period of time which makes it easier to remember and understand” (p. 5).

### 4.5.4 The textbook

The textbook’s content has already been analysed in section 4.2. The textbook’s themes are broad and provide information on issues and aspects concerning Namibia and globally. This is indicative of Namibia being committed to solving environmental education concerns, acknowledging a literate society and encouraging learner-centred education.

Teachers are teaching according to specific objectives. Evidence also reveals that the key assessment objectives of the syllabus indicated judgement and decision making in what they are taught. Learners should reason and make judgements on the specific objectives.

The syllabus in solving problems with already prepared objectives has provided a variety of different topics and concerns. Time for Geography to be taught is well embedded in the subject and encouraged in planning of teaching for the year.

## 4.6 Interest in future sustainability

Interest in the future entails both interest and capacity to predict what change might be possible in a given context. The policy documents are all useful guides and uphold Namibia’s vision and aims of an educated society as highlighted in the curriculum. The policies are also guided by Namibia’s Vision 2030 in the curriculum. The main features of Vision 2030 are:

- A caring society
- A healthy society
- A democratic society
- A productive society
- An environmentally sustainable society
- An information society
- Individual development

The aims of the subject policy are to:

- Provide guidelines for subject managers in controlling teaching and learning activities;
- Guide teachers in organising their administrative duties and in planning teaching and learning to meet the expectations of the national standards and performance indicators.

## 4.7 Planning and taking action individually and together in material practices

The curriculum and subject policy have not specified particular investigations that learners should be able to carry out. However, the syllabus does specify that learners should be able to carry out Geographical investigations and not necessarily those that have to do with the environment. The curriculum through education has envisioned a caring and healthy society, a democratic and productive society, an environmentally sustainable society, an information society and individual development that includes different types of skills that are highlighted on page 7 (Namibia, 2010).

## 4.8 Conclusion

This chapter has presented the data collected through document analysis, using the action competence indicator framework. The chapter has looked for and investigated the presence of action competence within the curriculum documents in investigating the embedded opportunities for environmental education in the Geography curriculum.

# CHAPTER 5: **PHASE 2 OF DATA COLLECTION**

## 5.1 Introduction

Phase 2 of the data collection for this research explored how the curriculum, subject policy, syllabus and the textbooks are being interpreted in schools to see if and how EE opportunities

are being created during Geography lessons and what visions have been developed to foster action and change.

Three teachers participated in the semi-structured interviews. Their qualifications and experience are outlined in the table below. All attended university and majored in Geography and other subjects. The table also indicates the teachers had experience in teaching Geography ranging from 3-9 years.

**Table 5.1: Teacher qualifications and experience**

| School | Teacher | Qualification | Years of teaching Geography |
|---|---|---|---|
| X | T1 | B.Ed (GEO & HIST) | 7 |
| X | T2 | B.Ed (GEO & HIST) | 9 |
| Y | T3 | B.Ed HON (GEO & BIO) | 3 |

In this phase, the IVAC model for contemplating environmental education pedagogy has been used to analyse the data. The IVAC model has three sections:

A) investigation of a theme (environmental education );
B) development of visions (within environmental education);
C) action and change.

## 5.2 Investigation of environmental education

### 5.2.1 Interview with teachers

Firstly, I asked teachers about their views on environmental education. It was evident that teachers had a good idea of what environmental education is all about. According to Teacher 1, environmental education is concerned with "educating people about how to be aware of the environment and take care of it to know how they can sustain the natural resources that they are using and everything within their environment where they are and also know the effects, the negative side." Other teachers indicated that environmental education is about teaching and educating learners about environmental awareness. They indicated the importance of awareness of cutting down of trees and planting more trees as well as of the impacts of global warming.

The teachers were also asked about the importance of the environment or environmental education:

Teacher 1 noted that "All living organisms survive in the environment, it is therefore very important for learners to learn about the importance of the environment and different sustainable ways of keeping the environment safe".

Teacher 2 stated that "The environment is home for all of us, all species depends on the environment for water, food, etc. that is why environmental education is important for the young ones to learn about how to better take care of it".

Teacher 3 said that "Environment is our home and lately a lot of damage has been done to the environment so environmental education is really important and should be taken seriously, for example people are cutting down trees and not planting any".

It was notable that overall the teachers had a good knowledge of environment and sustainability concerns related to the area.

### 5.2.2 Observations

During classroom observations, the researcher noted there was no mention of the concept of 'environmental education' in classrooms, with the exception of one class in one lesson, where the teacher's theme for the day was deforestation. When asked by learners in this class about deforestation, the teacher defined it as the "cutting down of trees" (Teacher 2). When the teacher probed further regarding deforestation, this led to silence in the classroom. The teacher then involved learners in trying to list and discuss the impacts of deforestation on the communities and the economy of Namibia and how it can be controlled or alleviated, and learners mainly copied notes from the chalkboard . In other classrooms, the researcher did not note any mention of the concept of environmental education.

### 5.2.3 Focus group interviews with learners

Learners in the focus group interviews were asked if they understood what environmental education was all about. Learners indicated that environmental education involved "learning about the environment" and "how to take better care of the environment." Asked also if they feel environmental education is important and why, learners agreed that environmental education is necessary in the sense that "we get food from the environment" and if the

environment is not well taken care of "we are going to suffer". Learners could not however really voice out in what terms or to what extent they would suffer if the environment is not well taken care of.

## 5.3 Development of visions within environmental education

### 5.3.1 Interview with teachers

Teachers indicated that events that take place within the classroom are all well thought out. The participant teachers agreed that they use a learner-centred approach in properly engaging learners in class. "I think every teacher uses learner-centred approach, it is the best" (Teacher 2).

Teachers found environmental education challenging:

Teacher 1: "I am hoping that with the new curriculum, if they can engage learners from the lower grades in environmental education, it will be easier to maintain it at senior grades, also learners should be encouraged to join awareness clubs about the environment, also involve learners in various activities such as cleaning campaigns within their local areas or they can go visit sites where those kind of sustainable projects are being done, that is what I want for this school."

Teacher 2: "I hope that learners become aware of environmental problems that we are having in this school and do something about it. I however think our learners need to especially be more educated on deforestation because I see it as a major problem in this region. The only problem is environmental education is not a subject on its own and it makes it difficult to thoroughly teach these topics considering the time we have to cover the syllabuses, so I hope environmental education gets changed so it becomes a subject on its own."

Teacher 3: "I am hoping that environmental education be recognised seriously and be properly taught, so that learners are aware of the environmental problems surrounding them, because I do not think they are aware."

Teachers also indicated that sometimes it is hard to use a learner-centred approach with learners because they are not very knowledgeable about some topics and they are challenged by the English language. Teachers are willing to participate in environmental education and take action for the environment, but they feel limited to teaching what is in the syllabus: "I only teach what is in the syllabus and it is so long I hardly have time for anything else" (Teacher 3).

Teachers are hoping learners become more aware of environmental issues around them. Teacher 2 feels that space in the school is limited in terms of working with environmental concerns. Teachers were concerned as the environmental education content is not clear in the books they teach with and they are unsure about how it is to be taught. Teacher 1 indicated that there are often workshops on various subjects but no workshop had specifically addressed environmental education. Teachers felt their environmental knowledge could be expanded beyond the basics.

### 5.3.2 Observations

Observations showed that teachers did engage the learners during lessons to ensure learning was taking place. Observations also indicated that learners were willing to learn, from the nodding of their heads in class and giving their opinion on certain issues e.g. how to solve the issues of deforestation, although these topics were not discussed at length and learners also could not express themselves in detail. The teachers were comfortable in presenting their lessons and confident which indicated that teachers were capable of facing the challenges of education particularly in terms of the need for proper and well engaged platforms for environmental education. Observation also indicated that teachers were willing to work.

Lessons observed indicated minimal learner participation both in and out of the classroom. Teachers made presentations and did most of the talking – only seven learners from all the classes observed participated in any class discussion, most learners only copied notes. In some classes learners nodded in response to the teacher but said nothing further. The researcher noted that teachers took nods from the learners as confirmation that they understood the discussion. Teacher 2 did not get answers from learners during her consolidation of the lesson.

### 5.3.3 Focus group interviews

Learners indicated that they were aware that the environment needs to be taken care of and that they were willing to look after the environment if given the opportunity. Learner 3 from Group 2 indicated that she loves the environment and loves to take care of it, but that she does not have time to because she is always busy with academic work. Learner 6 from Group 1 described the plants they help to water from time to time in the school. This seemed to be the only activity that is considered as part of environmental education. The school with an environmental club noted that learners watered plants.

This is an indication that learners in schools are willingto learn and take part in environmental education issues in their communities, but teachers focus on assessed academic work. Learners

revealed that some were part of the school environmental club. Even those not part of the club helped pick up papers, plant trees around the school and discouraged other learners from littering in the school grounds. Learner 2 from Group 2 described how Grade 12 learners have small plots of vegetables at the school where they grow tomatoes, cabbages, green peppers etc. for their agriculture (subject) project.

The vegetable plots are only for learners doing the subject of agriculture in Grade 12 and work in these plots is assessed for their final year exam. The learners who were part of this study were enthusiastic and although there is not much they do at school with regard to environmental education, they were willing to learn and be involved in projects: “we want to plant trees and also make a garden like other schools” (Learner 4, Group 1). This shows willingness to be involved not only for short periods but also in longer laeger projects.

Learners’ willingness to copy and do what others are doing, shows that if teachers can commit and guide them in the right direction with regard to environmental education in Geography, learners would be likely to commit themselves and work on issues concerning the environment.

## 5.4 Action and change

### 5.4.1 Interview with teachers

Teachers tend to teach what is in the syllabus only and one teacher was not aware of EE being part of the curriculum: “no, environmental education is not part of the curriculum” (Teacher 3). Other teachers were aware of environmental education being part of the curriculum and recognised that parts of their teaching in Geography informs environmental issues such as “deforestation, decertification are part of what we teach” (Teacher 1). Teacher 2 described this in detail: “In some topics of Geography, learners are required to know the side effects of how they must use the land or how they can sustain it, what they can do, like solutions”. Teachers indicated the need for environmental education to be a serious concept within the school by becoming “a competency within the syllabus or an introduction of a new non promotional subject like we have Life Skills” (Teacher 2). Teachers also hoped that the curriculum developers would recognise this issue and provide teachers with proper training so that environmental education could be fully functional in schools.

### 5.4.2 Observations

The silence in classes in response to questions indicated how little learners knew about the topic of environment and they did not appear particularly engaged in environmental awareness. The researcher observed that learners relied on their teachers for all information with regard to all subjects. Teachers could use this reliance of learners on them to inform and educate them regarding environmental education concerns in the Geography syllabus. No real interest in environmental education was evident in schools. Both teachers and learners, however, indicated that given the platform, they would want to do or learn about issues regarding environmental education in Geography.

### 5.4.3 Focus group interviews

Learners revealed that they wanted to make gardens and plant trees as mentioned in section 5.4. This gave the researcher the impression that learners would want to be involved in more activities with regard to the environment with support from their teachers and schools.

## 5.5 Planning and taking action individually and together on material practices

Teachers, observations, as well as the learners, all indicated there was no planning or action for the school to move forward. Teachers had not witnessed any actions with regard to the environment that learners freely took, as environmental education is not a noticeable part of the schools. Teacher 2 indicated however that they had recently planted a few shade trees around the school. These trees were donated by the Ministry of Agriculture which is close to the school. Sadly, some plants had already been eaten by goats.

## 5.6 Conclusion

This chapter has presented the second phase of data collection from teachers, lesson observation as well as the focus group interviews guided by action competence as a lens for probing for opportunities for environmental education in the Geography curriculum.

# CHAPTER 6: **DISCUSSION OF RESULTS**

## 6.1 Introduction

In this chapter I present discussions of the data detailed in Chapters 4 and 5. The aim of this study is to investigate opportunities for environmental education within the Geography curriculum using the concept of action competence as an analytical tool. Through the discussion this study seeks to answer the research question, namely:

> How is environmental education embedded in the curriculum and textbooks and how is this playing out in action competence in the two cases of Geography teaching examined in the study?

The data in Chapter 4 was analysed with an indicator action competence framework to identify the specification of environmental sustainability action in the policy, curriculum documents and textbook that frame environmental education. Chapter 5 used the same indicator framework to review a case of classroom practice where teachers were working with the curriculum and the textbook. This process of working with the concept of action competence to assess how it came to be embedded and enacted allowed the study to develop as a process of analytical critique that was important as it allowed me to reflect on my practice as a Geography teacher concerned about the need for environmental education in our school system.

The following focus areas were developed based on the data presented in Chapters 4 and 5.

1. The embedding of environmental education in the curriculum and textbooks;
2. Teacher understanding of and interest in environmental education in their Geography teaching;
3. The inclusion of EE in lesson plans;
4. How action competence is emerging in the lesson experience of Geography students.

## 6.2 The embedding of environmental education in the curriculum and textbooks

The analysis in Chapter 4 revealed Namibia's commitment in the Constitution that education is a right of all persons and it is the responsibility of the government to provide education to its people. This same aspect of the Constitution has been used in planning and developing all the

other documents. Evidence in Chapter 4 indicates that Namibia aspires to becoming a more knowledge-based society in her Vision 2030 which informed the development of the core dimensions of the curriculum. Seen (2005) indicated that environmental education has been and is part of many policy documents and across the curriculum. Further studies done by Tshiningayamwe (2011) indicated that although education is integrated in the curriculum documents, the insertion of the environmental topics in the curriculum is insufficient. Other studies revealed that Geography, Biology and Agriculture subjects in schools are perceived to contain environmental education but investigations indicate that the focus of these subjects is not on environmental education but rather on factual or scientific knowledge (Uugwanga, 2009).

There is evidence that the education documents that they have outlined provided knowledge with understanding of the current state and consequences if the environment is not well taken care of. Outlined in the documents are the risks we face if we do not care for and manage our natural resources. The documents suggest that education can develop learners' social responsibility towards other individuals and the country and encourage it to do so (see section 4.2).

The documents encourage knowledge creation through the Geography syllabus, and they provide understanding of not only Namibian problems but problems of other countries, e.g. negative impacts of population growth on the environment as well as negative impacts of tourism on the environment (D2). Kimaryo (2011) indicated that it is important to teach environmental education because it would help learners develop knowledge which will enable them to understand the environment. This seems to be supported by Paterson (2009) who proposed that when students are motivated to care for something, it can help them reach other areas within and lead to better care of the environment and communities.

Knowledge with understanding is also supported by the activities that are provided within the Geography guides as the activities use recall questions such as "Describe which parts of the North Sea are most polluted and suggest reasons for your answer" (D2 in section 4.2).

Evidence in Chapter 4 also indicates that the recommended teaching methodology considered to have the most impact on learners is a learner-centred approach. This broadly focuses on learners and shifts the focus from the teachers to the learner. Observations made by Appel, Dunkelman and Kulfers (2004) pointed out that the integration of environmental education poses a number of challenges to teachers.

Based on this evidence it is possible to conclude that:

- Action competence was a core concept in the framing of environmental education in the curriculum;
- The specification of environmental education has mainly emerged as a series of concerns that present as topics to be taught and compared with similar concerns in other parts of the world; and
- Action competence as a concept informing the specification of environmental education in the Namibian curriculum is readily evident in working with the curriculum and textbooks.

## 6.3 Teacher understanding of and interest in environmental education in their Geography teaching

Teachers' understanding and interest in environmental education could be assessed through the participation of learners. Participation is an essential and crucial aspect for learning. The data analysed have indicated that a great deal of participation is required for action competence to emerge. A learner-centred approach which should include direct questioning, eliciting, explaining, demonstrating, challenging the learner's ideas, checking for understanding, helping and supporting, providing for active practice and problem solving is recommended in D1 (Chapter 4). Enabling the components listed will develop aspects of environmental education communication and language within the Geography learners to engage in environmental issues and concerns.

Although the policy focus has been on a learner-centred approach, the strategies and evidence collected through observations reflected little learner participation. This is supported by Tshiningayamwe (2011) who indicated that engagement and participation for learners is minimal except at the level of copying summaries and answering the teachers' questions in preparation for how Geography is to be assessed in public examinations. Tshiningayamwe (2011) emphasised that learner to learner communication or interaction is not considered in the lessons.

The shift towards active teaching and active methods of teaching is linked to the shift from a content based curriculum to a competency based curriculum; this needs a participatory pedagogy (Woods, 2008) that is not evident. The data generated through observations revealed that learners mostly copied notes. Here it is noted that some teachers may use less participatory

methods simply because they teach to finish the syllabus and they ensure syllabus coverage so their learners pass exams because quality teaching is determined through passing examinations (Kyando, 2007). This is true also for Namibia: sometimes teachers teach learners only the skills they need to write examinations (Mosha 2000).

Efficient language use is evident, English is the official language though it is a second language to most learners. The words seems to be clear and easy to understand but there is little evidence of concepts being related to local concerns by pupils. Tshiningayamwe (2011) also noted that little attempt was made to adapt the textbook knowledge to learner situations.

The curriculum intends teachers to facilitate teaching and learning both inside and outside the classroom in order for learners to acquire the necessary knowledge skills and values, although this was not observed. Teachers indicated that their 40-minute lessons are not long enough for environmental education to be developed with any depth. Jensen and Schnack (2006) argued that learners should be helped to become environmental problem solvers if they are to develop action competence.

Based on this evidence it is possible to conclude that:

- Action competence has not been emerging through current exam-centred teaching; and
- Teachers have little understanding of what and how to teach and inform environmental education within their classrooms.

## 6.4 The inclusion of environmental education in lesson plans

It is evident in Namibia‘s Vision 2030 that guides the curriculum that the intent is to develop a caring society, a healthy society, an environmentally sustainable society, a productive society and a democratic society with individual development (see section 4.5). Learners did not actively question their teachers about environmental issues (Chapter 5) and this prevented learners from actively seeking ways of how environmental problems could be addressed to improve future sustainability. It is necessary to actively involve learners as argued by Jensen and Schnack (1997) and having visions about the future is an important part of action competence.

Subject managers need to control teaching and learning activities as highlighted in Chapter 4. This seems to be one of the environmental education shortcomings as managers do not control and enforce implementation of environmental education in the daily teachings of teachers (Chapter 5).

It also emerged that teaching should be planned to meet the national expectations of the intended curriculum as revealed in Chapter 4.

To be able to decide on the appropriate action to take and their own personal responsibility and commitment, students need to understand their own attitudes and values towards issues, as shown in Chapter 5. The focus group interviews (see Appendix 5) with students revealed that the learners could not demonstrate an understanding of their own attitudes towards issues of the environment; they stayed silent in class. In the focus group interviews, the data indicated that learners were not able to develop and communicate their own perceptions and visions about environmental issues that surround them.

Chapter 4 also indicated the importance of the ability to plan education carefully: what should be taught and how it should be taught. Learners seemed not to show any ability to take action in this regard. Learners did not exhibit planning skills. Eames et al. (2006) argued that for learners to develop or show evidence of planning and taking action development as an aspect of action competence, they must first develop and demonstrate a level of self-confidence and an ability to solve problems.

Based on this evidence, it is possible to conclude that:

- Learners are not actively involved in seeking and probing environmental concerns or in seeking solutions to these; and
- Action competence is not evident in the learning methods presented to the learners.

## 6.5 How action competence is emerging in the lesson experience of Geography students

The data in Chapter 5 revealed that there is a gap between what the curriculum puts forth in the documents and what is practised at school. T2 was not certain whether environmental education was part of the curriculum. Tshiningayamwe (2011) indicated that the current curriculum is theoretical and not suitable for proper integration of environmental education.

In Chapter 4 it was noted that the textbooks used (Namcol study guides) cover the content to be learned and do not fully bring forth the key skills that they set out to promote fully e.g. critical thinking, analytical skills, problem solving. This is also supported by Tshiningayamwe (2011) in a study that looked at environmental learning within Biology which indicated that the skills stipulated by the curriculum documents are not fully integrated within the textbooks, and hence the teaching and learning.

## 6.6 Conclusion

This chapter has provided critical discussion of the data presented in Chapters 4 and 5. Analytical statements were used at the end of each section to draw out evidence of opportunities for environmental education and an emerging action competence in the Geography curriculum. The evidence was reported and the analytical statements were developed according to Jensen and Schnack (1997)'s action competence development framework that was used in the two-phase data generation and analysis developed for the study.

It is thus clear that there is a policy rhetoric around action competence embedded in environmental education policy and textbooks but this is not being realised in practice. Stevenson (2007) discussed this disjuncture between the embedding of environmental education ideals in the curriculum as a rhetoric that is not being realised in classroom practice which is centred and directed towards successful performance in exams. Teachers teach content to support students to be successful and these established ways of doing things in schools are not currently supporting the development of action competence in the Geography teaching reviewed in this study.

# CHAPTER 7: **CONCLUSION AND RECOMMENDATIONS**

## 7.1 Introduction

This chapter presents a summary of the whole study inclusive of its main findings. This study was done to gain insight into opportunities available for environmental education within the Geography curriculum and how this is playing out in the classroom practice. The chapter first summarises how action competence emerged in Namibia to become embedded in curriculum documents and textbooks in particular ways (Phase 1). It then summarises the evidence of action competence emerging in two cases of Geography teachers planning and implementing lessons using the prescribed textbooks and their sense of what environmental education is and how to work with the pupils to achieve this (Phase 2). The chapter finally summarises findings of the study in relation to the questions guiding the research, namely:

> How is environmental education embedded in the curriculum and textbooks and how is this playing out in action competence in the two cases of Geography teaching examined in the study?

The research is then concluded with recommendations for enhancing environmental opportunities in the Geography curriculum. Lastly, the chapter makes recommendations for further research.

## 7.2 Summary of the study

This study has considered opportunities present within the Geography curriculum for EE in secondary school curriculum and teaching and learning settings in Namibia. As a Geography teacher, the research data on curriculum, textbooks and classroom practice helped me reflect and to take a closer look at my own presentation of Geography lessons and whether I integrate environmental education effectively in my teaching/ classroom.

This study was conducted as a case study of the embedding of action competence in the curriculum and textbooks as well as a review of teaching practices in two schools in Okahao, Omusati region. The study focused on Grade 11-12 Geography teachers and it investigated the environmental education opportunities that came to be embedded in the Geography curriculum and how this is playing out in two cases of environmental education in a context of Geography

teaching. The study made use of qualitative methods including document analysis, classroom observations, semi-structured interviews as well as focus group interviews to generate data on opportunities for EE in the Geography curriculum and in the school contexts examined. Observation and interview schedules were used during classroom observations and semi-structured interviews with teachers. Ethical considerations were taken into account during the study.

One of the study's limitations was that it was only carried out in two schools due to financial and time constraints. However, despite this limitation, the study has provided an understanding of environmental education in Geography as a subject and how this is being carried through as a tool for enabling learners to address environment and sustainability concerns. The findings showed little evidence of a developing action competence (and thus environmental education) mainly because of the exam-centred ways in which lessons are being planned and taught in the Geography teaching practices reviewed. The results are significant in the contexts examined but the data cannot be generalised to what is happening in Geography Grade 11-12 classrooms with regard to EE. The data does, however, point to conflict between the intent of a curriculum to develop action competence and the realities of teaching Geography content to help students to be successful in the current examination system.

The study revealed that teachers are trying to engage with EE but that this is happening at a minimal level in the cases of Geography teaching examined. Teachers are however well qualified in their subject and are engaging with the curriculum to the best of their understanding. The study also revealed that although EE is in the curriculum, schools interpret this differently. The study further revealed that although teachers are trying, these are a number of constraints such as understanding how to properly integrate EE during the lesson as teachers.

The study could only conclude that teachers mainly teach environmental education as content to support students to be successful in exams and their established ways of doing things in schools are not currently supporting the development of action competence in the Geography teaching reviewed in this study.

## 7.3 Recommendations

This section draws on the analytical statements as well as discussions thereof in order to make possible recommendations for recognising environmental education opportunities within the Geography Grade 11-12 curriculum. Noting that the data indicated that environmental

education is slowly taking place, materials are inadequate and a gap was recognised between curriculum envisioning in theory and in practice, the researcher makes the following recommendations to help teachers to engage thoroughly with environmental education.

### 7.3.1 Teachers need to revisit and review the curriculum documents to match theory with practice

The study showed a gap between curriculum envisioning and practice. Teachers' knowledge and understanding could still be further enhanced with more guidance or training by curriculum developers so that teachers can carry out effectively the intended curriculum in environmental education. Kimaryo (2009) indicated that the gap exists because teachers are not well trained in teaching of environmental education in schools nor did they undergo any professional development courses or training in teaching environmental education. Therefore, it is necessary for this gap to be addressed.

### 7.3.2 Teachers need to encourage learner participation to enhance their interest and emotional responsibility in environmental education

The study also revealed minimum participation of learners in the classroom; they appear to have little interest or are not engaged adequately in environmental education activities. However, this could be because teachers themselves are not well equipped, a view supported by Kimaryo (2009) who indicated that problems that exist in implementing environmental education in secondary schools are a result of barriers facing teachers too.

Overall, the well-intentioned policy of embedding environmental education in the curriculum and textbooks is not playing out in classroom teaching practices that are effectively engaging students in environmental concerns or developing the desired action competence to address environment and sustainability concerns reflected in the Geography curriculum.

## 7.4 Suggestions for further research

The following could help expand environmental education within the schools and in Namibia as a whole.

1. An investigation in teacher education and training inclusive of environmental education;
2. Relevance of activities and participation of learners in teaching environmental education; and
3. Assessment guidelines as to how environmental education can be assessed in schools.

## 7.5 Conclusion

The concluding chapter of this study has made recommendations both about the study as well as for further research. The study has used an action competence lens to look at potential and realised opportunities of environmental education in the Namibian Geography curriculum. Evidence in curriculum documents, teacher activities and learner engagements was analysed indicating an embedding of action competence that is not playing out in the Geography teaching contexts reviewed. The study concluded that there are opportunities for environmental education in the Geography curriculum; however these are not being implemented and realised in effective ways that are making a difference in the lives of the learners.

## References


Anyolo, E.O.(2011). *Investigating the incorporation of education about, in/ through and for the environment in the geography junior phase curriculum: a case study of three Namibian schools.* Unpublished masters thesis, Rhodes University, Grahamstown.

Appel, G., Dankelman , I., & Kuipers, K . (2004). Disciplinary explorations of sustainable development in higher education. In B.P. Corcoran & A. E. J. Wals (Eds.). *Higher Education and the challenge of sustainability: Problems, Promise and Practice* (pp. 213-222). Dordrecht: Kluwer.

Ballantyne, R., & Gerber, R. (2004). Teaching and learning matters. In W. A. Kent, E. Rawling, & A. Robinson (Eds.). *Geographical education expanding horizons in a shrinking world*. Glasgow Scottish Association of Geography Teachers with the Commission on Geographical Education.

Breiting, S., & Wickenberg, P. (2010). The progressive development of environmental education in Sweden and Denmark. *Environmental Education Research,* 16 (1), 9 37.

Butt, G. (2002). *Reflective teaching of Geography 11-18: Continuum studies in reflective practice and theory*. New York: Continuum.

Carl, A.E. (1995). *Teacher empowerment through curriculum development: Theory into practice*. Kenwyn: Juta & Company.

Davidson, G., & Catling, S. (2000). Towards the question led curriculum. In C. Fisher & T. Binns (Eds.), *Issues in geography teaching.* London: Routledge.

Cohen, L., & Manion, L. (1994). *Research methods in education*. New York: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education*. London: Routledge Falmer.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). London: Routledge.

Council for Environment Education (CEE). (1988). *Education for sustainable development in the school sector: A report to DFEE/QCA from the panel for education for sustainable development*. Reading: Council for Environment Education.

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). New Jersey: Pearson.

Cryer, P. (2000). *The research student's guide to success* (2nd ed.). Philadelphia: Open University Press.

Eames, C., Law, B., Barker, M., Lies, H., Mckenzie, J., Patterson, R., et al.(2006). *Investigating teachers' pedagogical approaches in environmental education that promote students action competence*. Teaching and learning research initiative. Wellington. Retrieved 6 august 2010 from http://www.edplus.canterbury.ac.nz/documents/research/AAEE action competence paper.pdf.

EECI. (2000). *Enabling environmental education processes in teacher education. A resource to support teacher educator to interpret policy and change curricula*. South Africa: UNESCO with DEAT.

Enviroteach. (1995). *Investigating of opportunities for the implementation of Enviroteach programmes in Namibia colleges of education.* Windhoek: DRFN.

Enviroteach. (1998). *The pilot phase, reflections on exploring mechanisms for integrating learner centered cross-curricular, activities based environmental education into basic education in Namibia*. Windhoek: DRFN.

Gay, L. R., & Airasian, P. (2003). *Educational research: Competencies for analysis and applications* (7th ed.). New Jersey: Merrill Prentice Hall.

Gerhard, De Klerk.(2008). *Namibia Senior Secondary Certificate: Geography*. Module 1&2. South Africa: Paarl Print

Haubrich, H. (1994). *International Charter on Geographical Education*. Commission on Geographical Education. Freiburg: IGU

Hichcock, G. & Hughes, D. (1995). *Research and the teacher: A qualitative introduction to school based research* (3rd ed.) London & New York: Routledge.

James, A. (2009). *An investigation into what influences action competence-orientated teaching and learning processes in a school environmental club*. Unpublished master's thesis, Rhodes University, Grahamstown.

Jensen, B. (1994). Action, action competence and change in the field of environmental and health education. In B. Jensen & K. Schnack (eds.) *Action and action competence as key concepts in critical pedagogy* (pp. 73-85). Copenhagen: Royal Danish School of Educational Studies.

Jensen, B.B. (1995). *Concepts and Models in a Democratic Health Education: Research in Environmental Health Education.* Copenhagen: Royal Danish School of Studies.

Jensen, B. (2004). Environmental and health education viewed from an action oriented perspective: Acase from Denmark. *Journal of Curriculum Studies, 36*(4), 405-425.

Jensen, B., & Schnack, K. (2004). Assessing action competence? In W. Scott, & S. Gough (eds.) *Key issues in sustainable development and learning: A critical review* (pp. 164-166). London: Routledge Falmer.

Jensen, B. B., & Schnack, K. (2006). The action competence approach in Environmental education. *Environmental education research,* 12,471-486.

Kanyimba, A.T. (2002). *Towards the incorporation of environmental education in the Namibian secondary school curriculum.* Unpublished master's thesis, UNISA, Pretoria.

Kyando, N.M.(2007). Quality education: Do we know what is involved? *Journal of Issues and Practices in Education, 2*(1), 1-11.

Keen, K. (1992). Competence: What is it and how it can be developed? In J. Lowyck (ed.). *Instructional design: Implementation issues* (pp. 111-122). Brussels: IBM International Education Centre.

Ketlhoilwe, M. J. (2008). Exploring issues of relevance and quality in the context of a university programme. *Southern Africa of Environmental Education, 25*, 132-148.

Kimaryo, L.A. (2011). *Integrating environment education in primary school education in Tanzania*. Finland: Albo Akademi University Press.

Lambert, D. & Balderstone, D. (2005). *Learning to teach Geography in the secondary school*: *A companion to school experience* (2nd ed.). New York: Routledge.

Lupele , J., & Sisitka-Lotz, H.(2006). *Learning today for tomorrow: Sustainable development learning process in sub-saharan Africa*. Howick: SADC-Regional Environmental Education Programme.

Kane, E., & Brún, M. O. (2001). *Doing your own research*. London: Marion Boyars Publishers.

Leedy, P.D., & Ormrod, J. E. (2010). *Practical research* (9th ed.). New Jersey: Pearson.

Maree, K. (2011). *First steps in research*. Pretoria :Van Schaik.

Mayer, F.S., & Mcpherson-Frantz, I. (2004). The connectedness to nature scale: A measure of individual's feeling in community with nature. *Journal Environmental Psychology, 24*, 503-515.

Moore, K.D. (1998). *Classroom teaching skills* (4th ed.). Baskerville: McGraw-Hill.

Mosha, H. (2000). Conceptualizing quality of education. In J. Galabawa, J. Senkoro & A. Lwaitama (Eds.). *The Quality of education in Tanzania: Issues and Experiences* (pp.118). Dar-es-salaam: Tanzania Institute of Kiswahili research.

Msangi, J.P. (2007). Land degradation management in Southern Africa. In M.V.K. Sivakumar, & N. Ndiang'ui (eds.), *Climate and land degradation. Environmental science and engineering*. Berlin: Springer.

Namibia Environmental Education Network. (1999). *An environmental education policy for Namibia.* Windhoek: NEEN.

Namibia. Ministry of Education. (2010). *The National Curriculum for Basic Education*. Okahandja: NIED.

Namibia. Ministry of Education and Culture. (1993). *Toward education for all: A developmental brief for education, culture and training*. Windhoek: Gamsberg Macmillan.

Namibia. Ministry of Education, Arts and Culture (2010). *National subject policy guide for social sciences. NSHE, History and Geography*. Okahandja: NIED.

Namibia. Ministry of Education and Culture. (2005). *Namibia Senior Secondary Certificate, Geography Syllabus (NSSC) Ordinary level*. Okahandja, NIED.

Namibia. National Planning Commission. (2011). Quarterly newsletter. Windhoek: NPC.

Namibia. National Planning Commission (2014). Quarterly newsletter. Windhoek: NPC

Palmer, J., & Neal, P.(1994). *The handbook of environmental education*. London: Routledge.

Nordström, H. (2006). Multicultural emphasis as a Means for Holistic Environmental Education. In S. Tani (ed.). *Sustainable development through education – Proceedings of the International Conference on Environmental Education*. Helsinki, 14 June 2005.

O'Donoghue, R. & Sisitka-Lotz, H.(2006). Situated environmental learning in southern Africa at the start of the UN decade of education for sustainable development. *Australian Journal of Environmental Education, 22*(1), 105-113.

Office of the President. (2004). *Namibia Vision 2030: A policy framework for long term National Development*. Windhoek: Government Printers.

Orr, D. (2004). *Earth in mind: On education, environment and the human prospect.* Washington DC: Island Press.

O'Sullivan, M. (2006). Lesson observation and quality in primary education as contextual teaching and learning processes. *International Journal of Education Development*, *26*(3), 246-260.

Reinfried, S. (2009). Education for sustainable development and the Lucerne Declaration, *International Research in Geographical and Environmental Education, 18*(4), 229-232.

Republic of Namibia. (2004). *Vision 2030*. Windhoek: Office of the President.

Robottom, I., & Hart, P. (1993) *Research in environmental education: Engaging the debate.* Geelong: Deakin University Press.

Robson, C. (2002). *Real world research* (2nd ed.). Oxford: Blackwell.

Paterson, J. (2009). *Integrating environmental education*. Virginia: National Association of Secondary School Principals (NASSP).

Schnack, K. (1994). Motive og behov (motives and needs). In K. Schnack (ed.) *Psykologist Oplagsbog (Critical Essays in Psychology)*. Copenhagen: Christian Ejler.

Schnack, K. (1996). Internationalisation, democracy and environmental education. In S. Breiting & K. Nielsen (eds.), *Environmental education research in the Nordic countries* (pp. 7-20). Copenhagen: Royal School of Educational Studies.

Schnack, K. (2000). Action competence as a curriculum perspective. In B. Jensen, K. Schnack, & V. Simovska (eds.), *Critical environmental and health education: Research issues and challenges* (pp. 107-126). Copenhagen: Danish University of Education.

Schnack, K. (2004). Some further comments on action competence debate. In B. Jensen, & K. Schnack (eds.), *Action and action competence as key concepts in critical pedagogy* (pp. 185-190). Copenhagen: Royal Danish School of Education Studies.

Stevenson, R.B (2007). Schooling and environmental sustainability education: From discourses of policy and practice to discourses of professional learning. *Environmental Education Research, 13* (2), 265-285.

Shikongo, S. (2005). *Local level monitoring for enhanced decision-making in the semi- arid rangelands of Namibia*. UNCCD cric 3 presentations. BONN:UNCCD available at http://www.unccd.int/cop/cric3/presentations/namibia.ppt

Tshiningayamwe, S.A.N. (2011). *Implementation of environmental learning in the NSSC Biology curriculum.* Unpublished master's thesis, Rhodes University, Grahamstown.

Tshiningayamwe, S.A.N.(2017). *Education for sustainable development in the Namibian Biology curriculum*. doi: 10.1007/978-3.

The Constitution of the Republic of Namibia. (1990). Windhoek: Ministry of Information and broadcasting.

Tani, S. (2006). Multiple meanings but limited visions: The concept of the environment in environmental education. In S. Tani (ed.), *Sustainable development through education – Proceedings of the International Conference on Environmental Education.* Helsinki, 14 June 2005. Research Report 268. Department of Applied Sciences of Education, University of Helsinki, Helsinki.

Woods, E. (2008). Tanzania Case Study: In UNESCO, *Country Profile Commissioned for the EFA Global Monitoring Report 2008: Education for all by 2015*: *Will we make it?* Paris: UNESCO.

UNEP. (2008). *Atlas of our changing environment.* Division of Early Warning and Assessment (DEWA). Nairobi: UNEP.

UNESCO. (1972). *Environmental education and training: Suggestions developed by the Secretary General of the United Nations Conference on the Human Environment* (Stockholm Sweden, 1972). Paris: UNESCO.

UNESCO. (1978). The Tbilisi declaration. *Connect, III*(1), 1-8.

UNESCO. (2008). *Ahmedabad Declaration 2007: A call to action education for life: Life through education.* Report by deputy general on the follow-up to decisions and resolutions adopted by the executive board and the general conference at the previous sessions. Paris: UNESCO.

Uugwanga, P. (1998). *Access to education for blacks in Namibia: A study on the impact of post-independence educational reforms*. Unpublished master's thesis, Ohio University.

Van Harmelen, U. (2000). *Evaluating change: An impact study of the Life Science Project Namibia, 1991-20000*. Windhoek: MBESC/Ibis.

# APPENDICES

## Appendix 1: Consent letter (Teachers)

To: Participant teachers

Omusati

Namibia

Dear sir / madam

I am a part time masters student majored in environmental education at the Rhodes University in South Africa. As part of this degree, am investigating opportunity of Environmental education that are embedded in the grade 11-12 geography curriculum.

To fully answer this question, I need to interview geography teachers and also observe their classrooms. I have thus chosen your school and grade 11 and 12 geography teachers to voluntarily participate in this study. These interview will be recorded. Ethnical consideration such as right to privacy, confidentially, honesty will be maintained and no names will appear or revealed anywhere in this study.

If you agree to participate in this study, please sign the consent form in the space below.

Signed…….. Date……

Your participation on this regard will be highly appreciated.

Yours faithfully

Helena Ashipala

**Appendix 2A: Consent letter (Principal)**

The principal

xxxxxx secondary school

Omusati region

Namibia

Dear sir/madam

Re: request for a research site

I am a part time master student majoring in Environmental education at Rhodes University, South Africa. As part of the degree, I am required to carry out a research study. I am investigating EE opportunities within the geography curriculum.

I am therefore humbly requesting to do my study at your school. The school's participation in this study is voluntary, meaning the school can choose to withdraw anytime should they wish to from the study.

If I am allowed to carry out research at your school, I will spend time at your school in June/July and will be involved with grade 11-12 geography teachers.

Thank you for your consideration in this regard.

Yours faithfully

Helena Ashipala

## Appendix 2B: Parental consent letter

P.o.box 1562

Omusati region

Namibia

Dear parent

I am a part time masters student majored in environmental education at the Rhodes University in South Africa. As part of this degree, am investigating opportunities for environmental education that are embedded in the grade 11-12 geography curriculum.

To fully answer this question, I need to interview geography learners in the participating schools about their understanding and experiences of environmental education.

I am writing to ask if you would be willing to give permission for me to ask your son/daughter if he/she would like to take part in my research. Participation is entirely voluntary and his/her participation will be treated confidentially and anonymously.

If you agree for your son/daughter to participate in this study, please sign the consent form in the space below.

Signed……. Date……

Many thanks in advance for your consideration of this project.

Yours faithfully

Helena Ashipala

**Appendix 3: Observation schedule**

Observation guidelines

Date ----------

School----------

1. (a) classroom description

Number of learners in class:

Seating arrangement:

(b)

| | |
|---|---|
| Teaching method being used | |
| What instructions are given | |
| Type of questions asked | |
| Activities given | |
| Type of answers learners gave | |
| Choices learners make | |
| Learners participation | |

2. What are learners involved with?

---

---

---

---

---

---

---

**Appendix 4: Interview schedule**

Semi- structured interviews

Teacher's profile

1. Years of teaching experience
2. Professional qualification
3. Years of teaching Geography at grade 11-12 level

Teachers' views on EE

1. What are your views on what is EE
2. Is EE part and parcel of the curriculum?
3. Is EE recognizable in the syllabus? And textbooks?
4. Which textbooks do you use in teaching geography or engaging EE?
5. How do you feel about teaching EE?
6. Which teaching method do you prefer to use with your learners? Does it work?
7. Is EE a concern in this school? How do you address that?
8. Are learners involved in any investigations/ projects with regard to EE?
9. What actions/ decisions have your learners taken with regard to EE or projects in the school?
10. Have you engaged learners in EE? Are there any problems that you encounter in engaging learners in EE?
11. What is your opinion on the availability of resources for teaching EE?
12. Do you receive support/ workshops with regard to EE?
13. Are there any comments you would like to make with regard to EE in your school? In general?

**Appendix 5: Focus group interview schedule**

A discussion with groups of 8 learners also

1. What are your views on what is EE
2. How do you take care of your environment
3. What projects/ investigations are you involved with regarding EE?
4. Are you involved with EE in the classroom?
5. What have you learned so far about EE?
6. How often do you engage in EE?
7. Have you taken any initiatives as learners to do or take part in the environment?
8. How do you feel about EE?

**Appendix 6: Sample of an interview transcript**

Responses to Semi- structured interview

Teacher (2)

Qualification: B.ED majored in geography and history

Years of experience: 9

Years teaching geography: 9

1. Environmental education is about making learners aware about what environmental education is all about and how to better take care of it.
2. I think it is part of the curriculum but it is not really clear to me very well, I must still find that out.
3. Environmental education is not recognizable really in the syllabus, although it gives a guideline on what to teach. However, in some topics of geography, learners are required to know the side effects of how they must use the land or how they can sustain it, what they can do like solutions and these are the things that are highlighted by the textbooks.
4. Teaching resources are really scarce but we make use of the NAMCOL geography module 1 & 2.
5. I have no problem teaching environmental education but the space is limited to carry out environmental concerns in the school and also that sometimes we have no idea how to go about it.
6. I think all of us teachers uses the learner- centred approach, it is the best. Only that sometimes we have difficulties because our learners have limited or no knowledge of some things.
7. Of course environmental education is a concern, I think for us all around here or the region but I think we do not really have a platform to address these issues, there is hardly time, the academic work is too much.
8. Not really, although we planted some trees that we received form agriculture that is here that few learners are involved with, a lot of these trees have already been eaten up by goats that sneaked in the school yard.
9. None at all, our learners are struggling a lot, most of these grade 11-12 that we receive are poor performers from grade 10 therefore we really have no time but work hard at academics.

10. Like I said before, there is too much academic work that is going on and time is usually limited as we rush to conclude and finish off our syllabus before time.
11. There is absolutely no resources for Environmental education here, apart from textbooks we have nothing else.
12. I cannot remember any workshops that has been carried out about environmental education, but we really need that.
13. I hope that learners become aware of environmental problems that we are having in this school and do something about it. however, I think our learners need to especially be more educated on deforestation because I see it as a major problem in this region, the only problem is environmental education is not a subject on its own and makes it difficult to thoroughly teach these topics considering the time we have to cover the syllabuses, so I hope environmental education gets changed so it becomes a subject on its own. A competency within the syllabus or an introduction of a non-promotional subject like we have life skills.

**Appendix 7: Sample of the focus group interviews transcript**

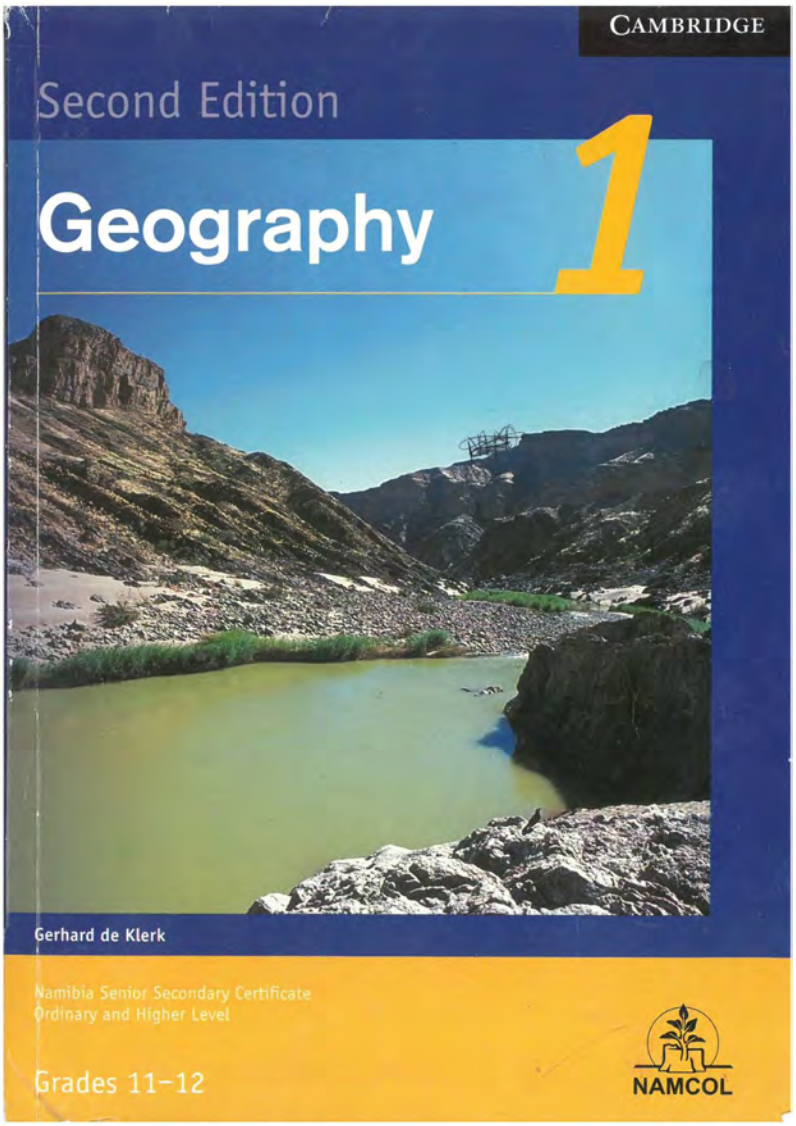
School X

Group 1

Answers to the interview questions

1. Mrs, can you ask that in Oshiwambo?
   I think I understand the question but cannot really put it in words (they then all agreed to this)
2. We mostly pick up papers around the school
3. We did not do any projects but we want to plant trees and also make a garden like other schools
4. No, not really
5. We cannot remember if we did anything in the class about environment
6. We water plants around the school
7. No but maybe we can
8. We want to learn about environmental education

**Appendix 8: Textbooks used**



## Appendix 9: Sample of a lesson plan

**SCHOOL NAME:** ... **TEACHER:** .....

**LESSON PLAN FORMAT**

| | | |
|---|---|---|
| **Subject:** Geography | **Date:** 14/06/2016 | |
| **Grade:** 12 ~~10~~ | **Duration:** 40 min | **# of learners:** 43 |
| **Theme:** Economic activities and the use of resources | **Topic:** Agriculture | |

1. **LESSON OBJECTIVES:** Learners will (*Please indicate the page in the syllabus :.....*):
Understand the different Agricultural systems in Namibia and SADC countries

2. **BASIC COMPETENCE:** Learners should be able to:
~~Discuss~~ Discuss the negative impacts of Agriculture on the enviroment for example, soil erosion, overgrazing, overstocking, desertification, salination, deforestation and pollution.

3. **TEACHING MEDIA/RESOURCES:**

**LESSON PRESENTATION**

| CONTENT | TEACHERS' ACTIVITY | LEARNER'S ACTIVITY | TIME |
|---|---|---|---|
| a) Introduction (*including monitoring of previous homework*) | Recap from Yesterday's work | | |
| b) Presentation (*subject content and learning activities*) | Discuss the negative impacts by asking the learners what negative impacts can agriculture cause on the enviroment. | • Answer the questions asked<br>• Write notes on the board | |
| c) Learning support (*Tasks to assist slow learners/extend faster ones*) | Textbook | | |
| d) i) Consolidation/ conclusion | Ask learners questions from the lesson just taught | | |
| ii) Assessment: Tasks/Homework | Learners to continue reading | | |

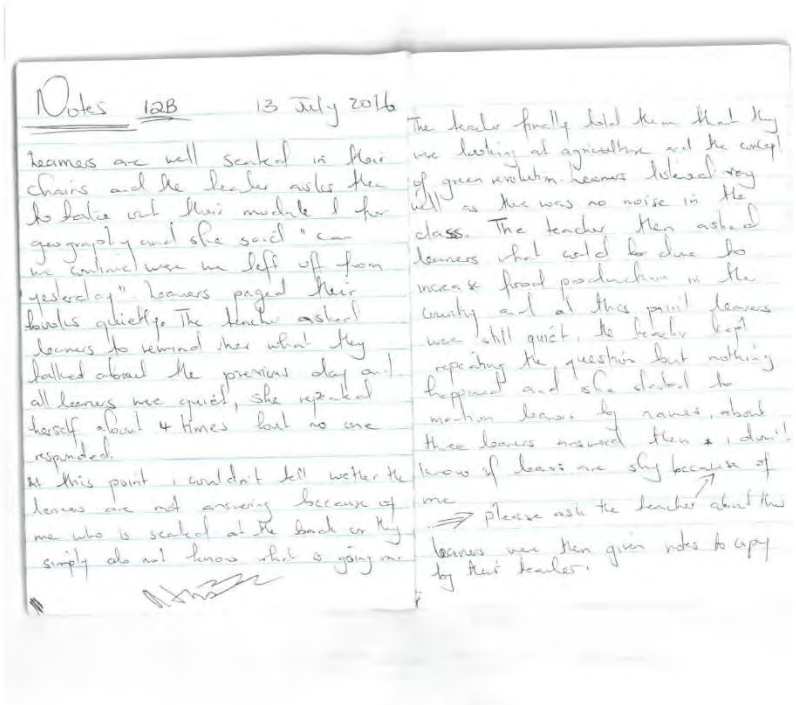
5. **LESSON EVALUATION/REFLECTION:**

| *What went well/wrong?* | *What could be changed next time?* |
|---|---|
| Participation in the class was not good | |
| Teacher's Signature: | Date: 14/06/16 |

6. **Monitoring**

| | *Remarks* | *Signature & Date* |
|---|---|---|
| Monitor (Phase Head, HoD or Principal): | | |

## Appendix 10: Sample of notes made



Notes 12B 13 July 2016

learners are well seated in their chairs and the teacher asks them to take out their module 1 for geography and she said "can we continue where we left off from yesterday" learners paged their books quietly. The teacher asked learners to remind her what they talked about the previous day and all learners were quiet, she repeated herself about 4 times but no one responded.

At this point I couldn't tell wether the learners are not answering because of me who is seated at the back or they simply do not know what is going on.

The teacher finally told them that they are looking at agriculture and the concept of green revolution. Learners listened very well as there was no noise in the class. The teacher then asked learners what could be done to increase food production in the country and at this point learners were still quiet, the teacher kept repeating the question but nothing happened and she started to mention learners by names, about three learners answered them + I don't know if learners are shy because of me → please ask the teacher about this

learners were then given notes to copy by their teacher.