The potential of Geography fieldwork projects to develop action competence in response to social-ecological concerns: A case study of two Grade 10 Geography classes in Northern Namibia

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Supervisor: Dr. Lausanne Olvitt

By

Modestus Mwiila

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DECLARATION

I, **Modestus Mwiila**, hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any university for a degree. All sources I have used or quoted have been indicated and acknowledged using complete reference according to Departmental Guidelines.

Signature:  Date: 12/01/2019

ABSTRACT

The study explored the potential of Geography fieldwork projects to develop learners' action competence in response to social-ecological problems in two schools in the Omusati and Oshana Education Regions. The study investigates ways in which learners' activities create an opportunity for them to act for the environment. That is, to investigate ways in which learners can be shaped into environmentally literate citizens who act for the environment.

A total of 43 grade 10 learners and two grade 10 Geography teachers participated in this qualitative, interpretive case study. Data was generated through document analysis, focus group interview with learners, semi-structured interviews with educators, and participant observations. Such data were analysed into three phases, first inductively and then abductively using Jensen's (2004) Investigations, Visions, Actions and Change (IVAC) model to produce analytic statements that form the basis of the research findings.

The study found that Geography fieldwork projects foster understandings of environmental problems in a local area. Through fieldwork projects, schools initiate indirect environmental actions, however, some environmental problems are too large or complex to be resolved by the actions initiated by learners. Based on these findings, the study identifies Geography fieldwork as an opportunity to create a community of practice in effort to address socio-ecological concerns. The study further recommends that learners should be allowed to engage with both social investigative actions and technical, scientific investigative actions when doing project work.

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DEDICATION

I dedicate this thesis to my parents, my father, Lukas Tsheehama Mwiila and my mother; Matlide Mwadhina "GwaaHosea" Hosea as a gift in celebrating their golden wedding anniversary [*50 years together in marriage*]. Your commitment for keeping the family together and my upbringing in its entirety made me the person I am today. From you, I learned a lot that is useful for life.

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LIST OF ACRONYMS

BETD	Basic Education Teacher Diploma
CASS	Continuous Assessment
DNEA	Directorate of National Examination and Assessment
EFS	Education for Sustainability
GAP	Global Action Plan
HED	Higher Education Diploma
HMI	Her Majesty's Inspectorate
IVAC	Investigation, Vision, Action, Change
LCE	Learner Centred Education
LRC	Learner Representative Council
MBEC	Ministry of Basic Education and Culture
MoE	Ministry of Education
MoHSS	Ministry of Health and Social Services
NEEN	Namibia Environmental Education Network
NIPAM	Namibia Institute of Public Administration and Management
ORDC	Ongwediva Rural Development Centre
QAA	Quality Assurance Agency for Higher Education
RDC	Rural Development Centre
UK	United Kingdom
UKQAA	United Kingdom Quality Assurance Agency
UNAM	University of Namibia
UNDESD	United Nations Decade of Education for Sustainable Development
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

This chapter introduces the study by outlining the background and rationale for investigating the Grade 10 Geography fieldwork project's potential to enhance environmental learning and develop learners' action competence. Thereafter, the chapter introduces the study's research question and sub-questions and concludes with an overview of the chapters that follow.

1.2 BACKGROUND TO THE STUDY

Since 1990, the Namibian education system has been through various transformations seeking to ensure sustainable development for all by addressing cross-curricular issues such as HIV and AIDS, Population Education and Education for Human Rights and Democracy (Ministry of Education, 2009). This educational reform was driven by the economically oriented 'Vision 2030', a national development plan that includes sustainability features like environmentally responsible consumption and production (Republic of Namibia, 2004). Over the past two decades, one of the crucial reforms was to make Environmental Learning a cross-curricular topic across the schooling system. According to the Environmental Learning Curriculum Guidelines (Ministry of Education, 2005), environmental issues cut across traditional subject boundaries and, in order to understand them, we need to identify the links and synergies and use them in planning for teaching and learning.

The Namibian National Curriculum for Basic Education assumes that upon completion of the Junior Secondary phase, learners should know how to take action for the environment and participate responsibly in a democratic society (MoE, 2009). It is based on these principles that Environmental Education in Namibia emphasises learning activities that, among others, encourage participatory methodology, direct experience, and the development of critical thinking and problem solving skills (MoE, 2005).

Against this backdrop, the Curriculum Guidelines for Environmental Education (MoE, 2005) identify Geography as one of the essential subjects carrying environmental content. The Ministry of Education (2006) and Van de Schee (2012) conclude that one of the aims of Geography is to lead learners to an awareness of their immediate and wider environment, and to an understanding of people's interaction with the environment. Van de Schee (2012, p. 12) explains that, "Geography is concerned with human-environment interactions with issues that

have a strong geographical dimension like natural hazards, climate change, energy supplies, land use, migration, urbanisation, poverty and identity".

Van de Schee (2012) concurs with Reinfried (2009) that all of these geographical themes such as environment, water, and climate change are highlighted on the United Nations Decade of Education for Sustainable Development (UNDESD) agenda. Reinfried (2009) explains that "the paradigm of sustainable development is easily integrated in all countries into the teaching of Geography in schools, from kindergarten to colleges, to reach the Decade's goals" (p. 230). (The UNDESD and subsequent international developments influencing Environmental Education and Geography Education in Namibia are more fully discussed in section 2.3).

These perspectives are reflected in the Namibian Ministry of Education's stance on Geography Education where Geography is defined as a discipline that involves examining ways in which humans adapt nature to meet their needs as well as how humans utilise environmental resources sustainably (MoE, 2009). By implication, Geography Education prepares learners to operate effectively in their society and the environment. Learners are equipped with knowledge for dealing with risks and challenges that are appropriate to their cognitive development that might affect their pursuit of quality of life and a healthy environment.

Despite these curriculum policy transformations, the outcomes of the Omusati Education Regional Directorate Geography workshops (2012-13) as well as the teachers' Regional Conferences (2013) consistently indicated that Namibian schools continue to focus largely on transmitting environmental knowledge, providing limited engagement with real life issues. The Ministry of Education has for some time been aware of this concern, and in the foreword to the Namibian Environmental Learning Curriculum, the Minister of Education argues that: "Knowing about the environment is insufficient on its own in preventing environmental problems. It needs to be linked to the development of environmental ethics and values that promote commitment and action to improve livelihoods" (MoE 2005, p. 5).

Similar sentiments are shared by Simalumba (2011) and the national conference of the Namibian Environmental Education Network (NEEN) in 2013. In his Masters of Education thesis, Simalumba (2011) argues that, although environmental issues relevant to Namibia were integrated in the school curriculum, little is known about how educators are promoting action-oriented activities. Similarly, it was noted with concern during the 2013 NEEN

conference that there is little evidence of schools engaging in local environmental issues, and in many cases schools areas are even becoming sources of ecological decline.

This study is an attempt to contribute to the concerns and gaps identified by Simalumba (2011), the Geography Education regional conferences (2012-13) and outcomes of the NEEN conference (2013), on how schools can transform teaching and learning to develop future citizens with knowledge, understanding and competences to apply what they learned to be effective and responsible citizens.

Having been a Geography teacher for the past 16 years, of which two were as the Head of the Social Science Department and co-ordinator of an environmental awareness club at the school, I developed an interest in researching learners' environmental activities. I was introduced to the concept of action competence during the Environmental Education Masters programme at Rhodes University and developed an interest in exploring opportunities to develop action competence through school activities in general, and Geography activities in particular.

1.3 CONTEXT AND RATIONALE FOR THE STUDY

This study was undertaken as an interpretive case study of two Grade 10 classes from two schools in the northern Namibia regions, namely Omusati and Oshana. As will be elaborated in Chapter 4, section 4.3, many people in these two regions depend directly on the environment for food, shelter and water. This is a communal area, where farmers mostly cultivate millet (*omahangu*) and keep livestock such as cattle, goats and donkeys.

Each region has its own Regional Education Directorate and operates on a different budget from the Ministry of Education. Each region allocates funds as per their regional priority and consideration of the Ministry of Education's strategic objectives. In both regions, the school calendar is commonly disturbed between February and March annually by the flood from the Cuvelai floodplain. As will be elaborated in Chapters 2 and 4, this context is a powerful illustration of how people-nature interactions within the social, cultural, economic, civic and political spheres of a local area give rise to what are called social-ecological problems.

Part of the rationale for this study rests on the assumption that there is a need for learners to more fully understand what healthy or deteriorated environments mean to them, in their context, so that they might be better equipped to respond to social-ecological problems. The study also serves as a response to the Ministerial directives (MoE 2005, 2009) that place

schools at the forefront of responding to environmental change and preparing learners with environmental ethics and the commitment to reduce their ecological footprint and achieve a sustainable future for Namibia.

As such, this study makes a small contribution to advancing the goals of the United Nations Decade of Education for Sustainable Development and, more recently, UNESCO's (2014) Global Action Plan. More specifically, the study was motivated by the Namibian education directive, (MoE, 2005) reminding teachers that the role of education is not only to *inform* learners, but also to *prepare them to work together and act* to meet Namibia's environmental challenges, now and in future. It was my quest to explore the potential of the teaching strategies encouraged by the Ministry of Education's Guidelines for Environmental Education (MoE, 2005) associated with the transformation of attitudes and the development of skills and abilities to take necessary action for change. My intention was not to develop a new approach but rather to understand the practice of the Grade 10 Geography fieldwork project and identify its potential to develop action competence with regard to social-ecological concerns.

Fieldwork projects give learners an opportunity to investigate Geographical issues (which are mostly environmental issues) in their locality. They are also an important assessment task for Continuous Assessment [CASS] marks, as required by the Ministry of Education. My interest was in investigating what opportunities there are to develop action competence at the various stages of these fieldwork projects.

The research is relevant to Social Science teachers in general and Geography teachers in particular. Since project-based investigation is a common teaching strategy across all Senior Primary and Junior Secondary subjects in Namibia, recommendations in this study may be useful to all teachers at those levels, as well as Senior Education officers responsible for advisory services.

1.4 RESEARCH QUESTION AND SUB-QUESTIONS

The over-arching question guiding this study was: "**What is the potential of Geography fieldwork projects to develop learners' action competence in response to social-ecological problems?**" To answer this main question, three sub-questions were formulated:

i. Is there any evidence of an action competence approach in the design and implementation of the sampled Geography fieldwork project?

ii. Is there any evidence of learners developing action competence through participating in the Geography fieldwork project?
iii. How is this developing action competence related to the focus and expectations of the Grade 10 Geography syllabus?

1.5 STRUCTURE OF THIS RESEARCH REPORT

This thesis consists of six chapters:

Chapter 1 has given an overview of the study including the background, context, motivation and research question. The chapter also highlights the potential value and contribution of the study.

Chapter 2 provides a general overview of literature relevant to the study's context, research focus and key conceptual and theoretical sources. The chapter draws on a range of international literature to explain the fieldwork concept and, thereafter, the meaning of action competence as an environmental education approach, drawing primarily on the work of Karsten Schnack and Bjarne Bruun Jensen (Jensen & Schnack, 1997; 2006; Jensen, 2002 & 2004). The chapter puts the study in context by providing an historical background of both education reform and environmental education in Namibia. Finally, the chapter brings together the action competence approach and the Namibian educational and social-ecological context.

In **Chapter 3**, I present the research methodology, including the research paradigm underpinning my study, research goal and questions, research site and participants, data gathering techniques, analysis and validation. I also discuss how I addressed any ethical issues associated with conducting the research, and finally I consider some of the limitations of this study.

Chapter 4 presents the case study data gathered through document analysis, semi-structured interviews, focus group discussions, participant observation and learners' work. Firstly, in section 4.2, I present a content analysis of Namibian Ministerial policy documents which direct the country's education in general, and Junior Secondary Geography education in particular. These ministerial documents outlined core skills needed for a knowledge-based society.

Learning to learn skill is described as a fundamental skill area for all as learners develop skills to organise, regulate, evaluate their own learning and apply knowledge in situations. Sections 4.4 and 4.5 presents data generated for case studies one and two respectively. Within each section, the stages of preparing and implementing the Geography fieldwork projects are described. In both case studies, learners investigated environmental issues guided by the syllabus and related to their local areas. Furthermore, in both cases, fieldwork processes led to learners having a better understanding of the environmental issues and the seriousness of these issues.

In **Chapter 5**, the analysed data are discussed in relation to the study's conceptual and theoretical framework, and other literature introduced in Chapter 2. Discussion of the case study data is done by means of analytical statements. Links and deviations between the focus and expectations of Grade 10 Geography fieldwork projects and action competence are established. It has been noted that Geography fieldwork fosters multi-dimensional understandings of local environmental issues, which develop concerns and serve as starting points to act. However, most of the environmental actions initiated were seen to be indirect actions where barriers are inevitable at implementation level. In some instances, learners pointed to the need for external policies as conditions for effective environmental actions. Many of the environmental actions suggested by learners were mostly associated with behaviour modification and social control, which are contrary to the ideals of developing democratic action competence.

Finally, **Chapter 6** presents a summary of findings for the study and makes recommendations for how Geography fieldwork projects can be repositioned to enhance the development of learners' competence to take action to address social-ecological concerns in their locality. The study concludes that despite learners having gained more complex understandings of environmental issues through the Geography fieldwork projects, their educational achievement is not measured according to how they understand or care for the environment, rather on what they understand in order to perform in the examination. In both schools, most of the suggested environmental actions exceeded learners' capacity and action possibilities within the school context. The study recommends extensive collaboration with local community and the establishment of communities of practice if schools are to contribute to sustainability practices and engage competently with possibilities to address social-ecological concerns in local areas.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This literature-based chapter outlines the main elements of this study and how they inter-relate around a concern for developing an active environmental citizenry in Namibia. The chapter begins by introducing 'fieldwork' as a concept and practice, both generally and in relation to Geography as a school subject. The discussion outlines the link between Geography fieldwork projects and Environmental Education. Thereafter, the chapter explores the meaning and origin of action competence in relation to Environmental Education, drawing primarily on the work of Karsten Schnack and Bjarne Bruun Jensen (Jensen & Schnack, 1997; 2006; Jensen, 2002 & 2004). Attention is drawn to a model of the components of action competence: investigation, vision, action and change (IVAC). The chapter then shifts focus to recent education reforms in Namibia, highlighting historical perspectives on Geography fieldwork projects, Environmental Education and the organisation of teaching and learning to encourage an inquiry approach.

2.2 FIELDWORK IN GEOGRAPHY

This section seeks to define fieldwork projects in general and Geography fieldwork projects in particular by drawing on local and international, historical and contemporary perspectives.

2.2.1 Geography fieldwork as concept

The term "field" implies the real world, going out of the classroom and into the outside world, which the geographer studies (Holmes & Moorhouse, 1991). Most geographers agree that, "Geography is concerned with human-environment interactions in the context of specific places and locations and with issues that have a strong geographical dimension" (Van Der Schee, 2012, p. 11). Geography is also defined as an "outdoor" subject which lends itself to fieldwork (ibid.). Kent, Gilbertson and Hunt (1997) define fieldwork as a setting where supervised learning can take place via first-hand experience, outside the constraints of the four walls of a classroom setting, but they caution that, "effective learning cannot be expected just because we take students into the outside..." (p. 313).

Expanding the definition of fieldwork, Holmes and Moorhouse (1991) suggest that 'outdoor projects' is an equivalent term to 'fieldwork' and perhaps it is on this explanation that many scholars use the term 'outdoor projects' or 'outdoor activities'.

Holmes and Moorhouse (1991) remind educators, however, that fieldwork has nothing to do with how far learners have travelled, but rather with what they actually do outside the classroom.

To take this discussion further, Kent et al. (1997, p. 1) define fieldwork very broadly as: "active engagement with the external world..." As such, Geography fieldwork might be confused with other field activities such as picnics and class excursions because they all meet criteria for active engagement. Kent et al. (1997) dimensioned their loose definition of fieldwork by categorising fieldwork activities as follows:

- *Short field excursion*: limited travel in limited time
- *Cook's Tour*: limited activity in extended travel
- *Residential course*: extended travel and time
- *Study tour*: multi-location activity

This range of fieldwork categories is helpful in thinking about what differentiates Geography fieldwork projects from other classroom outings. Kent et al. (1997) map the changing approaches to Geography fieldwork from the traditional Cook's Tour through to increasing emphasis on projects, problems and students.

These changing approaches to fieldwork have been recognised by various scholars such as Beaumont and Wyn Williams (1983) who refer to the "new Geography". Kent et al. (1997) suggest that the "new Geography" developed with the shifting emphasis from passive to active learning, resulting in a re-evaluation of the efficacy of fieldwork as a learning tool. Consequently, the form and function of Geography fieldwork has, for the past two or three decades, been pedagogically re-orientated towards small-group learning and a small-scale problem solving approach (ibid).

These significant shifts in approaches to Geography fieldwork continue to be reflected in more contemporary work. For example, Stears (2010) argues that learning involves more than sensory experiences. During the fieldwork project, children integrate sensory processes (seeing, hearing, moving or touching) with processes of thinking, feeling and doing in the world. Similarly, Edlund (2011), in her Master's thesis, explains fieldwork to be a way of expanding the boundaries of the classroom through involvement of the broader community, including the school grounds and nearby environment.

Classroom walls keep learners comfortable with the false understanding that nature is 'outdoors' and humans are separated from the environment (Neilson, 2009). Classroom-based activities thus hinder learners' openness to engaging with the challenges at the intersection of human and nature (ibid). This is what Down (2010) refers to as learning that connects academic and real world activity, including community needs. Down (2010) draws on John Dewey's theory of experiential learning to emphasise that one learns better by doing, and that education is not just about books but about experience and connecting what one needs and hears with ongoing observation and experience.

Learning tasks require the active participation of the student in hands-on opportunities and must connect content to the student's life. Experiential education combines active learning with concrete experiences, abstract concepts, and reflection in an effort to engage all learning styles (Ulrich, 1997). These arguments reflect the earlier position of Beaumont and Wyn Williams (1983) who motivated for Geography to be taken as a form of discovery learning, characterised by activity rather than passivity. They promoted the concept of fieldwork projects using an ancient Chinese proverb: *I hear and I forget; I see and I remember; I do and I understand* (ibid.).

In a more recent study, Fuller, Edmondson, France, Higgitt and Ratinen (2006) surveyed international perspectives of Geography fieldwork for learning. They report that fieldwork is perceived by many Geographers as being at the heart of Geography. Fuller et al. (2006) further explained that "fieldwork enhances students' understanding of geographical features and concepts, and allows students to develop specific as well as general skills" (p. 2).

Sharing the same sentiments with Kent et al. (1997), Welch and Panelli (2003) cited in Fuller et al. (2006) acknowledged changes in the delivery of fieldwork. They explained that fieldwork has been adjusted for important pedagogic reasons and re-orientated towards small-group learning and small-scale problem solving.

2.2.2 Critiques of the fieldwork project approach

Like all educational theories and approaches, the fieldwork project approach has critics and supporters. Highlighting some criticisms of this approach, Holmes and Moorhouse (1991) argue that poorly planned fieldwork will be little more than a free period or a holiday for learners. Furthermore, some parents, teachers and learners may not regard fieldwork/outdoor projects as a part of the learning experience and some struggle to link the classroom theory with the fieldwork practical experience (Holmes & Moorhouse, 1991).

Haras (2010) also notes that the indefinite positive impact of fieldwork projects does little to alleviate fears of risk in terms of learners' safety. For example, teachers know that visiting a dump site is an effective way to develop learners' understanding of the links between waste mismanagement and environmental deterioration. Learners may even change their attitudes and potentially commit to waste recycling through such a site visit. But there are risks involved with such a trip and parents might complain that their children are unsafe (Haras (2010). Teachers similarly are afraid of being accountable for anything mishaps associated with fieldwork (Holmes & Moorhouse, 1991).

In exploring further international perspectives on Geography fieldwork projects, it is important to acknowledge the international survey by Ballantyne (1999) who explored Geography educators' perceptions in teaching Environmental Education concepts in Geography. The survey found that fieldwork was an important and popular method of teaching, with educators encouraging their learners' active involvement in local environmental issues. However, despite these positive perceptions of fieldwork, the survey also found that many teachers felt ill-equipped to support fieldwork, and also cited practical constraints as a major obstacle to using fieldwork as a teaching method (Ballantyne, 1999).

2.2.3 Fieldwork teaching and fieldwork research

It is important to clarify what brought confusion among various stakeholders in both Geography and Environmental Education with regard to fieldwork. Fien, Gerber and Wilson (cited in Holme & Moorhouse, 1991) differentiated between two types of fieldwork, namely: fieldwork teaching and fieldwork researching. In both cases, learners are taken outside, but what matters is *what* and *how* they are doing outside. In fieldwork teaching, a teacher gives a lesson in the field, while fieldwork research adopts a more problem-solving attitude. According to Holmes and Moorhouse (1991) and in line with fieldwork project definition by Beaumont and Wyn Williams (1983), fieldwork research gives learners an opportunity not only to observe, but also to apply and develop certain skills such as social skills, recording and reporting.

In this context, the concept "problem-solving" as presented in the previous section (2.2.1) refers to addressing environmental problems. The following section considers the relationship between Environmental Education and Geography fieldwork projects.

2.3 ENVIRONMENTAL EDUCATION AND ITS LINK TO FIELDWORK IN GEOGRAPHY

The following discussion clarifies what Environmental Education is, why it is important, and how various scholars link Environmental Education with Education for Sustainable Development. Building on that, the section further establishes how environmental learning can be linked to Geography fieldwork projects.

2.3.1 A shift from Environmental Education to Education for Sustainable Development

In the 1960s, Environmental Education was seen as a response to environmental problems caused through industrialization, consumerism and urbanization (Hume & Barry 2015). On the same note, scholars such as Bagoly-Simó (2014) and Dube (2014) find the early definition for Environmental Education as it is more concerned with the protection of the biophysical environment. Dube (2014) explained that Environmental Education has been more focussed on conservation education that excludes the human agent in relation to the economic, social and political components. These illustration summarised that Environmental Education was focusing more on the protection of the natural environment without taking account the needs of human populations. This type of education only began to change in the 1990s with the emergence of more socio-ecological approaches. As outlines by UNESCO (1999), education's role in early 1990s was not only to make people wiser, more knowledgeable and better informed but also more ethical and responsible. The socio-ecological approaches to education involves critical reflective and participatory elements thus go beyond saving the natural environment. On this, Bagoly-Simó (2014) acknowledged the paradigm shift from the sole biophysical environment to the "interconnectedness of the individual natural subsystems of the geosystem" (p. 129).

With this understanding, Dube (2014) explains that a number of events (such as Intergovernmental Conference on Environmental Education in Tbilisi in 1977, the World Commission on Environmental and Development in 1987, and the Rio Earth Summit in 1992) have shaped the field of Environmental Education and led to the gradual shift (at least at the level of international policy discourses) from Environmental Education to Education for Sustainable Development. From 2005 to 2014, the United Nations implemented the international Decade for Sustainable Development (UNDESD) (Reinfried, 2009).

The purpose of the UNDESD as explained by Reinfried (2009) was to help countries to progress in attaining the Millennium Development Goals through education reform and the incorporation of Education for Sustainable Development into mainstream curricula.

Toward the end of the UNDESD in 2014, the United Nations again spearheaded a follow up to the Decade: The Global Action Programme (GAP) (UNESCO, 2014). According to UNESCO (2014):

> The momentum for ESD has never been stronger. Global issues – such as climate change – urgently require a shift in our lifestyles and a transformation of the way we think and act. To achieve this change, we need new skills, values and attitudes that lead to more sustainable societies.

Based on this, there had been a strong and enduring support for the idea of schools playing a critical role in advocating for sustainability practices through school subjects (UNESCO 1992; 1995; 2014).

2.3.2 Environmental Education as a part of Geography Education in Namibia

The previous section has outlined key developments in the field of Environmental Education and more recently Education for Sustainable Development in the past four decades. These provided an international backdrop to Namibia's broad education reform agenda since the country gained its political freedom in 1990 (Ministry of Education, 1993; Ministry of Education, Arts and Culture, 2015). The Ministry of Education, Arts and Culture clarify the aims of the ongoing curriculum reform as follows:

> The aims of the curriculum in relation to developing an environmentally sustainable society are to provide the scientific knowledge and skills, and attitudes and values needed to ensure that the environment is respected and sustained and to develop the

> ability to make environmentally wise choices in terms of family development, as well as in economic activities (MoEAC, 2015, p. 11).

The ongoing reform in Namibia's education system is a response to the pressing need to define relevant objectives and learning contents, introducing pedagogies that empower learners and include sustainable principles (UNESCO, 2014). In line with this agenda, Namibia identifies competencies of environmental learning that can be integrated in various subjects in schools. According to the Curriculum Guide for Environmental Education (MoE, 2005) these competencies are: learning with understanding, skills, values and attitudes. The Ministry of Education maintains that good environmental learning will integrate competencies from all these domains into different subject areas (MoE, 2005).

It is on this understanding that these environmental competencies are integrated in Geography as a subject. In support of this idea, Van der Schee (2012) argues that Geography is a major contributor to the Environmental Education. As previously discussed in sections 1.2 and 2.2.1, according to Van der Schee (2012), "Geography is concerned with human-environment interactions in the context of specific places…with issues that have a strong geographical dimension" (p. 12). This emphasis on human-nature interactions supports the idea of Geography being concerned with the interconnectedness of the bio-geo-physical and human social dimensions (Bagoly-Simó, 2014; Dube, 2014), or taking a 'social-ecological view' as is done in this study. Such an approach to Geography education requires teachers and learners to weigh various sides of an environmental issue through critical thinking skills and enhances their own problem-solving and decision-making skills (MoE, 2005 & 2006).

2.3.3 Linking Geography fieldwork project and environmental learning

Active participation of learners is recognised in a number of education Ministerial directives and policies (MoE, 2005, MoE, 2006, MoE, 2007 & MoE, 2009) and research (Van Harmelen, 2005; Awases, 2015). Teachers are encouraged to develop learning programmes that are particularly designed to prepare for their learners to take ownership of learning (MoE, 2006). Among others, an enquiry-based teaching and learning method is viewed as an appropriate one. In her Master's thesis, Awases (2015) explained enquiry-based teaching as question-driven that involves active and learner-centred pedagogies:

"It involves learning activities both in and outside the classroom in which learners acquire knowledge and skills for their present and ongoing independent learning" (Awases, 2015, p. 20).

Such pedagogy supports and recognises the value of learning in a variety social settings, with the emphasis on investigations in the local area (MoE, 2006).

Equally, Van Harmelen (2005) emphasises that field-based teaching creates opportunities for learning is not simply *about* the environment but also *in* and *for* the environment. In clarifying this point, Dube (2014) explains that teaching *about* environment mainly focuses on teaching environmental knowledge of environmental issues and limited to skills. Environmental learning *in* the environment, however, encompasses outdoor education programmes, while learning *for* the environment focuses on improving the environment.

The emphasis here is that children are actually experiencing a real world situation rather than just reading or hearing about it. In addition to this, Du Toit and Sguazzin (1995) argue that fieldwork activities cultivate learners' awareness, knowledge, appreciation and concern for the natural environment and effect of people's action upon it. These two clarifications of fieldwork are in support of the contribution by Van Harmelen (2005) about environmental learning that knowing is not enough, because the question is what is going to happen with what is known?

Having defined fieldwork, it is also equally vital to look at the basic characteristics of project work in Geography. The Geography Assessment Guidelines document (MoE, 2007) explains that project work involves identifying a problem, formulating hypothesis, collecting, analysing and presentating data. Throughout these processes, teachers are involved in an advisory rather than authoritarian role at any of the stages (MoE, 2006; 2007). This corresponds with Van Harmelen's (2005) explanation of environmentally literate learners who should be able to apply their knowledge to environmental issues and problems by making their own informed decisions.

Furthermore, in differentiating project work from other teaching approaches, Van Harmelen (2005) explains that the project method is a form of inquiry or discovery learning, and is associated with a problem-solving approach, which is in contrast to expository methods whereby concepts and facts are described by a teacher. In taking enquiry further, Van

Harmelen (2005) explains enquiry as to find out and to ask. An environmental learning processes as described by Van Harmelen based on inquiry and problem-solving.

Another link between project work and environmental learning is established through the explanation of the importance of investigations to environmental learning by Du Toit and Sguazzin (1995). They argue that investigations put learners in touch with their local social and biological environments which are important factors to consider what people know about the environment that supports their existence (ibid.).

Furthermore, by connecting environmental learning with the explanation of fieldwork project, Van Harmelen (2005) explains that through environmental learning, learners are given the conceptual understanding and skills to enable them to play an active role in making their place better by working towards resolving the problems and issues in their environment. "Environmental Learning as conceptual development gives a focus to the learning of those concepts that help learners to make sense of their world" (Van Harmelen, 2005, p. 12). The concepts of environmental learning are concerned with understanding the political, social and economic systems that operate in the learners' world and these systems are inter-related and dependent on the biophysical world (ibid.).

In addition, environmental learning recognises the need for investigative approaches to have meaning for learners and thus the focus on the learners' local environment as the place in which to locate many enquiries (ibid.).

This is an opportunity to create a community of practice. Cited in Van Harmelen (2005), Van Harmelen and Wilmot expressed that "results (*fieldwork results*) have been presented by learners…to the school, at parent evenings and most successful, of all to the people who participated or helped us in our enquiries" (p.21). This attracts interest of parents, community members and raises awareness of the quality and variety of work being done at school (ibid.).

In this section an attempt has been made to provide some background of Environmental Education and its link to fieldwork project. In the following section, the concept of action competence is introduced and discussed in a more detail.

2. 4 ACTION COMPETENCE AS AN APPROACH TO ENVIRONMENTAL EDUCATION

The concept of "action" is mentioned in the previous section without clear definition or theoretical orientation. This section now explores the concept of "action" within the action

competence approach, with due consideration of its relevance to Environmental Education, Geography Education and Geography fieldwork projects in particular.

2.4.1 Origin of Action Competence

Jensen (2002) defines action competence as a process through which students identify environmental issues, determine solutions and take actions in the ways that develop their competence for future action to solve or avoid environmental problems. In exploring the origin of action competence, it is vital firstly to indicate what necessitated people to develop this educational approach. The growing concern for the state of environmental issues in the world pressurised global educational stakeholders to rethink and develop alternative approaches and redirect educational efforts to change the current situation (Barrett, 2006). As Barrett (2006, p.1) explains:

> …a recent United Nations' report claims that nearly two-thirds of the Earth's natural systems are unhealthy or failing, and many point to education, environmental education, education for sustainable development, or sustainability in education as a key means of addressing these issues [sic].

In some parts of the world, this call for redirecting educational efforts received attention as far back as the early 1990s. In response to this call, the notion of action competence was first posed in the 1990s by researchers in the Royal Danish School of Education Studies (Jensen & Schnack, 1997; Jensen, 2002 & 2004). Breiting and Morgensen (1999) explain that European countries, particularly German and Nordic countries, championed the redirection of the pedagogical approach to Environmental Education and this is where the concept of action competence originated.

According to the Danish research collaborators Jensen (1997 & 2004), Breiting and Mogensen (1999), and Jensen and Schnack (2006), the action competence concept has formed the basis for the Danish philosophical ideology of approaching environmental and health education within a liberal democratic framework. Jensen (1997) himself put it that action competence developed out of the belief and tradition of democratic education that involves the development of learners' abilities to act at personal and societal levels.

If learners are required in their lifetimes to contribute to the solution of contemporary environmental and health problems, Jensen (1997) contends that they should have the

necessary competences to identify personal and structural causes behind environmental and health problems and develop their own possibilities to influence the conditions around them.

Jensen and Schnack (1997) are, however, very clear that the role of schooling is not to solve the world's environmental problems but to provide educational processes that develop children's action competence as future citizens:

> … it is not and cannot be the task of the school to solve the political problems of society. Its task is not to improve the world with the help of the pupils' activities. These activities must be evaluated on the basis of their educational value and thus according to educational criteria. A school does not become 'green' by conserving energy, collecting batteries or sorting waste. The crucial factor must be what the students learn from participating in such activities, or from deciding something else. (p. 165)

Over and above its origins in critical theory and Danish liberal democracy, action competence has its philosophical roots in the German educational notion of '*Bildung*'. According to Morgensen and Schnack (2010, p. 61), *Bildung* "has as its aim the fulfilment of humanity: full development of the capacities and powers of each human individual to question preconceived opinions, prejudices, and 'given facts', and intentioned participation in the shaping of one's own and joint living conditions". This orientation lays the philosophical foundation for a particular conceptualisation of "action" in action competence, which is the focus of the following section.

2.4.2 The meaning of "action" in Action Competence

In clarifying the concept "action", Jensen and Schnack (1997) argue that education is not about simple behaviour modification without understanding, but is about creating a democratic process of participation in which students decide for themselves the action they will take. The point of departure here is that students are made aware of the greater problem their action is helping to solve (ibid.). In the following section, the attempt has been made to provide clarity on the meaning of "action" within action competence. The intention of this section is not only to explore the link between environmental actions, experience and activities but also to understand the extent to which schools can influence learners' behaviour to act for the environment.

2.4.2.1 Intentional action

Within the action competence approach, the concept of "action" is characterised by being conscious or purposive (Bishop & Scott, 1998). This means action must be intentional, considered and targeted.

Like Jensen and Schnack (1997), Bishop and Scott (1998) also maintain that actions need to be considered in terms of motives and reasons rather than with reference to mechanism and causes (ibid.). Equally, action competence is not necessarily a physical activity, but an intention in the actor(s) who set out to achieve something (Jensen & Schnack, 1997).

2.4.2.2 Action and experience

The notion of action competence complements experiential learning interventions which predominated in early Environmental Education approaches. O'Donoghue and Lotz-Sisitka (2006) explain that early experiential learning interventions were planned on the assumption that children were learning simply because they were involved in action. Figure 2.1 illustrates the close relationship between dialogue, (experiential) encounters and reflection. Jensen and Schnack (1997) concurs that experiences and actions are closely linked. They explain that: "while knowledge can be transferred to a person without it being possible to say that the person acts in relation to this knowledge... it is the case that one has had to act on the experience one acquires" (p. 166). They elaborate that this is what Dewey (1938) (cited in Jensen and Schnack, 1997), calls the "continuity of experience". This implies that in order for education to be progressive, there has to be an experiential component to the lesson and by focusing only on content inside the classroom, the teacher eliminates the opportunity for students to develop their own opinions of concepts based on interaction with the information (ibid.).

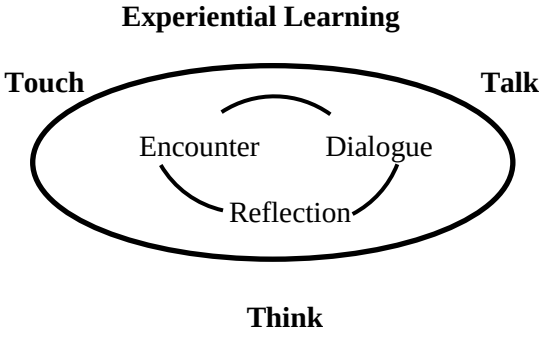

Fig. 2.1 The Experiential Learning Model

[Source: O'Donoghue & Lotz-Sisitka (2006)]

Although Jensen and Schnack (1997) have proposed that the goal of the act might not be identical with the content of the experience, they maintained that experiences and actions are closely linked by pinpointing that "without action competence, one cannot become rich in experiences, which in their turn can help to qualify action competence" (p. 167).

2.4.2.3 Action, Behaviour and Activity

Another crucial position is Jensen and Schnack's (1997) differentiation between actions, activities and behaviour change. In most cases, schools incorporate practical activities that are mostly meant to enrich teaching and motivate learning. These activities are in many contexts described as "action-oriented", however, Jensen and Schnack (1997) maintain that such activities "… are obviously valuable and productive to the extent that they help motivation and the acquisition of knowledge but, in order to be characterised as actions, they must be addressed to solutions of the problem which is being studied" (p. 168).

Equally, Breiting and Mogensen (1999) explain that an action is not a process of influencing students in a predetermined direction. Thus, for example, if a class is asked to clean the school yard, it could not be characterised as action because it is not an intentional action but just an activity that leads to the immediate (but possibly short-term) disappearance of rubbish. Activity only addresses the symptoms but does not produce action that actually resolves an environmental problem (Breiting & Mogensen, 1999; Jensen & Schnack, 1997)

Figure 2.2 summarises what Jensen and Schnack (1997, p. 169) refer to as criteria for action. The horizontal plane concerns the boundary between behaviour and action, whether learners have decided themselves to take action or it has been predetermined by the school. The vertical plane concerns the difference between activity and action, focusing on whether what is done is addressing the actual causes of the problem or not.

This schematic indicates that action occurs only when students decide willingly to act by finding the root causes of an environmental issue in their area.

	Students pushed to do something	Students involved in deciding what to do
Activity solely as counterweight to academic tuition		
Activity targeted at solving the problem		ACTION

Fig 2.2: Criteria for an action (Jensen & Schnack, 1997)

2.4.2.4 Social and Scientific action

For a better and deeper understanding of the action dimension of action competence, Jensen (2004) differentiates between various types of actions. Two types of investigations can be regarded as environmental action, namely: collecting scientific and technical data, and collecting opinion in a social context. According to Jensen (2004), to test the content of oxygen in water is a scientific investigative action while interviewing community members about their opinions on a potential environmental hazard is a social investigative action. Both are actions, but what qualifies them to be described as environmental actions is whether these actions are geared toward solving specific environmental issues/problems (Jensen, 2004).

Bishop and Scott (1998) support the idea that it is appropriate for learners to experience actions of all kinds. Their point is that both scientific and social investigative actions need to supplement each other for effective environmental action. They further explain that actions which survey people's opinions about transport policy may be geared to influence social policy at a political level, but motives for doing so are still likely to be grounded in scientific evidence related to increased atmosphere pollution and airborne diseases.

2.4.2.5 Direct and Indirect actions

Finally, Jensen and Schnack (1997) and Jensen (2004) differentiate between direct and indirect environmental actions.

They explain that actions which involve people-to-people relations are regarded as indirect action while actions which involve people intervening in and for their physical environment are considered to be direct actions. In a more detailed explanation, Jensen and Schnack

(1997) argue that direct action contributes directly to solving the environmental problem in question, while indirect action seeks to influence other people to contribute to solving the environmental problem in question. Jensen and Schnack (1997) give the following practical examples of direct and indirect actions:

> … sorting of garbage, construction of compost heaps, economising on water and energy consumption, etc. Examples of indirect environmental actions are the preparation and distribution of a newspaper concerning the environment, letters to politicians and companies, organising debate evenings on environmental conditions, editorials to the local paper, etc. (p. 171)

In the next section, the meaning of competence within action competence was established.

2.4.3 The meaning of "Competence" in Action competence

Morgensen and Schnack (2010) reflect that when the educational ideal of action competence was first developed, the notion of 'competence' was used to foreground the importance of "enlightened and qualified action" (p. 63). Subsequently, competency-based frameworks have become dominant in education, including in Education for Sustainable Development, and they are careful to distance the use of 'competence' in action competence from more technicity (human resource management) approaches that seek to measure people's knowledge and skills in order to get a qualification. They suggest that: "… qualifying students' competence to take action is thus basically a matter of organising learning situations which make it possible for students to transform themselves into critical, democratic and political human beings" (Morgensen & Schnack, 2010, p. 64). This is in line with Jensen and Schnack's (1997) earlier explanation that competence is associated with being able, and willing, to be a qualified participant. As described in the previous section, what is referred to as "action competence" differs from other actions because it is characterised by the fact that they are done *consciously* (Jensen & Schnack, 1997).

Silo (2011) elaborated on this understanding of action competence in her study of primary school learners' participation in waste management in Botswana. She summarises action competence as conscious action by an individual / group seeking to solve a problem. This requires deliberate, conscious desire and purpose on the part of the learners involved.

The key concept here is that there should be volunteerism in participation for it to be regarded as intentional action.

In summary, the educational ideal of action competence rests on an interdisciplinary approach that develops learners' abilities to envision a future they want, and reflect on and respond to current health and environmental concerns. Furthermore, for an environmental intervention to be defined as an action as opposed to an activity, it must address a cause rather than just an effect or symptom of that cause. (Bishop and Scott, 1998, drawing on Jensen and Schnack, 1997). At the core of this study is a concern for how this interdisciplinary approach can go beyond the level of effects to include causes and actions Jensen (2004). The next section sheds some light on these ideas by focusing on the IVAC model for developing action competence.

2.4.4 Investigation, Vision, Action and Changes model for developing action competence (IVAC)

This section explains a diagnostic framework that was suggested by Jensen (2004) as a way of developing action competence in learners. Ferreira and Weish, 1997, cited in Simasiku, (2012) explain that the IVAC model offers learners opportunities to define a local health or environmental problem of significance to them, to acquire knowledge about the problem, to envision possible solutions and, based on these, to take some actions to address the problem. The IVAC model provides tools for analysing participation levels that can be used to generate action competence, although, as noted by Silo (2011), school curricular responsibilities do not easily fit into the IVAC model. Table 2.1 (Jensen, 2004) summarises the IVAC approach, and the sub-sections that follow briefly explain each stage.

Table 2.1: The IVAC approach (investigations, visions, actions and changes):

Source: Jensen (2004)

Steps	Guiding sub-steps
Investigation of a theme	○ Why is this important to us? ○ What is its significance to you/others? ○ What influence do lifestyle and living condition have? ○ What influences are we exposed to and why? ○ How were things before and why have they changed?
Development of visions	○ What alternatives are imaginable? ○ How are the conditions in other schools, countries, and cultures? ○ What alternatives do we prefer and why?
Action and Change	○ What changes will bring us closer to the vision? ○ What action possibilities exist for realizing these changes? ○ What barriers might prevent the understanding of these changes ○ What barriers might prevent actions from resulting in changes? ○ What action we initiate? ○ How will we evaluate those actions?

2.4.4.1 Investigation:

Jensen (2004) explains investigation as a way of obtaining knowledge about the existence and spread of the selected environmental problem. This knowledge awakens concern and attention and creates a starting point for a willingness to act. In earlier work, Jensen (2002) refers to this investigative stage as being based on a scientific approach that contributes to scientific knowledge of the problem. Here, a scientific approach includes attending to social factors that influence people's behaviour (Jensen, 2002). Investigation should also develop an understanding of why the problem exists, that is, develop knowledge about its root causes.

Jensen (2002) emphasises that knowledge does not necessarily lead to environmental action, but should be acknowledged as one among many important preconditions for the development of competence leading to action. Knowledge taught in schools is generally not action-oriented, and learners may have limited possibilities to actively appropriate and internalise that knowledge.

2.4.4.2 Vision:

In this component, the departure point is to develop a vision and alternatives to the problem and its causes. Jensen (2004) argued that such visioning includes coming to know how people go about things in other cultures, or in other places near or far.

This also means developing a dream or ideas for the future in relation to one's own life, work, family and society. Jensen (2004) maintains that if learners have a vision about where and how they plan to live, it will help them to identify what needs to be changed to achieve this vision.

2.4.4.3 Action and Change:

This component deals with what needs to be done to bring about change. As Jensen (2004) explains, this is knowledge about both how to control one's own life and how to contribute to changing living conditions in the society. This component embraces both direct and indirect possibilities for action, foregrounding questions like how do we change the surrounding social structures? Who to turn to? Whom do we ally with? How to encourage cooperation? How to analyse power relations? Jensen (2002).

Having deliberated the origin and meaning of action competence in the broadest sense, this chapter now focuses on the Namibian educational setting in which the notion of action competence is applied in this study.

2.5 EDUCATION REFORM: NAMIBIAN PERSPECTIVES

This section highlights Namibian educational reforms with an emphasis on Environmental and Geography Education in general. Firstly, the section provides a background to Environmental Education in Namibia and the type of knowledge it is advocating. Thereafter, the section presents the Geography Curriculum content, including a description of the fieldwork project as an assessment task, and how teaching and learning can be organised with regard to learner-centred education.

2.5.1 Environmental Education in Namibia

Following Namibia's political independence in 1990, the country's education system went through various transformations to remove all barriers that were delaying sustainable development for all citizens (MoE, 2009). One of the many crucial decisions taken was the strategy to make environmental learning a cross-curricular topic in schools.

According to the Environmental Learning Curriculum Guidelines for Educators (MoE, 2005), environmental issues cut across traditional subject boundaries and, in order to understand them, these links need to be identified and used in planning themes for teaching and learning. Key role-players in Environmental Education realized that environmental issues and challenges are not only biophysical, but are also related to social, economic and political factors (MoE, 2005).

These insights were strengthened in the Environmental Education sector in Namibia by the work of Janse van Rensburg and O'Donoghue (1995) who explain that Environmental Education involves the bio-physical, economic, political, and socio-cultural dimensions of life.

Having taken up this way of thinking about environmental concerns, the Ministry of Education (MoE, 2005) explained how, if one dimension of the environment is affected, many other dimensions may also be affected. The biophysical dimension is the foundation of the social, political and economic dimensions and so, if affected, will have an effect on the other dimensions too. This understanding of environmental issues led the Ministry of Education to prioritise the integration of environmental learning across the curriculum in the formal education system and to link together ideas found in many different subject areas (MoE, 2005).

The Namibian National Curriculum for Basic Education assumed that upon completion of the Junior Secondary phase, learners should know how to act effectively and responsibly in a democratic society, and for the environment (MoE, 2009). The concept of gaining knowledge to act for the environment resonates with the contributions of various environmental education scholars at the time such as Morgensen (1997); Tilbury and Williams (1997); and Barrett (2006). They argue that it is not enough for learners to possess a body of knowledge; they also need to know what to do with it and how it enables them to be active participants in society. Barrett (2006) urges that it is not enough for students to be "armchair critics" (p. 1); they need to get their hands dirty and learn how to take action. On the same note, Morgensen (1997) argues that if environmental issues are to be solved in the long run, then teaching must emphasise intervention attempts and actions that explore solutions to local environmental issues.

It is on these abovementioned principles that Namibian environmental education came to emphasise environmental learning activities that (among other goals) encourage participatory learning, critical thinking, the development of problem-solving skills and offer direct experience (MoE, 2005).

2.5.2 Not just *about,* but also *in* and *for* environment

Namibian environmental learning aims at creating an environmentally literate and responsible citizen (MoE, 2005), but the question that schools need to answer is which competencies are relevant and how are they acquired? One way of answering this is to identify the knowledge, skills and values that will enable learners to respond to environmental issues (ibid). To this end, the Environmental Learning Curriculum Guidelines for Namibian educators (MoE, 2005) drew on the work of Australian educator, John Fien (1993) who suggests three approaches to environmental learning: Learning ABOUT, IN / THROUGH or FOR environment (ibid.).

As described in the Environmental Learning Curriculum Guidelines for Namibian educators (MoE, 2005), learning ABOUT the environment involves developing a sound base of knowledge with understanding so that learners can make sense of environmental issues. Furthermore, the curriculum gave a historical view by stating that before the reform, environmental learning in Namibia focused mostly on learning ABOUT the environment, occasionally providing opportunities for learning IN / THROUGH the environment, but encouraging very few action opportunities FOR the environment (MoE, 2005).

To take this discussion further, learning IN / THROUGH the environment provides experiences and skills required to become active and take appropriate action to address environmental issues (MoE, 2005). This can be in the school grounds, a local area or further on an extended field trip. Learning FOR the environment involves developing informed concerns about and encouraging sensitive use of the environment, now and in the future (ibid.).

Furthermore, one can draw attention (for comparison sake) to Jensen's (2002) account of two landscapes of knowledge for environmental education, namely traditional environmental education and action-oriented environmental education. According to Jensen (2002), traditional environmental education can be compared to learning ABOUT the environment in the Namibian context. The approach is scientific and investigates mostly the effect and seriousness of the selected environmental problem. In later work, Jensen (2004) explains that although knowledge about the existence of environmental problems awakens concerns and attention – which is an important starting point for willingness to act – it provides no explanation for why we have the problem, and no insight into how can we contribute to solving it.

In contrast, action-oriented environmental education includes causal analyses of environmental issues and ways of producing change within environmental education (Jensen, 2002). This explanation corresponds with Fien's (1993) account of learning in / through and for the environment.

It is from this background that the Namibian Curriculum recommends an action-oriented approach to environmental education that explores the causes of sustainability issues and concerns, including social factors behind environmental issues. Such knowledge belongs mainly to the sociological, cultural and economic areas (MoE, 2005). This means issues and problems are to be analysed from biological / ecological, sociological, cultural and historical perspectives to understand their root causes.

Equally, action-oriented environmental education aims at changing the *status quo* toward a desired future. This reflects Jensen's (2004) argument that we must deal with knowledge about both how to control one's own life and how to contribute to changing living conditions in society. Some of the central questions to an action-oriented approach to environmental education include how we change structures in our schools or society.

2.5.3 Namibia Geography curriculum for Junior Secondary level

The National Curriculum for Basic Education (MoE, 2009) categorises Geography as a subject of the Social Sciences. The Social Sciences learning area begins at lower grades than secondary level. According to the Ministry of Education (MoE, 2009, p. 13), "The Social Sciences learning area comprises of Environmental Learning (Pre-Primary); Environmental Studies (Grades 1-4); Social Studies (Grades 5-7); Religious and Moral Education (Pre-Primary and Grades 1-10); Life Skills (Grades 5-12); Geography (Grades 8-12); History (Grades 8-12) and Development Studies (Grades 11-12)". This ministerial document further describes the Social Science field of study as follows:

> The Social Sciences learning area is a key learning area for understanding the development of society, the mechanisms of globalisation, the importance of human rights and democracy, and environmental issues. It focuses on the development of personal values as a responsible and productive citizen. Understanding for and tolerance of diversity, e.g. religious beliefs, is developed through an inter-faith approach. Learners explore and come to understand interactions in social, cultural, economic, civic and political spheres, and the relationships between people and their environments (MoE, 2009, p. 13).

Based on the abovementioned background, the Curriculum Guidelines for Educators (MoE, 2005) identify Geography as one of the essential subjects carrying environmental content.

In explaining how Geography content and methodology have a great deal to share with Environmental Education, Tilbury and Williams (1997, p. 7) argue that: "Geography, which studies the interactions between humans and the physical environment, contributes to an understanding of the processes affecting the environment and encourages an interest in its management and protection".

Exploring further the aims of Geography, Namibia Geography syllabus for Junior Secondary explains that, among other aims, Geography seeks to lead learners to an awareness of their immediate and wider environment, and to an understanding of people's interaction with their environment. The syllabus for Junior Secondary phase learning content makes it one of the

key phases which is rich with environmental content. Table 2.2 summarises this learning content for junior secondary level with the emphasis on grade 10 only.

Table 2.2: Learning content for Geography Junior Secondary, Grade 10

Theme	**Topics**
Map work	Graphs, Interpretation of human and physical features on maps. Location (degrees, minutes, seconds), Distance and scale, Photographs Contours, Cross-section , Interpolation of isolines
Climatology	Weather instruments and data (graphs) Climatic maps Air pressure systems and movements Local winds Synoptic weather maps
Ecology	*Deterioration of Namibian environment: causes of deforestation, desertification and bush encroachment Land, water and atmospheric pollution Population growth and resources Possible solution*
Geomorphology	Internal forces: Plate tectonics, fold mountains, Earthquakes and volcanism External forces: Weathering Erosion
Population geography	*Population density and distribution Population dynamics: age-sex structure, growth, migration benefits and challenges of population change Strategies to reduce the impact of HIV and AIDS*
Regional geography	Namibia: Physical features: physiological regions, and SADC drainage, vegetation, climate Economic activities: agriculture, fishing, mining, transport, tourism Factors influencing economic growth Regional position: SACU

(MOE, Geography Syllabus, 2006)

Among six chapters in the syllabus, the Ecology and Population chapters directly cover topics on environmental issues. Under Ecology, learners investigate issues that can lead to deterioration of Namibia's environment (MoE, 2006). The Geography syllabus's prescribed learning support material, *Discovering Geography* by Van Rensburg (2008), explains that Ecology tries to understand how humans and other influences are damaging the Namibian environment, habitats for human and a large number of other forms of life.

Furthermore, the learning support material explains that population geography presented ecological issues such as overpopulation, population movements and impact of HIV and AIDS.

On the approach for teaching and learning, the Geography syllabus recommends that teachers make use of local examples so that learning is relevant to learners' lives. "Local case studies expose learners to examples of real life problems and help learners to examine and analyse real life situations" (MoE 2006, p. 4). This idea of the value in focusing on local issues (in the Geography syllabus) is well-articulated by Jensen and Schnack (1997); Mogensen (1997)

& Jensen (2004). For example, Mogensen (1997) argues that investigation strengthens the relevance and coherence of learning and teaching because it provides authentic attachment to the real world outside the classroom.

On the same note, Jensen (2004) argues that for environmental issues and problems to be addressed, there must be a provided scope for local solutions. These clarifications from an action competence perspective suggest that Geography topics are best taught if learners get out of traditional classrooms and link up with local environment.

The fact that the prescribed textbook provides case studies and investigations on local issues, suggests that the Namibian Geography Curriculum is indeed not confined to the classroom. This is a positive contribution to environmental education for, if teachers continue to concentrate only on theory in the classroom, the overall aim of education to change people's attitudes toward a desired environment is unlikely to be realised (Holmes & Moorhouse, 1991).

2.5.4 Geography fieldwork project as an assessment task

The fieldwork project approach in Namibian Junior Secondary Geography came about with the same historical background of what some scholars refer to as a "new Geography into school syllabuses". According to Beaumont and Wyn Williams (1983), the new Geography refers to changes in both structure and content of Geography with a greater emphasis placed on higher-order skills such as analysis, synthesis and evaluation. Through this new Geography, Beaumont and Wyn Williams (1983) introduce the concept of "project work" as a method of inquiry and evaluation. Furthermore, "the new Geography" syllabus is believed to be organised around concepts, principles and theories that require methods of assessment which enable students to be assessed in terms of a range of higher-order skills and abilities (ibid).

It is on these same principles that Geography project work is counted as one of the formal assessment activities in Geography Junior Secondary level in Namibia. According to the assessment section, formal assessment for Geography "requires practical exercises, projects, topic tests and end of year examination, in order to give an overall picture of the learner's knowledge and skills" (MoE 2009, p. 113).

A project is defined as "a longer assignment which gives learners an opportunity to complete an investigation on a geographical topic outlined in the syllabus in greater depth" (MoE,

2009, p. 113). This Ministerial policy document further explains that learners' projects can be done in groups or individually, both in or outside the classroom (ibid.).

Project work does not intend to replace other forms of learner evaluation but rather complements traditional components such as tests and examinations (ibid.).

Learners are expected to formulate aims, collect data, analyse, interpret and present data (ibid.). The project is done in the order presented in Table 2.3.

Table 2.3: **Stages within a project cycle (**MoE, 2005)

Project Stage	**Inquiry-based requirement**
1	Identify the issue
2	Investigate the topic
3	Analyse and present information
4	Find possible solutions and possible actions

The role of the teacher in project work should be to monitor and guide learners throughout the process (ibid.). Other crucial requirements for project work is that one of the projects should be based on fieldwork (primary data), while other projects can be based on secondary sources (ibid.). In clarifying the concept fieldwork in the context of project work, Van Harmelen (2005) explains that fieldwork is not a teacher-tell approach, but rather learners are able to practise their own enquiry skills.

The Environmental Learning Curriculum Guidelines for Educators (MoE, 2005) similarly support an enquiry-based approach. The guidelines state that enquiry-based learning provides an open learning framework that encourages learner choices, negotiation, reflection on the learning and teaching process, emphasis on critical thinking and active real-life learning.

This document further explains that because it is based on problem solving, it encourages learners to research their own questions, present and analyse data. The most important aspect of enquiry-based learning is that it identifies possible solutions that learners or other people may be able to implement.

2.5.5 Learner-Centred approach

When the new educational policy for independent Namibia was formulated after March 1990, Learner-Centred Education was chosen as a basis for the reform. According to the policy

statement *Towards Education for All* (MoE, 1993), Learner-Centred Education is an approach to teaching and learning that comes directly from the national goals of equity (fairness) and democracy (participation).

Taking this discussion further, the Ministry of Basic Education and Culture (MBEC, 1999), explained that it is an approach that means teachers put the needs of the learner at the centre of what they do in the classroom, rather than the learner being made to fit whatever needs the teacher has decided upon. This means that activities which put the learner at the centre of teaching and learning must begin by using or finding out the learners' existing knowledge, skills and understanding of the topic (ibid.). The teacher is responsible for developing different activities to find out what the learners already know about the topic. Then teachers develop more activities that build on and extend the learners' knowledge (ibid.).

Having defined the Learner-Centred Approach, it is necessary to interpret it in relation to the Geography curriculum. To ensure optimal quality of learning, the Geography syllabus (MoE, 2006, p. 7) states that "teaching and learning is based on a paradigm of Learner-Centred Education described in the Ministry's policy documents, curriculum guides, and the conceptual framework". The aim of the Geography syllabus is to develop learning with understanding, the skills and attitudes to contribute to the development of society (ibid).

Equally, in relation to Geography's learning objectives and competencies, teachers are advised to look at the best ways to achieve these objectives and competencies. As stated in the syllabus, teachers must look at:

> When it is best to convey content directly; when it is best to let learners discover or explore information for themselves; when they need directed learning; when they need reinforcement or enrichment learning; when there is a particular progression of skills or information that needs to be followed; or when learners can be allowed to find their own way through a topic or area of content (MoE, 2006, p. 7).

It is on this basis and the syllabus requirements (MoE, 2006) that the project work in geography is introduced as an assessment task in which learners carry out investigations on a Geographical topic. In the assessment of this project work, "learners will be expected to formulate aims, collect data, analyse, interpret and present data on any geographical topics" (MoE, 2009, p. 113).

To clarify the link between Geography fieldwork project and the main indicators of Learner-Centred Education as stipulated in the Ministerial guides (MBEC, 1999) & MoE, 2006; 2009), the following links were established:

Firstly, Wyn Williams and Beaumont (1983) argue that, "As a form of discovery learning, project work is characterised by activity rather than passivity" (p. 6). On this note, during the project work learners are actively involved.

This means exactly what it says, getting learners to do things (MBEC, 1999). In this case learners are not passive recipients of the content, but equal participants (MoE, 2006, 2009). To further clarify the guidelines for teachers, the Ministry of Basic Education (MBEC, 1999) further explains that learners do not always need to be conducting experiments, presenting topics or giving reports, but Learner-Centred Education encourages any forms of interactions between all the class members including the teacher.

Secondly, Learner-Centred Education as stipulated in the Ministerial document (MBEC, 1999) emphasises problem-solving. This is an essential skill in life: an ability to understand the nature of a problem and then solve it (ibid.). This can only be learned through practice, and since Geography fieldwork project is a practical activity outside the classroom, Beaumont and Wyn Williams (1983) write that "being involved with the world outside the classroom, the student has a greater opportunity to develop an understanding of real problems" (p. 7).

Relevance of the learning experience is equally important (MBEC, 1999). In the modern world, it is important for learners to understand the relevance of what they are learning and how they can apply it to the real world (ibid.). This is in line with what Van Harmelen (2005) refers to as conceptual development, which she argues is the intention of both Environmental Learning and Learner-Centred Education. She explained: "conceptual development is based on knowing about, why, what if, how and how to" (Van Harmelen, 2005, p. 11).

On this point, the Ministerial guidelines explained that knowing the facts serve little purpose if the learner doesn't understand the concepts underlying those facts (MBEC, 1999). Equally, this is compared to the fact that a person who knows all the scientific names of every tree that grows in her/his areas is not necessarily environmentally aware (ibid.). Teaching concepts enables learners to understand the world around them, how it functions and enables them to apply their knowledge in a meaningful way (Van Harmelen, 2005).

Lastly, during the Geography project work, students are encouraged to make their own choice of the topic of study (MBEC, 1999). In searching for what this might mean for learning, Wyn Williams and Beaumont (1983) argued that making own choices of the topic encourage a sense of commitment and personal responsibility for the task. These arrangements concur with the Learner-Centred Education approach as explained in the Ministerial document (MBEC, 1999), that learners are given opportunities to make choices and alternatives so that they can be more in control of what they are learning.

This section has explained some important components in the Namibian educational reform that came about after Independence in 1990. These discussions foregrounded how best to align these educational developments with the action competence approach discussed in 2.4. Although some linkages were already made throughout the previous sections, the following passages highlight this comparison in detail.

2.6 LINKING GEOGRAPHY FIELDWORK PROJECT AND ACTION COMPETENCE

The following section identifies and outlines the relationship between the Danish perspectives of action competence elaborated in 2.4 and the Namibia context in 2.5, with the focus on the Geography fieldwork project.

2.6.1 Common historical background

One of the common similarities of both fieldwork and action competence is that they share same philosophical ideas in their origins. One of the main ideas is that in both contexts (Namibian and Danish) Environmental Learning is taken as a cross-curricular theme (NEEN, 2013 & Jensen, 2004), but it was established that there is still a need for education that can go beyond effect-level and deal with root causes of environmental issues (ibid.). As per the Danish perspective, Jensen and Schnack (1997) and Barrett (2006) indicate that there is a growing criticism of schools' prioritisation of the academic dimension at the expense of the more practical.

Equally, pressure is observed in Namibia, where schools were challenged to bring education that can shift from just knowing to practical ability. As the Ministry of Education explains: "Knowing about the environment is insufficient on its own in preventing environmental problems. It needs to be linked to the development of environmental ethics and values that promote commitment and action to improve livelihoods" (MoE, 2005, p. 5). In this vein, Simalumba (2011) supports this view

and acknowledges that although environmental issues relevant to Namibia are integrated in the school curriculum, little is known about how educators are promoting action-oriented activities.

2.6.2 Learners as active participants

In line with the Namibian goal described in *Toward Education for All* (MoE, 1993), schools are encouraged to promote active participation of all and it is on the same principles that project work was established in the curriculum to promote active learning. Jensen and Schnack (1997) have similarly highlighted the importance of participation in a democratic society. They argue that in a democratic society, members are not spectators but participants.

As potential participants, they will decide when and in what way they will become involved. Geography fieldwork projects are designed with this same logic as teachers are expected only to guide learners in their selection of topics, whereas the final choices (which promote democracy) remain with the learners.

2.6.3 Targeting root causes of environmental issues

The basic definition of the Geography fieldwork project is that learners are given an opportunity to complete an investigation on a geographical topic in a greater depth (MoE, 2009). A deeper understanding of the issue under study can lead to an understanding of root causes rather than just symptoms and perhaps also concrete solutions.

This position is aligned with Beaumont and Wyn Williams (1983) who argue that during project work, students go beyond the tangible, finite and familiar in spatial concepts, to conceive the infinitely small and to invent imaginary systems. This might allow a better understanding of the issues / phenomenon under study (ibid.). Jensen and Schnack (1997) similarly suggest that, if learners are to contribute to the solution of contemporary environmental issues, they have to identify personal and structural causes behind these issues.

To indicate the importance of enquiry-based learning and how it advocates addressing root causes of environmental problems / issues, the Curriculum Guidelines for Educators (MoE, 2005) give the following practical example:

> At a small rural primary school in Caprivi the teachers noticed that many of the children were tired or were falling asleep during the school day. They wondered why. So together they decided to discuss this with the learners and discovered that many children were tired because they were hungry. (p. 51)

In the example above, and as per Jensen and Schnack's (1997) insights, providing one meal at school is not described as an action, but one needs to further investigate the real causes of hunger in this community by engaging with people. Giving one meal at school is compared to an activity which can lead to the "immediate disappearance of symptoms... it will not have any effect on the problem" (Jensen & Schnack, 1997, p. 169). This activity will only solve solely the symptoms of hunger (ibid.). To understand the root causes of hunger in this area, an investigation should be carried out and go beyond immediate disappearance to come up with solutions that address the root causes of hunger in the area.

2.6.4 Geography fieldwork project processes and the IVAC model

Jensen and Schnack (1997) argue that richness in experience helps one to qualify action competence. Geography fieldwork projects go far in achieving experiential learning and responding to Jensen's (2002) call that if we really want to help learners to understand the world they live in, there is no option but to bring them face to face with controversial issues. These ideas can be linked with Figure 2.1 about experiential learning because experience and action are closely linked.

The logic of the Geography fieldwork project as previously described (MoE, 2005, 2006, 2007, 2009; Van Harmelen, 2005) resonates strongly with Jensen's (2004) IVAC model on criteria for actions (Table 2.1). The focus in all cases "targeted towards solutions of the problem that is being focused upon ... a change perspective" (Jensen &Schnack, 1997, p. 169).

The investigative projects in Geography are referred to as environmental action projects (MoE, 2007) and they align with Jensen's criteria for action competence. Proposed solutions recommended by learners out of their fieldwork projects can be aligned and categorised with the types of actions suggested by Jensen and Schnack (1997) in the subsections on, 2.4.2.3, 2.4.2.4, and, 2.4.2.5 respectively with the reason to understand whether fieldwork can qualify one to develop action competence. In this study, the intention was to explore whether learners develop attitudes and skills through the Geography fieldwork project that develops in them a willingness to act on their own without influence or pre-determined solutions.

2.7 CONCLUSION

The aim of this chapter was to introduce two concepts crucial to this study: Geography fieldwork and action competence, and to discuss the link between them in the Namibian context. In the first sections, I explained the origins of fieldwork projects in general and in Junior Secondary School Geography in particular. It emerged that fieldwork came with the concept of what many scholars refer to as the 'new Geography' approach, which is based on enquiry-based learning.

Secondly, I explored the meaning and connection of environmental education with Geography fieldwork. Geography, as a subject under Social Sciences, is identified as one of the subjects' rich in environmental topics, particularly Ecology and Population Geography.

In the third phase, I critically explored the concept of action competence by looking at its origin, meaning and main components. The most important area was why action competence is regarded in this study as relevant to Environmental Education. In exploring the meaning of action competence in relation to Environmental Education, I identified three broad ways that different scholars use the concept of action competence. In some cases, authors refer to action competence as an aim and goal of Environmental Education. In other cases, which dominated this chapter, it is defined as an approach to Environmental Education. In the last case, scholars referred to action competence as a notion or an educational ideal. I tried to balance and combine these scholars' ideas and understandings as they are complementary for this study.

Finally, this chapter has explored some visible linkages between the fieldwork project in Geography and components of action competence. This is a central area of this study which seeks to explore the potential of Geography fieldwork projects to develop action competence.

The next chapter outlines the overall design of the case study, including the data generation and data analysis methods and tools used to explore the research questions.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter explains the research journey that investigated opportunities to develop action competence through the Geography fieldwork project. Firstly, the chapter discusses the research methodology, including an explanation of the interpretive orientation and case study approach. The chapter then describes the data generation process by explaining the research sites, participants, the data generation methods used and reasons for their selection. The chapter then describes how the data were organised and analysed and, finally, concludes with a discussion about research validity, trustworthiness, research ethics and limitations of the research process.

3.2 RESEARCH METHODOLOGY

This section introduces the qualitative, interpretive, case study methodology that guided my choice of research methods and analytical tools.

3.2.1 Interpretive Case study

This is an interpretive case study that seeks to understand how Geography fieldwork projects can develop action competence. Terre Blanche, Durrheim and Painter (1999) explain that interpretive research strives to make sense of feelings, experiences and social situations by studying participants in their natural settings. Echoing the same sentiments, Cohen, Manion and Morrison (2011) explain that to retain the integrity of whatever is being investigated, effort is made to get inside the person and to understand from within. An interpretive approach provides a rich description of the phenomenon, and if possible develops some explanations (Cohen, Manion and Morrison 2007). They further explain that an interpretive paradigm seeks to understand the subjective nature of human experience and focus on all individual actions or interpretations during a certain process.

In this study, an interpretive paradigm was appropriate as it helped me to gain deeper insights into learners' and teachers' attitudes, experiences and views while conducting Geography fieldwork project. I conducted fieldwork to understand the outcomes of this learning process and I interpreted the learning outcomes using components of the action competence approach (see Section 2.4).

As a participant observer is this study (see Section 3.4), I worked directly with participants so that data yielded can include meanings and purpose of those who are at the source (Cohen et al., 2011). Within this interpretive paradigm, a qualitative case study approach was adopted.

According to Creswell (1994), a case study is a sole case of a limited system such as a child, a group, a class, a school and so forth. A case study is also defined as a study of a case in a setting and it is significant to set the case within its setting (Yin, 2009). Furthermore, "a case study provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or principles" (Cohen et al., 2011, p. 289). Similarly, Leeds and Ormrod (2005) explain that sometimes researchers focus on a single case, perhaps because its unique or exceptional qualities can promote understanding or inform practice for similar situations.

My case study was of two Grade 10 classes conducting Geography fieldwork projects at different Junior Secondary schools in northern Namibia. I aimed to explore and gain an understanding of the opportunities provided by the Geography fieldwork project to develop learners' action competence. The case study methodology assisted me to provide a chronological narrative of events and conversations that I found relevant to the case, and which helped me to answer the research questions (Cohen et al., 2011). According to Gay, Mills and Airasian (2009), data for a qualitative case study are gathered directly from participants and a researcher spends a great deal of time with participants as they consider alternative explanations for the behaviour they see. At both schools, I spent two days with the research participants while they conducted their Geography fieldwork projects. I also conducted semi-structured interviews, focus group discussions and participant observations (see Sections 3.5.3 – 3.5.5).

In considering the limitations of case studies, Gay et al. (2009) point out that a case study is particularistic, that is, it is focused on a particular situation or event and does not, therefore, lend itself to generalisability. Yin (2009) affirms that "case studies provide little basis for scientific generalization" (p. 15) because, like experiments, they are "generalizable to theoretical propositions and not to populations or universes" (Yin, 2014, p. 21) The goal of this study, therefore, was not to generalise findings about Geography fieldwork projects into other schools but to expand and generalize my understanding of action competence as a goal of environmental education through the case study data.

3.3 SAMPLING

This section explains the sampling process for choosing both the place and participants of this study.

3.3.1 Research sites

This study was conducted in two schools [referred to as **School One** and **School Two**] in two different regions of northern Namibia, namely: Omusati and Oshana (see Section 4.3.1 and 4.3.2). I adopted a purposive sampling approach in choosing the two schools which, according to Creswell (2012), is when researchers deliberately select persons and locations to study or comprehend the central phenomenon. Moreover, Gay et al. (2009) explain that during purposive sampling, a researcher should also screen prospective participants to ensure that each has the necessary experience or knowledge of the phenomenon under investigation.

My criteria for selecting the two schools as study sites were as follows:

- Firstly, I chose two schools from regions that performed well and ranked 2nd and 3rd nationally in the 2013 Junior Secondary examination results, according to the Directorate of Examinations and Assessment (MoE, 2014). My assumption in choosing these two schools was that they conduct good assessment practices, including Geography project work.

- Secondly, the two schools were also selected based on the fact that the first school is in a rural area while the second school is semi-urban. My intention was not for comparison purposes, but rather to ensure that conclusions adequately represent the entire range of variation instead of one typical area.

- Furthermore, School One was where I was employed as a Head of Department for Social Sciences making it possible and convenient to interact with participants during and after school. It was also desirable for me to conduct research at this school because the school community expected me (as a new staff member and Head of Department) [including Geography and History] to investigate how to enhance quality education at the school.

- School Two is closer to my residential area, Ongwediva town. Apart from being closer to where I live, I also had an established link with a Geography teacher at this school through exchanging assessment tasks and resources like tests, practical exercises and notes.

3. 3. 2 Participants

Gay et al. (2009) define sampling as the process of selecting a small number of individuals for a study to help the researcher to understand the phenomenon under investigation. In addition, Trochim (2006) explains that by studying the sample, we may fairly generalise results back to the population from which they were chosen. It was important that I consider a screening procedure of participants early in the planning of the research to think about issues like participants' withdrawal (Gay et al., 2009), expenses, time and regular convenience – all factors which might inhibit me from acquiring information from the whole population (Cohen et al., 2011).

For this study, purposive sampling was used to select firstly the two schools as explained above. Secondly, learners were also purposively selected because of the nature of the subject (Geography) being studied and the grade. According to Cohen et al. (2007), purposive sampling is used to access knowledgeable people. Through this approach, a researcher selects those he thinks have in-depth knowledge or experience about the particular issues under investigation (ibid). In the light of the study's interest in exploring evidence of learners' developing action competence through the Geography fieldwork project, I chose grade 10, an exit grade for Junior Secondary phase in Namibia (and it was the last senior class at both schools). Grade 10 learners are expected to do fieldwork projects in various subjects and they are more familiar with the procedures for conducting research projects than lower grades such as grade 8 and 9. During the fieldwork project, learners in School One worked in groups of four to five members, and four to six members in School Two. Each group at both schools selected a representative to participate in the focus group interviews (see Figures 4.10 and 4.11). Usage of the term 'representative' was prompted by Gay et al. (2009) who note that some interviewees (in this case learners) might be shy or uncomfortable to participate or converse with a researcher. My intention was to get a group leader or anyone with authority in a group or who was known by learners to be knowledgeable and be able to express him/ herself in any language of his/her choice.

My criteria for sampling the teachers was that they should have three or more years of experience in teaching Geography at Junior Secondary level (including Grade 10). This was a straightforward selection as the teachers at Schools One and Two had been teaching Geography at Junior Secondary level for at least the past 16 years.

3.4 DATA GENERATION METHODS

3.4.1 Introduction

Data generation is the process of documenting or generating information from events and activities of the research. This process was conducted between March and June 2014 at both schools, following a process of document analysis that enriched my understanding of the curriculum policy context (see Table 3.1). As is the norm with case study research, several complementary methods were used (Yin, 2014). I conducted four observations (two per school). The first lesson observed was an introduction and the second was the actual fieldwork at each school. One pre-fieldwork and one post-fieldwork focus group interview with learners was conducted at each school (giving a total of four focus group interviews). Two semi-structured interviews with two teachers were conducted (one per school). Lastly, I also analysed three learners' written reports on their fieldwork.

Different research methods used are discussed below, that is: document analysis (3.5.2), semi-structured teacher interviews (3.5.3), focus group interviews with learners (3.5.4) and participant observations (3.5.5).

3.4.2 Document analysis

Hitchcock and Hughes (1995, p. 156) state that "...once a written source has been created for whatever reason, it becomes a potential historical fact and therefore documentary data" Similarly, Maree (2011, p. 82) refers to document analysis as "the analysis of all types of written communication that may shed light on the phenomenon that you are investigating".

In order to understand education arrangements and directives, I analysed three national policies of Namibia's Ministry of Education that inform teaching and learning in general and Geography education in particular as well as learners' reports on fieldwork. Table 3.1 below summarises the documents analysed and my reason for analysing them.

Table 3.1: **Summary of documents analysed**

Name of the document	Year	Main reasons for analysing this document
Geography Syllabus for Junior Secondary, Grade 8-10	2006	To help me to understand what is expected in grade 10 in particular regarding topics, basic competencies and types of assessment.
Continuous Assessment Manual for Geography, Grade 8-10	2007	This document summarises the assessment plan for Geography and gives practical examples of tasks learners can do for practical exercises and projects.
The National Curriculum for Basic Education	2009	To understand the overall education policies framework that informs teaching and learning structures and other directives.
Learners' workbook	2014	To understand how learners plan their fieldwork project, the fieldwork project process and learners' recommendations.

3.4.3 Semi-structured teacher interviews

After familiarising myself with Ministerial documents that inform teaching and learning in Geography, I engaged in purposeful discussions with the two participating Geography teachers in the form of semi-structured interviews. According to Uys and Basson (1991, p. 58), "the interview is a technique in which the researcher poses a series of verbal questions for the respondent in a face to face situation". To differentiate between structured and semi-structured interviews, McMillan and Schumacher (2006, p. 204) explain that: "semi-structured interviews have no choice from which the respondent selects an answer". They are phrased to allow for individual responses. Semi-structured interviews have open-ended questions but are fairly specific in their intent. Furthermore, semi-structured interviews allow the researcher to probe further and ask follow-up. Semi-structured interviews are encouraged by Leeds and Ormrod (2005) who state that through semi-structured interviews one can probe an interviewee's thoughts, values, prejudices, perceptions and perspectives.

In this study, semi-structured interviews were designed and used to deepen understanding gained from the document analysis and observations, and for the two participating Geography teachers to share their perspectives on opportunities, challenges and pedagogies associated with fieldwork project and the research questions.

One semi-structured interview of about 25 minutes' duration was conducted with the Geography teacher at each school.

In each interview, a semi-structured interview schedule with some open-ended questions was used to guide discussions (**see Appendix A**). All interviews were voice-recorded and transcribed.

3.4.4 Focus group interview with learners

Kumar (2011) define focus group interviews as strategies in which attitudes, opinions, perceptions about an issue can be explored through a free and open discussion between members of a groups and the researcher. Based on this, two separate focus group interviews were conducted with grade 10 learners from the two participating Junior Secondary schools. Learners were interviewed after normal school hours in groups of five to six members as recommended by Hitchcock and Hughes (1995) and Kumar (2011), noting that small friendship groupings of this size appear to be more productive (See Figures 4.10 and 4.11).

At School One, this interview was conducted during the May 2014 school holiday as learners were having extra lessons in the holiday for three subjects including Geography. At School Two, the focus group interview was conducted in early June 2014.

In motivating for the use of focus group interviews, Maree (2011) argues that in a focus group interview, participants are able to build on each other's views in ways that are not necessary attainable from individual interviews. Sharing the same sentiments, Kumar (2011) argues that the focus group interview is a very simple and low cost way of collecting primary information.

In this study, I preferred to conduct focus group interviews because the method saves time for both learners and the researcher. The selected group of Grade 10 learners had little time for extra afternoon activities as they are mostly kept busy with conducting experiments and remedial classes and afternoon study.

The focus group interviews were conducted before and after the fieldwork project. Before the fieldwork project, I was interested to hear how learners participated in developing and organising their fieldwork project, and the roles played by both the teachers and learners in the preparation stage. After the fieldwork, I asked learners to reflect on what they had experienced in organising, implementing and managing their fieldwork project. I explored learners' understandings of the investigation done, their attitude toward data obtained and

their achievements in doing the project. The important aspect here was probing whether the project had created a new understanding and vision of building on what they have learned through the project.

In the focus group interviews before and after the fieldwork, I used what Creswell (2012) refers to as "elaborating probes" (p. 222). In this case, learners were required to explain their responses in more detail. During the focus group interview at School One, the learners and I agreed to use code-switching as a strategy for effective communication. In this case, learners were able to answer or explain their perspectives in both English and the vernacular (Oshiwambo). This was done to ensure that all leaners have access to the discussion.

All discussions were video recorded with the help of a critical friend at both schools, and later transcribed as per the advice of Creswell (2012, p. 219) who states that, "a problem with conducting a focus group interview is that the researcher often has difficulties taking notes because so much is occurring". With this in mind, I decided to video-record these conversations for easy retrieval at a later stage (**see Appendix B)**.

One of the challenges that I encountered at both schools, but especially at School One, was that there were some learners who, despite the option to code-switch between English and Oshiwambo, could not participate freely in the discussions. I was informed later by teachers that some of the participating learners hold leadership positions in the school. For example, Learners One, Four and Six were serving in on Learner Representative Council (LRC), which might contribute to their high levels of participation. Learners Two, Three and Five, however, are described as shy learners. Kumar (2011) warns that if focus group interview discussions are not well-facilitated, they may reflect the opinions of dominant individuals. With this in mind, I tried to balance levels of participation by making eye contact with those who were quiet, or moving my eyes across all participants to indicate that they are all expected to participate and contribute ideas.

I was challenged to consider other techniques for interviewing children. For example, Arksey and Knight's (1999) note the importance of establishing trust with children and helping them to feel confident. In this case study, the fact that the study was supported and introduced to the school by the principal, gave the study a level of importance that learners responded positively to. Furthermore, children were keen to participate in the video recorded interview as I had promised them that the video will be made available to them and others to watch. At

both schools, the study was accepted as just another way of learning and at the same time participants were confident that confidentiality would be kept, as promised by myself.

Despite the learners' excitement and the principal's support, I needed to consider the consequences of the learners perceiving me as an authority figure. Eder and Fingerson (2003, p. 34) state that the "power and status dynamic is heavily implicated in interviewing children". With this in mind, I introduced myself as someone in a learning process (just as like them), and similarly introduced my critical friend who was also a student at the University of Namibia. I also assured learners that their discussions with me would in no way affect the award of marks for their project work.

To ensure what Greig and Taylor (1999) refer to as less intimidating environment, I assured the learners that no teachers would be present during the focus group interviews. The focus group discussions were conducted in an informal style but learners were informed that information will contribute to a bigger project that could possibly bring about positive change in a long run.

Lastly, other small ways in which I tried to establish myself as a non-authoritative and non-threatening figure was by positioning the chairs during the focus group interviews so that everyone could see each other and interact naturally, and I tried to speak in a style that children themselves use instead of using very formal language or academic terminology.

3.4.5 Participant observation

Cohen et al. (2011) define observation in simplest terms as looking and systematically noting people, events, behaviours, setting, artefacts and so on. In this study, I decided to use this primary source of information to enhance and complement data gained from teachers' interviews and focus group interviews with learners. During the participant observation, my focus was on how learners prepared and engaged in the fieldwork, providing a description of the events during the fieldwork project and learners' behaviour during and after the fieldwork project.

This data generating method was selected based on its strength, as presented by Cohen et al. (2011) that observation allows a researcher to look directly at what is taking place *in situ*, rather than relying on second-hand accounts. Put simply, observation allows researchers to gather "live data from live situations" (Cohen et al., 2000, p. 305). This creates a potential to

yield more valid and authentic data than more mediated methods (ibid.). Moreover, Robson (2002, cited in Cohen et al., 2011) argues that what people do may differ from what they say they do.

It was therefore important for me to verify what teachers and learners say they do by observing their practices during the Geography fieldwork project, especially with regard to the possibilities of developing action competence.

As indicated by Bell (1999), "observation is not an easy option, careful planning and piloting are essential and it takes practices to get the most out of this technique" (p. 156). With this early warning, I designed an observation schedule where actions and interactions were recorded during the fieldwork (**see Appendix C**). Cohen et al. (2011) argue that once you know in advance what you wish to observe, it is important that you develop an observation schedule. A strength of using an observation schedule is that it helps during data analysis, as categories having already been established. Equally, the observation schedule directed my focus to what was happening in relation to the research questions.

I conducted observations at four different occasions, two lessons per school. Although I opted to be a non-participant observer whose presence is only to observe what learners and teachers were doing, I ended up a participant observer. Creswell (2012) states that shift can be advantageous because direct involvement in activities at a research site enables the researcher to experience events from the vantage point of the research participants.

Yin (2014) defines participant-observation as "a special mode of observation in which you are not merely a passive observer". As I am also a Geography teacher, during the observations it was possible for me to assume different roles as follows: At School One, I assisted learners to select their fieldwork methods, and to draw up questions for their interviews. I also accompanied learners while collecting data at different sites. At School One, there were five groups working across three different topics. I did not restrict myself to working with only one group, but rather became a member of all groups, directing them during the preparation stage. At School Two, I observed a lesson where the Geography teacher introduced the project work to learners. The teacher also gave me an opportunity to explain to learners the steps in conducting a fieldwork project in Geography. That afternoon, I accompanied learners on their fieldwork at different sites in and around the school grounds. There were four groups of five to six learners researching four different topics.

Although learners were investigating different topics, all learners went at one site together so that everybody could have an opportunity to observe and engage in discussions.

At both schools, I applied what Cohen et al. (2011) identify as the roles of an observer-as-participant that is: asking questions for clarity where possible and deliberately creating "new provocations" by opening more opportunities for participants' explanations.

On the observation schedule from both schools, I focused on finding evidence of an action competence approach being used, and evidence of learners developing action competence through these fieldwork projects. The recording of these observations were done on the observation schedule in the form of descriptive field notes. Although I was physically present as an observer at both sites, the activities of the fieldwork were video-recorded by a critical friend with a reason to re-view and reflect on the fieldwork activities later. This also helped enhance the validity of my data collection process, as explained in section 3.8.2.

My approach to storing and managing the qualitative data generated through these interviews and observations is discussed in the next section.

3.5 DATA MANAGEMENT

This section describes how data were arranged in an orderly way so that I could access them at any time. To arrange the data systematically, I made an inventory of all the data sources used in this study. Table 3.2 presents these data sources with explanations, the specific index code and relevant appendix numbering for easy access. All field notes from observations, and the selected learners' reports on the investigation were saved both electronically and in hard copy.

Table 3.2: Inventory of data sources

Data source	Index	Description	Appendix
1. Focus Group	**FG**	Transcribed focus group interview with learners before and after fieldwork at School One and School Two	B
1.1 Focus Group one	FG 1		
1.2 Focus Group two	FG 2		
2.Observation Schedule	**OS**	Observation schedules with field notes written during preparation, conducting and after fieldwork at school one & two.	C
2.1 Observation Schedule one	OS 1		
2.2 Observation Schedule two	OS 2		
3. Tabulated Summary of documents	**TDC**	Content analysis of the three Ministerial documents (**Analytical Tool 1)**	D
3.1 National Curriculum for Basic Education	Doc 1		
3.2 Geography Syllabus	Doc 2		
3.3 Continuous Assessment Guidelines for Geography	Doc 3		
4. Semi-Structured Interview with educators	**SIE**	Transcribed semi-structured interviews with two teachers	A
4.1 Semi-Structured Interview one	SIE 1		
4.2 Semi-Structure Interview two	SIE 2		
5. Learners' report on investigation	**LRR**	Report written by learners after fieldwork.	N
5.1 Learners' report 1	LRR1		
5.2 Learners' report 2	LRR2		
5.3 Learners' report 3	LRR3		
6. Analytical Memo	AM	Analytical memo	E

To make meaning from the data collected from these various sources, I needed to analyse the data. The following section explains in the more detail how the data were analysed.

3.6 DATA ANALYSIS

Cohen et al. (2011) define qualitative data analysis as making meaning of data in terms of the participants' definitions of the situation, observing patterns, themes, categories and consistencies. Similarly, Cohen et al. (2011) describe data analysis as an attempt to generate thick description. This mainly means generating data that not only describes events in context, but reflects participant's intentions, strategies and agency.

Based on this understanding, I adopted Maxwell's (2005) recommendation (as a basic principle of qualitative research) that data analysis should be conducted simultaneously with data collection.

One way that I was able to achieve more focus during data generation to support data analysis was to design the interview questions as well as the observation schedule in line with the IVAC model (see Section 2.4.4).

In this study, I used both inductive and abductive approaches to data analysis. In phase one, I took an inductive approach to analyse the data from selected Ministerial documents. After reading these documents, I developed five categories, relevant to the research question and theoretical framework, as follows:

- Desired skills advocated (Core skills)
- Roles of teachers/learners
- Goals for learning and teaching
- Teaching and learning approach
- Usage of Local area

While reading the Ministerial documents, I colour-coded pieces of text from each document with data that falls under the abovementioned categories. This was done with the understanding of Creswell's (2012) explanation of coding as simply a name or label that the researcher gives to a piece of text that contains an idea or a piece of information. Cited in Creswell (2012), Gibbs (2007) explains that a same code is given to an item of text that refers to the same thing. Each category was given a different colour. These categories were then tabulated and served as Analytical Tool 1 (**see Appendix D**). This was done to understand what is expected Geography at a policy level in the teaching and assessment in relation to developing action competence in learners.

Abductive analysis was conducted in phase two of data analysis. Data that had been collected through interviews with teachers and focus group interviews with learners were first transcribed, colour-coded and then entered into Analytical Tool 2, analytical memo 1-4 **(see Appendix E)**. This colour coding was done as per the conceptual and theoretical framework of the study in line with Jensen's (2004) IVAC model explained in Section 2.4.4. Learners' investigation reports and my own observation field notes were also interpreted and analysed through the same procedure. This phase helps me to move further to condense data from learners' reports and observation field notes onto Analytical tool 2, analytical memo 1-4.

I later used data in Analytical tool 1 and Analytical tool 2 to guide me to produce analytical statements in chapter 5.

Based on these steps illustrated above, data summarised in Analytical Tool 1 (documents), Analytical Tool 2, analytical Memos 1-4 were the basis of the study's claims or findings about the possibilities of developing action competence through Geography fieldwork projects.

The next section describes the steps I took during the study to ensure that the raw data, the analytical process as well as the presentation of the research findings was rigorous, valid and trustworthy.

3.7 VALIDITY AND TRUSTWORTHINESS

In order to ensure reliability and validity of this study, various strategies were employed to ensure that bias was minimised and information obtained was of real phenomena and represented activities that took place during the research. Although some strategies employed to ensure validity and trustworthy of these data have already been mentioned in section 3.5 in relation to the data generation process, it is still useful to explain these techniques in greater detail here.

3.7.1 Verification of observation field notes

As a participant observer in this study, it was important to minimise bias in my reflections and written fieldwork observations. This was done in line with the advice from Kumar (2011) who argues that during participant observation, a researcher needs to make notes of what he observes in a format that best suits his preferred way of working as well as the situation. He further wrote that a researcher can record the observations and further verify the observation notes with data generated by other means to draw inferences and conclusions. Based on this early warning, my observations and field notes were shared with a critical friend who was also present during the observation as a video recorder to verify my observation notes. The video recording also enabled me to re-view and reconsider selected aspects of the observation with the critical friend a day after the fieldwork was conducted.

3.7.2 Member checking

According to Creswell (2012), member checking is a process in which researcher asks one or more participants in the study to check the accuracy of the account. In this study, the video recordings of the focus groups interview and fieldwork project observations were watched by learners as a form of reflection at both schools. Learners at both schools not only enjoyed listening to their previous conversations but they clarified details of their contributions through our further discussions.

Participating teachers received a copy of transcribed notes and had informal discussions with me to confirm the accuracy of the notes and, where needed, to add additional information. These arrangements were made in line with the recommendation by Creswell (2012) that if respondents are asked to validate the data and its interpretation and they are given a chance to withdraw or alter, then their responses may then become additional data. Despite this arrangement, participants (teachers and learners) could not alter the first data collected, but they rather just confirm that information written were accurate.

3.7.3 Triangulation

This is another method used to enhance the validity and trustworthiness of research findings. Creswell (2012) defines triangulation as a process of corroborating evidence from different sources. In pursuit of validity in this study, different methods of data generation were used, that is: document analysis, semi-structured interviews, focus group interviews and participant observations. Data from various sources were condensed in Analytical Tools 1 and 2, to generate claims and evidence in response to the research question.

3.8 RESEARCH ETHICS

Previous sections have alluded to various aspects of the study that have required ethical responses, but these were not discussed in detail. This section now focuses more specifically on the steps that I and the research participants took to conduct the study in a way that is respectful of people, truth and democracy (Bassey, 1999).

3.8.1 Access letters

In line with Cohen and Manion's (1994) suggestion, it is important to follow correct channels by formally requesting permission to carry out any investigation. With this in mind, I wrote a formal letter to my employer, the Namibian Ministry of Education, immediately after the research proposal was approved by the university (**see Appendix F)**. In this access letter, I drew on Yin (2003) who explained the procedural element of doing research by stating that a

researcher should provide the aim and background to the project to anyone who may want to know about the project, its purpose and people involved. Therefore, the first letter was used as a letter of introduction accompanied by the approved research proposal. Based on this, the Ministry of Education approved this study with very helpful suggestions on how to reach research participants (**see Appendix G).**

In accordance with the procedures indicated in the letter from the Ministry of Education head office, I wrote the second letter and attached the response from Ministry of Education Head office to the two Regional Directorates of Education (Oshana and Omusati) and also to the principals of the two selected schools. These access letters helped to clarify the intentions of the study and reduce doubt for those people potentially participating in the study. Leedy, & Ormord, (2005) affirm that ethical standards for research require researchers to ensure that participants are not at risk of harm as a result of participating in the study.

All participants were informed about the purpose and objectives of this study to allow them to make informed decisions about their involvement in the study. The study was conducted anonymously and learners and teachers were informed about their right to withdraw from the study at any time. Both the researcher and participating teachers from both schools agreed to assign pseudonyms to the names of schools referred to as School One and School Two.

3.8.2 Consent letters

At School One I managed to introduce the study during a parent-teachers meeting. At both schools, parents of learners agreed to their children participating in the focus group interview and signed the consent letter **(see Appendix H).** It emerged through the meeting at both Schools that parents and learners did not see the need for anonymity as they recognised that the study did not present any risks. It is on this understanding that I took photos while collecting data for this study. At School Two, I gained the support of learners and teachers as I was introduced by the principal, someone they trust who is also one of the school's Geography teachers.

3.9 LIMITATIONS

This section outlines some of the constraints I experienced during the study and ways these were addressed. The first of these was time constraints. The study focussed on the busiest learners of the Junior Secondary phase, grade 10s, whose teachers indicated that they have

limited time to cover their syllabi. Consequently, data generation at School One was done during extra lessons of the school holidays. As is common at secondary schools, arrangements were made with parents to allow learners to attend lessons for various subjects during one week of the school holiday. Learners used this extra time to conduct fieldwork project in geography.

At School Two, project work was done after the normal teaching time in the afternoon. This was done after internal arrangements were made with other subject teachers to give learners opportunity to carry out the project and participate in focus group interviews in the afternoon. Teacher interviews were conducted over weekends.

Secondly, project work in Geography was done in groups carrying out investigations on different topics. My intention was to follow each group at different sites while collecting data in a small group but due to limited time, at both schools all learners were grouped together and organised to go to one site. Those investigating topics other than the one under study at that site mostly stood around while those investigating the issue at hand were more active asking details and taking notes. The aim of this arrangement was for everybody to have an opportunity to observe and engage in discussions about various topics in the syllabus. There were a few learners who did not contribute anything during fieldwork discussions and reflections (see Figures 4.6 & 4.18) or have an opportunity to express their feelings and opinions about environmental issues under study. Despite this, the majority of learners were observed actively participating during the report writing session and I am confident that this did not compromise the quality of the study because their views and opinions might be captured in learners' written reports and in the focus group discussions.

3.10 CONCLUSION

In this chapter, I described the interpretive case study and the qualitative research methods used to gain insights into the topic under investigation. The chapter further described the data generating methods used to answer the research question, namely: document analysis, semi-structured teacher interviews, focus group interviews with learners, and participant-observations. The chapter then discussed data management and how the study's data was labelled and stored so as to be secure and retrievable. The chapter then discussed three phases of interpretive data analysis that enabled me to produce research findings. The inductive approach was used in phase one while the abductive approach was used in phases two and

three. Finally, the chapter elaborated on validation methods, research ethics and limitations of the study.

In the next chapter, I present the data gathered using the qualitative data generating methods described in section 3.5 of this chapter.

CHAPTER 4: DATA PRESENTATION

4.1 INTRODUCTION

This chapter presents data generated in relation to the study's interest in learners developing action competence through Geography fieldwork projects. As described in chapter 3, data was generated through document analysis, interviews, focus group discussions and participant observations. This data is now presented into two stages: Firstly, I present a content analysis of various Namibian Ministerial policy documents which direct education in general and Junior Secondary Geography education in particular. Stage two describes the lessons undertaken by learners in two Grade 10 Geography classes, while preparing this fieldwork, during and after the fieldwork projects.

4.2 MINISTERIAL POLICIES' EXPECTATIONS AND DIRECTIVES

4.2.1 Introduction

This section presents data from three national policies of Namibia's Ministry of Education that informs teaching and learning in general and Geography education in particular:

- **The National Curriculum for Basic Education** (referred as Document 1 [Doc. 1]) is the overall policy document that replaces other curriculum directives and policies. As stated in this document, "… this Curriculum is effective from 2010 ... replaces the Pilot Curriculum Guide for formal Basic Education (1996) and the Pilot Curriculum Guide for formal Secondary Education (1998) ..." (Doc 1, p. 4). All other education directives and learning areas are informed by this National Curriculum.

- **The Geography syllabus** (Document 2 [Doc 2]) is the national document that sets out the aims, learning objectives and basic competencies for Geography. "This syllabus describes the intended learning and assessment for Geography in Grades 8-10" (Doc 2, p. 2).

- **Continuous Assessment Manual for Geography, Grade 8-10** (Document 3) [Doc 3]) describes types of activities and gives practical guidance that educators can direct learners for Continuous Assessment marks or year marks.

These three policy documents are considered in this chapter in terms of how they resonate with or deviate from the Nordic understanding of 'Action Competence" as described by Jensen and Schnack (1997), and Jensen (2002; 2004).

4.2.2 Namibian policy stance regarding development of core skills

As the overall guideline for general education in Namibia, the National Curriculum for Basic Education advocates the core skills that are relevant for the realisation of the National Vision 2030. Document one further outlined that "core skills are those which everybody needs in a knowledge-based society" (Doc 1, p. 10). These core skills are: Learning to learn skills, personal skills, social skills, cognitive skills and communication skills (Docs. 1 and 2). The rest of this section summarises what the three policy documents say about these five skills.

'Learning to learn' is described in the National Curriculum for Basic Education as the "fundamental skill area of all" (Doc. 1). It further explains that, "learners develop the skill to organise, regulate and evaluate their own learning in order to acquire and apply new knowledge in new situations or innovative ways (Doc. 1, p. 10). The Geography Syllabus (Doc 2) explains the learning to learn skill as learners developing a complex understanding of issues or phenomenon which can be gained through investigation. Here, to investigate means to understand "why" (ibid). Geography learners are expected to, "investigate the reason for the deterioration of the environment and search for possible solutions" (Doc. 2, p. 39). Furthermore, Geography leads to understandings of how people are using nature to meet their needs and the extent to which humans are able to utilize their environment in a sustainable manner (ibid.).

To assess and evaluate learners' understanding, Geography project work, "directs the learners' attention to the specific enquiry" (Doc. 3 p.19), which requires them to find out about a specific topic from various sources. Furthermore, issues for investigation should be "real issues" that learners will be interested to be involved with and be motivated to find solutions to (Docs. 2 and 3). As the syllabus explains, learners are expected to explore risks and challenges facing local society, why they exist and what needs to be done (Doc. 1).

Another core skill encouraged by the three Ministerial policies is personal skills. Learners coming through this education system are expected to be self-disciplined, have an ability to regulate their own behaviour, and take responsibility for their own actions and decisions (Doc.1).

This develops through increased self-awareness and awareness of others, through structured learning experiences, and personal reflection (ibid.). "Personal skills include practical life skills including, among others, accountability, integrity, self-confidence, commitment and constructive approaches to challenge..." (Doc.1, p. 10).

Another important skill for a knowledge-based society is the ability to respect and work well with others (Doc.1). Among many indicators of social skills, learners are expected to demonstrate the ability to influence others, negotiate, reach consensus, to create and use network and share knowledge (ibid.). To use a network and share knowledge implies that learners are expected to have the ability to communicate, which means "to tell, act out, write, explain or report" on whatever they were researching (Doc. 2, p. 3). In a knowledge-based society, learners must be able to communicate proficiently and confidently (Doc.1).

Finally, all three documents demand that schools prepare their learners to think independently and find solutions to issues at their level of thinking. Document one (Doc.1) elaborates that children should be engaged with activities that encourage them to think critically, plan solutions and solve problems. The Geography Syllabus states that, once learners have gained a deeper understanding of ecological issues, they should be able "to transfer and apply this knowledge to the solution of problems in other areas" (Doc.2, p. 4). The above discussion has outlined the core skills that are promoted across the three Ministerial documents. The next section looks at the roles and expectations of both teachers and learners.

4.2.3 The roles of teachers and learners

This section discusses the roles of Namibian teachers and learners as outlined across the three policy documents. The aim here is to establish power relations and identify the influences of these stakeholders toward learning and teaching in general, and Geography fieldwork projects in particular.

All three documents recommend teachers to be the first managers of the implementation of the curriculum in schools while at the same time considering learners' needs. The National Curriculum explains: "All teachers are fully conversant with the curriculum and its implications, the process of knowledge creation, and teaching, learning and assessing in a learner-centred way" (Doc.1, p. 37). This means teachers will decide when to teach what and what is the best way to do it. "The teacher must decide...a best way to convey content directly or let learners discover or explore information for themselves" (Doc.2, p. 7).

In terms of the Geography fieldwork project, the Continuous Assessment Manual for Geography explains that the "teacher has a pivotal role to play in initiating the project, both in its design and guiding learners to produce work which reflects their true potential" (Doc.3, p. 15).

The assessment guideline outlines that the teacher must provide learners with clearly outlined stages for doing the project (Doc. 3). This includes producing a planning sheet informing learners of the main features of the project to be attempted and a marking grid indicating what knowledge and skills will be assessed (ibid.).

The most important component for doing a research project is "to make effective conclusions" (Doc.3, p. 17). During the reporting stage, learners are expected to analyse and interpret data in order to set further learning targets and actions. In this regard, learners are expected to demonstrate application of knowledge (ibid). Document one explained that this assessment stage carries an important value of education and gives a picture of what schooling is all about (Doc. 1). Learners are motivated to extend their knowledge and skills (ibid.), that is, they should increase what they can actually do with the knowledge and skills they learn. Ideally, assessment tasks help learners to solve problems intelligently by using what they have learned (ibid.).

Similar perspectives are presented in the Geography syllabus. Learners are required to observe phenomenon in order to interpret them correctly. The syllabus explains interpretation as the ability to comprehend, distinguish, translate data, compare and classify (Doc.2). In Geography, learners might show evidence of understanding through their ability to "apply knowledge and skills in a specific situation or environment" (Doc.2, p.3).

This section has outlined specific roles played by both learners and teachers as presented in the three national policy documents. The next section builds on these teachers' and learners' roles by focusing more specifically on teaching and learning approaches.

4.2.4 Teaching and learning approaches

To explore and analyze the potential of developing action competence in Geography fieldwork, it is necessary to understand the teaching and learning approaches recommended across three national policy documents. The aim in this section is to establish whether these educational policies are in line with or contradict criteria for developing action competence.

As indicated in Sections 4.2.2 and 4.2.3, all three national documents recommend that, towards achieving the goal of Namibia becoming a knowledge-based society, learners should be active participants in their own learning. In support of this, the National Curriculum introduced the "learner-centred approach" (Doc.1, p. 4) with the following components and descriptions: schools are encouraged to make use of "learners' existing knowledge and ideas to bring new knowledge" (Doc.1, p. 37). With a learner-centred approach, schooling should not be seen as learning alien content (ibid.). "The starting point ... is the fact that the learner brings to school a wealth of knowledge ... from the family, the community and through interaction with the environment (Doc.2, p.7).

To promote active participation and the learner-centred approach, the assessment guideline document recommends that learners identify an issue/problem for the project and state clearly what the problem/issue is, why it is a problem/issue and why they chose to focus on it (Doc.3). This information implies that the Geography fieldwork project focuses on what learners identify as needing change or improvement, and that learners know and trust that there are possibilities for change.

Furthermore, teachers are directed to use local and concrete examples to explain issues because what is known by learners is what is available and seen in their areas. The policy explains that "local examples to illustrate geographical concepts, issues and processes" should be used during teaching (Doc.2, p. 4). In addition, the local environment can also be used when planning for and carrying out simple projects which promote the development of Geographical skills (ibid.).

The Curriculum not only recommends that schools contribute to the local community, but also draw on the local community as a resource to support learning. The Curriculum explains that, "Good relations with the community are essential if the school is to benefit from two-way exchanges, and if learners are to experience that knowledge is all around them, if only they learn to find it and use it" (Doc.1, p. 39). Two-way exchange here implies that schools are also expected to make a visible contribution to the community in which they are operating.

Finally, all three documents encourage learners to work together and engage with each other. Teachers are encouraged to enable "cooperative and collaborative learning" wherever possible (Doc 2 p. 7).

Despite project work being done in groups, the assessment criteria for the fieldwork project allows teachers to assess individual group members' contributions (Doc.3). This indicates that individual contribution is recognised within the collective effort. Equally, schools and individual subjects are advised to avoid working in isolation when doing project work. The guide reads: "assignment outlines may be shared with other schools within your area" (Doc.3, p.19).

This section has explained the content analysis of three Ministerial documents relevant to establishing the explicit and implicit linkages between Namibian Geography teaching and the development of action competence. Much of this linkage will be further discussed in Chapter 5. The following section presents a brief contextual profile of the two selected schools as well as the two teachers' professional backgrounds. Then, in Section 4.4, I describe in some detail the preparation, implementation and consolidation of two fieldwork projects conducted by these teachers in their schools. I describe teaching and learning activities and learners' involvement during these lessons with a view to exploring their developing action competence.

4.3 SCHOOL CONTEXT AND TEACHER BACKGROUND

This section gives a brief description of the two schools that participated in this study. The section also looks at the background of two educators involved in this study.

4.3.1 School One

Omulunga (Pseudonym) is a combined school of Junior Primary and Junior Secondary grades from Grade 0 to Grade 10. The school is situated within Omusati Education Directorate, Ogongo circuit. According the school journal, the school was established in 1967 and its sphere of influence are learners from three nearby villages. Furthermore, the school journal indicated that the number of learners at this school has remained in the range of 300 to 350 learners since 2010. Despite the school being in a rural setting, it has access to electricity, tap water and poor cellular phone and internet reception (OS 1). Within a one kilometre radius of the school, is a church, a clinic and *shebeen* (local tavern) (OS 1).

Learners at this school come from subsistence farming families, in which *Omahangu* (millet) and mixed livestock are the source of families' income and food (G.I. Amwaandangi, Pers comm, March 28, 2014). At the time of data collection (2014), the school had 21 Grade 10 learners: 6 boys and 15 girls (ibid.).

An interviewed teacher, Mr Salomon (Pseudonym, identified in the data as SIE 1), completed a Basic Education Teachers Diploma (BETD) in 2001 and teaches Geography Grades 8 to 10. He furthered his studies with the University of Namibia [UNAM] on a part-time Bachelor of Education programme 2012 to 2015 specializing in teaching Geography to Grades 8 to 12. Mr Salomon was responsible for Grade 8 and 10 in the academic year of 2014 when data for this study was generated.

4.3.2 School Two

Marula Combined School (Pseudonym) is located 5km from Ongwediva town in Oshana region. It is situated within the jurisdiction of Oshana Directorate of Education, Eheke circuit. The school has a population of 702 learners from Grade 0 to 10 (2014). The majority of learners come from Ongwediva town, the surrounding shanty towns and a few from nearby villages.

According to the school principal (who is also a Geography teacher), the school was established in 1975. It is a government school and it is connected to all basic services like electricity, telephone, internet, water and gravel road (OS 2). Despite this, only the teachers' toilet is a flushing one that connects to a sewage dam constructed by the community. Over 700 learners use pit latrines on the school premises (OS 2).

Near the school is a church, and about 4km away is a location that consists of households, shops and warehouses. This is a very busy area built along the main road between the two major towns of Northern Namibia: Ondangwa and Ongwediva (OS 2). Although this area does not have municipal services like sewerage, rubbish removal and street lights, it attracts many people to live there because of the low cost of living (M.Iiyambo, pers comm., May 26, 2014).

Mr Kalenga (Pseudonym, identified in the data as SIE 2 was the Grade 10 Geography teacher at this school who participated in this study. Mr Kalenga has a Higher Diploma in Secondary Education specialising in teaching Geography and Biology. He did not study further since graduating from the University of Namibia, but did receive training in Instructional Leadership through the Namibian Institute of Public Administration and Management (NIPAM).

The next sections (4.4 and 4.5) describe the activities done before, during and after the Geography fieldwork projects. This is a summative overview of two Grade 10 classes at two schools (Case One and Case Two).

The sections include summaries of teaching activities and conversations before, during and after the Geography fieldwork project that shed light on the development of action competence.

Data presented here were generated through participant observations, semi-structured interviews with educators, focus group interviews with Grade 10 learners at both schools, and samples of learners' work.

4.4 CASE STUDY ONE: OMULUNGA COMBINED SCHOOL

4.4.1 Pre-fieldwork project activities: Lessons 1 and 2

The first lesson on the fieldwork project took place on the 20th March 2014 as illustrated in Figures 4.1 to 4.7. Learners were given the project instructions in groups of four to five members (**see Appendix I**). These instructions gave step by step procedures to follow in doing a fieldwork project. The teacher explained these steps and provided a list of possible topics for learners to choose from (OS 1).

After deliberations and explanations of instructions (**Appendix I**) learners got into five groups of four to five members to decide on their group's topic and write the introduction as per the project instructions (OS 1). In their groups, learners discussed and shortlisted issues of concern in their vicinity [*from instructions as shown in Appendix I*] and decided on one to investigate further. In the end, all five groups chose to investigate two topics (water and land pollution). Groups 1 and 4 chose water pollution in the stream a few meters from the school while Group 2 chose water pollution in the local dam. Groups 3 and 5 chose land pollution around the local tavern. The teacher read through all the groups' introductions, in which learners specified the environmental problem, its causes and the group's reasons for choosing it as the focus for their fieldwork projects. This first stage led to the understanding of the existence of the environment problems and seriousness of these issues.

4.4.2 Determining factors for fieldwork topics

Mr Salomon indicated that learners' choice of environmental issues of concern in their local area was guided by the syllabus (SIE 1).

In consultation with the syllabus, the teacher identifies topics that require learners to have an in-depth understanding and to describe or explain the issue (SIE 1 & OS1).

As one learner explained, "we chose water pollution...we see that it is very risk[y] for people to live at the area where water is dirty" [FG 1.1, L1] [for Group 1]. She explained that the majority of people in the area use water from wells and streams for domestic purposes like "washing and watering" (ibid). In their report, Group 2 explained that they chose water pollution as a major problem in their community because animals are using the same water source as people, people are seen bathing in the dam and this affects people's health. Waterborne diseases like cholera and diarrhoea are very common in the area (LRR 3) (see Figures 4.1- 4.4).

Similar sentiments were shared by the groups investigating land pollution. They stated that they chose land pollution because it is affecting people and animals in their area. A learner explained that, "Animals will die once [they] eat these plastics" [FG1.1, L5] [for Group 3]. Furthermore, these broken bottles will cause (*oku tetwa*) injury and the place will look ugly (ibid.). Group 5 explained that "land pollution plays a major role in the community as there is no dumping site or rubbish bins ... people in the village dump rubbish everywhere" (LRR) (See Figures 4.3- 4.5).

In support of going outside the classroom to understand environmental issues better, Learner 5 explained that there are some topics that require one to go outside in order to have a full understanding [FGI.1, L5]. Learners indicated that fieldwork projects help them to recall information better and perform well in examinations. As one learner explained, "I think if I cannot recall what I wrote in my summary book, I can always recall what I observed, hear through conversation to be able to answer the questions" [FG1. 2, L7]. In support of this, Learner 1 also explained that, "without fieldwork project, you will never understand the chapter without seeing things with your eyes" [FG1. 2, L1].

Both Mr Salomon and his learners indicated that ecology is the most suitable chapter for field-based activities (FG1.1; SIE 1). Mr Salomon maintained that, "Ecology deals directly with issues in the local area" (SIE 1). Similarly, Learner 5 explained that Ecology deals with the

relationship between people and their environment, and there is a strong belief that one can have a better understanding of this relationship once you experience it" [FG1. 1, L5].

Learner 5 argued that, "topics like water pollution, land pollution, deforestation occur outside the classroom or the school, therefore one needs to go outside the classroom to understand them better" [FG1. 1, L5].

The fieldwork preparation activities seemed to focus mostly on learners' behaviour modification and assumptions that learners will learn and act through participating in these investigations (OS 1). At the introduction stage, learners responded to questions such as which environmental issue was identified in their area? Why it is a problem? And why they choose such a problem? (OS 1) As explained early in this section, these key questions facilitated learners understanding of the existence and seriousness of environmental problems in their locality. Moreover, the teacher indicated some key questions that the project is likely to provide answers such as 'why do people litter?' and 'are there any ways to prevent this?' (SIE 1). These key questions at the preparation stage demanded that learners understand the root causes of environmental concerns and were committed to understanding social factors that influence people's behaviour (OS 1). Mr Salomon was determined that learners who undertook the investigation developed a positive attitude as their minds were being opened: "They came to understand very well what the impact or what causes and danger of deforestation are" (SIE 1).

The next section presents conversations and observations conducted during and after the fieldwork with a view to exploring the extent to which the fieldwork projects develop learners' action competence.

4.4.3 Fieldwork investigations by learners: Lesson three

The following week, on the 26th March 2014, learners were divided into five groups of four to five members each. Three groups investigated water pollution and the other two groups investigated land pollution. All groups were directed to go outside the school yard, and work within a distance of about 800 – 900 metres (OS 1). Although the groups had different topics for investigation, all 21 learners together worked at one site so that everybody could have an opportunity to observe and engage in discussions (OS1).

The first site was an open stream (Oshana), 300m from the school gate. This stream flows between January – June depending on the amount of rain (OS 1) (See Figures 4.1 and 4.2).

There was no evidence that this water was being used for domestic purposes such as cooking and drinking (OS 1), but upon arrival, the group saw a person washing clothes using the stream water. "People here usually wait until it rains to wash their blankets as they do not want to pay extra money for piped tap water" (L3).

This area is a communal area and the land belongs to the whole community for grazing their animals. Animals like donkeys, cattle and goats can be seen around the area (OS 1) (See Figure 4.3). A learner narrated: "The common cause of water pollution around here is littering" (L1). She points to plastics, cans and bottles lying in water (see Figure 4.2 and scrapped car in water 4.3). Rubbish can be seen in water and on the land near water (OS1). The same learner explained: "Although we [do] not directly drink water from this dam, we eat fish and meat from animals that drink water from this dam" (L1). The learner's intention here was to indicate how serious water pollution is and how it gets into human being's food chain.

On the same day, the group moved to the second site, a dam located about 800 - 900m south of the school as shown in Figure 4.4. This is a water source for cattle, goats and donkey in the whole village (OS1). These animals are seen coming in a group, indicating that they belong to one household (ibid.) (See Figure 4.3). The first time the group visited the dam [around 10h30], they could not find anyone to interview as planned (FG1 (2)), L4). They decided to come back later that afternoon with the hope of finding people looking for their animals. This was indeed what happened as one of the group members confirmed that, "… we went there some hours after and we found somebody to answer our questions" [FG1. 2, L1].

Despite learners not finding anyone to interview in the morning, they engaged one another in a 20-25-minute discussion about water usage, water pollution and looking for evidence of the dam's water quality (OS1). One learner described water in the dam as unfit for human consumption: *"Omeya oga gagala tshinene, naantu ota ya vulu oku kwatwa komikithi dhono hadhizi momeya*" ["This water is dirty, and people can get waterborne diseases"] (L3) (See Figures 4.3 and 4.4). She further explained the causes of water pollution in the dam by stating: *"Ondi wete kutya, omeya ngano oga gagala molwa oku ekela iiyagaya momeya muka"* ["I think the cause of water pollution here is dumping of waste"] (L3). In agreement

with this, Learner 4 stated that, “the risk here is that even these people from *Cuca* shops [taverns] contribute to the poisoning of this water source”.

Evidence was later found that people from the surrounding area regularly come for bathing in the dam (OS 1): “This net and Vaseline empty tin are evidence that someone usually comes and baths here” (L1).

My own observations revealed that the net referred to here is a piece of blue net commonly used in the region as a face cloth. A Vaseline tin is actually an empty container used for petroleum jelly which is used as a skin moisturiser (OS1) (see Figure 4.4).

The dam is located a few meters from the *Cuca* shops [taverns]. These are small shops (about 8-10) where villagers buy basic necessities and are also a place for people at night [Bar]. Learners indicated their very serious concern about these taverns and their contribution to water pollution in the dam. One of the group members explained: “People at these Cuca shops are urinating around here because there are no toilets and when it rains everything is washed into this dam” (L4). This poses a risk to living organisms that depend on this water (ibid.).

The third site visited on the same day was the *Cuca* shops [taverns] close to the dam. The group arrived at this site at 11h40, and many shops were just opening. Music and the sound of people talking could be heard behind the closed doors (OS 1). Learners wanted to find out more about littering at the area (Land pollution). Learners were interested in why people throw rubbish on the ground (FG1 2). Through my own observations, I found that there are not enough dustbins at the area and people are dumping rubbish behind their shop as seen in Figures 4.5 and 4.6 (OS 1). There was only one shop with a rubbish bin (OS1) (Figure 4.7). The following are comments from learners in response to this situation: *“Aantu mpano ihaa longitha edustbin ndoka”* [“People here don’t use that rubbish bin”] (L3); “During the night here, sir...is not easy …. During the night here, everyone is drunk, so who is going to use a dustbin?” (L4). The type of rubbish seen lying around includes plastic bags, empty bottles, cans and newspapers (OS 1). Learners pronounced the area very risky for both animals and people: “It is very dangerous to animals ... if animals eat these plastics and it can also cause *oku tetwa* [injury] to people” [FG1. 2, L5] (See Figures 4.5 and 4.6). During the site visit, the same learners explained that, “This rubbish spoils the scene and the place looks very ugly” (L5).

At this site, learners discussed with one another and suggested how best this kind of pollution can be addressed. They suggested looking at the type of waste lying around (OS 1). Others made connections to the need to improve people's living standards through earning a living. For example, Learner 5 suggested that bottles can be used to earn a living by selling them: "These bottles can be recycled" (L5). He explained to others that bottles can be returned to a depot at Oshakati, or be used as building materials: "I saw that at ORDC" [Ongwediva Rural Development Centre where recycling ideas are exhibited] (L5).

The learners' intention at this site was to interview some residents at the area, but this was futile as people were reluctant to be interviewed. Some of them tried to avoid learners by closing their shops and telling them that they are too busy (OS 1), as seen in Figure 4.7.

Despite this, the visit appears to have raised a growing concern for land pollution in the area. Upon visiting the tavern around 19h00 on the same day, a bar tender (for the bar shown in (Figure 4.7) commented to the teacher*: "Uunona weni okwali wa hala okupula shinasha niiyagaya mpaka, otatu dhilaadhila ngaa oku yi toola po omasiku ngaka".*

["Your learners wanted to interview me about this waste, anyhow we are planning a cleaning campaign at this site"]. This indicates that she was aware of this investigation and knew that there were concerns about the levels of pollution in the area.

This section has presented evidence that learners appeared to understand the seriousness of the local environmental issues that they investigated. The next section focuses on their levels of commitment to address these issues.

4.4.4 Fieldwork activities that supported visioning

In this section, I present conversations and activities that appear related to learners' ability to envision effective responses to the environmental problems, during and after the Geography fieldwork project.

During the interview with the Geography teacher, I asked why the fieldwork project was introduced in the curriculum. Mr Salomon explained that:

> ...looking into their community, when they [learners] compare the information given by the elders how the background of the area was in 20 years' time [sic.] and when they compare with what they see at the current [time], ... it creates... it has a positive impact on the way the learner can understand the topic, for instance, a change in their attitude... (SIE 1)

According to the teacher, schools are expected to equip learners to analyse and understand issues so that they can either decide to sustain old practices or, where necessary, change to better ones. The teacher maintained that, through fieldwork projects, learners develop positive attitudes that help them to shape their future.

Giving a practical example of deforestation, the teacher explained that, "my learners who took that topic to research, they develop like positive attitude toward the exercise, because their minds were opened ... they came to understand very well what the impact or what are the causes of deforestation and what a danger is" (SIE 1).

The teacher further suggested that, in the future, we are not going to experience these types of problems from the same citizens. He explained that the expectation is that by the time these children are adults, they will change from the old unsustainable practices to more sustainable practices [like change from firewood to another energy source like gas and electricity[1]] (SIE 1).

During the focus group interview, learners indicated that they know how they want things to be and they have a dream for the future. For this reason, they chose to study what they think needs to be changed in their local environment and they have a hope that it can be achieved. As one learner indicated: "We chose water pollution; we see that it is very risky for people to live at the area where the water is dirty and they use this water for drinking, cooking and ...it is really very risky for their health" [FG1. 1, L1]. On this, I observed the learners during the fieldwork making recommendations such as: "It is not necessary for people to come and take bath here...it is better to collect water and take bath at home" (L1). On the same note, learners engaged in far-sighted, demanding questions such as "how can we make water fresh again to be fit for people and animal consumption?" [FG1. 2, L4]. These discussions are evidence that learners are developing a clear vision of how they would like their community and environment to be.

It emerged during the focus group interview that learners were looking forward to conveying the message from these investigations to the community in whatever way possible. These

[1] Although the teacher could not specify type of gas and electricity that he referred to as sustainable, I assumed that he referred to biogas and solar energy that are from renewable resources.

ideas came after a learner suggested that, “We need to organise the community meeting and inform the community on the effects of using dirty water...just effects”.

They further set a clear agenda of what to discuss with the community once this meeting materialised [FG1. 2, L1].

Despite these creative strategies, my observations suggested that most ideas on the way forward lacked clarity in terms of implementation. I noted, for example: “Learners discussed recycling of waste material with no clarity on how to go about it” (OS1).

Furthermore, the time needed to implement most of these suggestions was also a matter of concern (OS1). Learners involved in these projects were grade 10s, that are always busy in afternoons with activities such as remedial classes, experiments, tests and summary writing. Some teachers use Saturday to teach and this leaves little time for other extra-mural activities (OS 1).

The next section describes the main actions and associated changes that the learners suggested during and after the fieldwork project.

4.4.5 Fieldwork activities that supported action and change

This section addresses strategies that were suggested during and after the fieldwork to realise the intentions and visions described above. The section describes the steps taken (or to be taken) that, either directly or indirectly, aims to address water pollution and littering in the school’s immediate community.

During the focus group discussions before the fieldwork [FG1. 1], I asked learners if there is anyone who had carried out a fieldwork project before. My intention was to identify the type of activities they had been involved with, and possible conclusions reached during these outings. Two learners out of seven replied that all that they had done previously was to go out in the community and pick up some trash (L1, L3). Another learner explained: “I know we can control land pollution...to pick up dirty” [FG1. 1, L7]. When asked to elaborate, he explained that he had served on the school bazaar’s organising committee the previous year [2013] and they were ordered to pick up litters after the bazaar. Although it was not a fieldwork project as such, I assumed he mentioned this because I asked about going out of the classroom for an environmental issue.

The teacher revealed that he assumed that learners can be influenced through investigation and possibly changes their minds about an environmental issue (SIE 1). I asked him whether the experience children obtained from fieldwork might lead to change in behaviour.

His response was, "Yes, my learners (referring to his Grade 10 class of the previous year) who took a research about deforestation, during classroom discussions, they indicated that they develop positive attitude, I think their minds were opened, they understand very well the impact and danger..." (SIE1). He further explained, "I think they will change from wood to another kind of energy like gas, electricity..."

Both of these perspectives were shared before the fieldwork project. The rest of this section focuses on action-planning and action-taking that was more directly associated with the fieldwork project that aims to change social structures and enhance cooperation in and around the school.

During the discussions at the dam (see Figures 4.1, 4.2 and 4.4), learners expressed concern that water purifying tablets usually distributed by the Ministry of Health and Social Services (MHSS) to rural communities are not always used correctly (OS 1). This concern was taken up during the focus group discussion with opinions from learners as follows: "I think people need to be educated how to use water purifying tablets" [FG1. 2, L1]. "Maybe the school can write a letter to the hospital or clinic requesting them to make it a priority to give information how to use water purifying tablets" [FG1. 2, L5].

The letter of request was then drafted by a learner, dated 18/09, (**see Appendix K**) and the final letter was sent from the school principal's office to the local clinic the following day. [As a co-teacher responsible for Geography and perhaps because I am known as the HOD of the Social Science Department at School One] I received feedback telephonically from the Nurse in charge acknowledging that "it is a good idea, however the Ministry of Health, Social and Service [MHSS] have shortage of staff in rural clinic, therefore unable to give this service" (H. Sem, pers. comm, September 26, 2014). The nurse advised the school to take the initiative to educate children on how tablets/chemicals work in purifying water.

During the focus group discussion, after I explained to learners on how long the school might wait for a proper answer (based on what learners wanted) from the local clinic, learners felt it necessary to initiate dialogue with the community to share information about issues of environmental concern. I asked learners how this might be done and these are some of the

responses: “We need to organise the community meeting and inform the community on the effects of using dirty water...and they will understand that people get sick because of that” [FG1. 2, L1]. Another learner supported the idea by emphasising that “just to inform people to know that is not good to pollute...I know people can understand” [FG1. 2, L5].

I posed a follow-up question on what if people understand but still do not change their attitudes or action. The answer I got was, (all shouted) “Then, we need to introduce punishment to these people!” [FG1.2].

The suggestion to introduce fines to culprit(s) that pollute water was also recommended during a visit on the 26/03 at the dam (OS1) after Learner 1(L1) suspected that someone was bathing in the dam. She was referring to the evidence of the net and petroleum jelly tin they found near water (see Figure 4.4). Based on this piece of evidence, Learner 3 (L3) recommended: *“Aantu naya pewe omageelo shaashi otayi shi ningile owina”* [“there is a need to introduce a fine as people are doing it on purpose”] (OS 1).

The focus group discussion on 14/04 cemented this idea of fining people and indicated their view that stricter legislation is needed. “I think we need a law, which is saying if you are found throwing rubbish on the ground, you can be punished for doing so” [FG1. 2, L1]. This was then connected to Learner 1’s suggestion while at the dam on 26/03 of writing a letter of concern to the headman or councillor and recommending that punishment be introduced.

A letter of concern was drafted by Learner 1 on behalf of Group 2. This letter indicated a serious concern of contaminated water in the village: “Contaminated water in dams caused by ...detergents spilling into dams...ignorance in our surrounding and lack of pride”. The learner’s letter concluded: “To prevent this [water pollution]”, there is a need firstly, to provide public toilets around the village and educate people on harmful effects of littering. “Secondly, if no improvement, we need to introduce punishment to individual found polluting our water sources” (Learner 1). Mr Salomon, the Geography teacher, edited this letter, and the final letter dated 26/09 was sent to the headman through the principal’s office. Although no official response from the headman of Oluteyi village was received, the teacher provided learners a few days later (on 30/09) with an article from the daily newspaper on the issue of water pollution. According to this report in the *Namibia Sun* newspaper, 30/09/2014, the traditional authorities in Northern Namibia agreed to fine culprit(s) found guilty of

various issues. The article reads: “Those accused of spoiling natural water used for human and animal consumption will pay a fine of N$200 (Iileka, 2014, p. 3). (**See Appendix L**).

Whether this report was influenced by the letter from the school dated 26/09 or not was unclear. Mr Salomon contacted the headman, who only acknowledged receipt of the letter and insisted that the school needs to inform children about the content of the article accordingly [referring to **Appendix L**].

Mr Salomon made enough copies for grade 10 learners and requested one learner to read this message at the morning devotion on 04/10 for the message to be taken further to every family.

The group that investigated littering also suggested the need for a law to address littering at the tavern (Cuca shop). In their report, learners suggested that government introduce a law to prohibit importation of empty bottles [avoiding buying empty bottles abroad] (LRR). The same ideas also emerged during the focus group interview. After a teacher asked learners to advise what to do with all those bottles lying around (in Figures 4.5 and 4.6), Learner 7 replied: “One can call the people from Tafel Lager to come and pick up these bottles to use them again” [FG1, 2]. Tafel Lager in this context refers to the brewer.

This same call was made earlier by Learner 5 during fieldwork when he insisted that empty bottles be returned to certain depot at Oshakati town. Furthermore, the same learners commented that bottles can also be used as building materials as per the exhibition at the Rural Development Centre (L5).

In their report, the same group indicated a concern for the numerous plastic bags lying around. They suggested charging people for plastic carrier bags so that people can start re-using them and bringing their own plastic carrier bags when shopping (LRR). There was a further suggestion to provide more dustbins at the area, noting that the only dustbin at the taverns should be relocated to a more visible site [OS 1; FG1. 2].

Learners interviewed in the focus group had the following reflections on the question of whether the fieldwork project developed new skills, knowledge and attitude that might not be gained through ordinary classroom-based lessons: Learners 1 and 3 explained that they managed to get more information that is not even written in books on how environmental issues can be dealt with. I asked them to give more practical examples. Learner 1 replied:

“We interviewed people and they suggested fencing off water sources” [FG1, 2, L1] and “adding chemical in water” (Learner 3). “If we could not go out, we could not get information ...” (L5). This implies that solutions suggested in Geography textbooks and discussed during lessons are not necessarily the same as those suggested by people during the fieldwork project.

This section has outlined what emerged during and after the Geography Fieldwork project conducted by learners at School One on water pollution and littering.

Using the IVAC framework (Jensen, 2004) outlined in section 2.4.4, the section has summarised how the Geography fieldwork project offered learners an opportunity to understand the underlying causes of environmental issues.

As suggested by Jensen (2004), in order to identify underlying causes of environmental issues, the investigative process must be conducted in a systematic way as outlined in Table 2.1, section 2.4.4. Jensen (2004) further suggested taking a sociological approach to environmental issues, that is, an approach that emphasises social, political and economic structures beyond the immediate school context that have an influence on the solutions or actions suggested by learners. These possibilities and tensions will be discussed further in Chapter 5. The following pages illustrate Figures 4.1 to 4.7 showing learners during the fieldwork project at school one. Thereafter, the next section presents findings from School Two in the same format.

CASE STUDY ONE: The following **Figures 4.1** to **4.7** illustrate learners carry out their Geography fieldwork project at School One as described in section **4.4**

Fig 4.1 Water pollution group

Fig 4.2 Land pollution leads to water pollution

Fig 4.3 Communal grazing area and donkeys coming for water whereas a visible scrapped car in water is evidence of pollution

Fig 4.4 A learner showing a piece of net used for bathing in the dam

Fig 4.5 Learners looking at the dumping site behind shops

Fig 4.6 A closer loser look at the types of waste

Fig 4.7 The only shop with small rubbish bin behind it

4.5 CASE STUDY TWO: MARULA COMBINED SCHOOL

This section provides a summary of activities carried out at School Two as illustrated in Figures 4.8 to 4.10. It includes the pre-fieldwork, during the fieldwork and post-fieldwork activities and interactions.

4.5.1 Pre-Fieldwork project activities: Lessons one and two

Lesson one at School Two took place on the 26 May 2014. The Geography teacher, Mr Kalenga (Pseudonym), introduced me to the Grade 10 class of 22 learners, 7 boys and 15 girls (OS 2).

He introduced the concept "Fieldwork Project" in the Geography assessment sheet by referring to it as "a longer assignment" (OS 2). Just before further explanation, he asked learners if they knew anything about this type of project. The following were the answers from learners: Learner 1 "We did a project in Life Science this year, but not about fieldwork". Learner 2: "We also drew a rainfall graph in Geography as a project at the beginning of the year and I am not sure if this is the same sir" (OS 2). There was an indication that learners knew what a 'project' is, but were not clear of the term 'fieldwork' (my observation).

The teacher requested learners to sit in their usual groups of 4 to 6 members, and explained the term fieldwork. Each group received a copy of project instructions in **Appendix M** (OS 2).

There were four topics for four groups as indicated in the instructions (see **Appendix M)**. Three of the groups selected topics, but the last group had no choice as there was only one topic left. I asked members how they felt about it and one responded: "We got stuck sir...all these topics are of concern here...no problem" (OS 2). Finally, groups investigated topics as follows:

- **Group 1**: Littering around the school ground
- **Group 2**: Rural-urban migration
- **Group 3**: Analysis of a case study on putting pressure on local natural resources
- **Group 4**: Rapid population growth

On the same day in the afternoon, I randomly selected and invited one learner from each group for a focus group interview.

On the first day of this project, 26th May 2014, learners in groups were given a chance to write an introduction of their project topic, [*as per instructions shown in* **Appendix M**]. The guiding questions were: why did you choose this topic, why is this topic important and what is the research about? The classroom atmosphere was informal with groups busy discussing what to present in ten minutes (OS 2).

After group work discusions, learners presented their introduction to the whole class. The first group to present stated: "We realise that there are too much litters on the school ground...we ask ourselves how can we keep our school clean" (Group 1). Reflecting on the importance of their topic during the focus group discussion, a group member explained: "These...are contributing to the spoilage of our natural environment and we need to find more information...what need to be done...to come up with some solutions and ... help us to answer questions in examination" [FG2. 1, L2].

Another presenter reported: "Our project is based on rural-urban migration as a part of population Geography" (Group 2 member). The presenter further explained that they wanted to find out the causes, problems and benefits of this movement (OS 2). During the focus group discussions, one group member emphasised: "Understanding on this issue...is very important because nowadays people are complaining of not enough textbooks, not enough education materials and hunger... so we need to understand this and come up with some solutions during our fieldwork project" [FG2. 1, L3]. This translates how a learner understands the impacts of rural-urban migration.

Group 3 explained that they had to analysis the case study to find out factors that put pressure on local natural resources (Group 3). "This topic is important because it educates people ... so that they can preserve for future generations", the presenter explained. During the focus group interview, Learner 1 who represented Group 3 explained that through this project, "we are to find out ... what need to be done and what are the effects when we, for example, overuse the land for cultivating" [FG 2. 1., L1].

Group 4 researched rapid population growth issues and the presenter said: "This topic directly involves the community we live in ... and it helps us to understand this topic (OS 2).

To defend their choice of this topic, Learner 4 explained during the focus group discussion,"We are to investigate on the problems and benefits on rapid population growth in the area in order to understand it and what it means in reality" [FG 2. 1, L4].

4.5.2 Determining factors for fieldwork topics

Despite the topics for investigation having been identified by the teacher, not the learners, the teacher maintains that the topics are relevant for the area where the school is located. "These topics are all about what is happening in our local areas and learners can see these issues/concerns around them, at their village, and even in their own family" (SIE 2). He further explained how learners were involved in the selection of the project topics by stating that: "the last decision lies with learners".

When asked about learners' attitudes toward fieldwork, the teacher commented: "Learners enjoy going out of the classroom" (SIE 2). He further explained: "This is another way to refresh and learn in a different way".

Whether or not learners understand fieldwork projects in the same way as a teacher can be seen in the following answers after learners were asked about the importance of the fieldwork project. "We need to observe environmental problems in reality like land pollution, deforestation, ask people in the community how this issue occurs" [FG2. 1, L4]. Another learner insisted: "One can go and experience, see and feel the problems by collecting information from the people who stays in this settlement *[village or town]* in order to understand them" [FG 2. 1, L1].

Apart from these statements by both the teacher and learners, what else makes the fieldwork project a valuable learning tool? To answer this, I analysed the responses of participants on the importance of fieldwork project. During the interview, the teacher explained that after the project, "learners will be able to relate to real issues investigated, be in a position to identify causes and come up with amicable solutions to some of these issues" (SIE 2). On the same note, the fieldwork project can also help all learners to learn despite their different abilities. The teacher explained: "Mostly our aim is for everyone to catch up with the content".

By illustrating practical examples of projects in Geography, Learner 2 mentioned that, "we collect data on various weather aspects like using rain gauge to obtain readings on the amount of rain and use these data to draw graphs and do some calculation like totals and annual average in our own areas" [FG2. 1, L2]. This example expands the list of possible topics apart from ecology mentioned by Learner 4 and Population Geography by Learner 1.

4.5.3 Fieldwork investigation by learners

This section explains activities that occur during the actual fieldwork project on the 27th May 2015. Although learners investigated different topics, they all went together to each site (on the 27/05/15) so that everybody could have an opportunity to observe and have a general understanding across all three topics (OS2 & SIE 2). The first site was the school grounds.

The group assigned to investigate littering in the school grounds were seen taking notes on the types of litter they could see and interviewing other learners, institutional workers and teachers (OS1). Learners visited one Junior Primary classroom (Grade 2), one Senior Primary classroom (Grade 5) and a Junior Secondary classroom (Grade 9) (OS2).

While observing inside the class, the following comments were made: Learner 4: "This one is very clean, you can see", referring to Grade 2. Learner 6 "I think, learners here are very serious, look at the cleaning list and chairs are well arranged". Learner 1: "Woh, something need to done here". Although the classroom was clean, a heap of rubbish could be seen behind the entrance door (OS 2). It was then revealed in the group report that despite a learners' cleaning schedule, the junior secondary learners ignore the list (LRR1). This indicates that the learners are responsible for cleaning their classrooms but are not doing so.

Thereafter, the group visited the staff room. While in the staff room, one learner whispered, "The cleaner was in here" (OS 2). This means that they found the staffroom cleaned. Learners moved closer to a teacher who was busy preparing her teaching material and then, to the corner where the rubbish from the staffroom are kept before disposal. A few pieces of paper cuts could still be seen around the bin in the staffroom (see Figure 4.8).

The group then decided to visit the school dumping area (Figures 4.9 & 4.10). This is an area where all classes from grade 0 to 10 dump rubbish once they clean their classrooms (OS1). "The cleaner also dumps at this point from the staffroom", insisted Learner 1.

She was referring to the bin in Figure 4.8. As shown in Figure 4.10, learners jumped into a landfill meant for rubbish. Their intention was to find out the type of rubbish found in the dumping site (OS 2) so that they can suggest solutions. As reflected in the learners' report (Appendix N), types of waste identified on the school ground and landfill (Fig. 4.10) included papers, plastics, chair/table, metal frames, bottles and tins (LRR1).

On the same day at 15h00, the group visited Olefa Location (pseudonym) about 4km from the school. Learners who selected the topics of rural-urban migration and rapid population growth were to interview residents of this area. The group conducted a group interview with three self-employed ladies working in a dress-making project. The interview was conducted in a local language [Oshiwambo].

Learners allocated each other questions and responsibilities (OS 2). Learner 3 introduced the group and posed the first question as: *Oko kutya ngahelipi hano ovanhu tava di komikunda va yuka keedolopa? Na pamadilaadilo oye otava dileko shike komikunda?* [How do you understand rural-urban migration and in your opinion why do people migrate from rural areas]. One of the ladies replied (joking): "*Onye naana inamu hala komikunda, nye ovanyasha, tu lombweleni kutya omolwashike*" [You are in the age group that doesn't want to live in rural area...can you tell us why?]. *"Ovanhu otava kongo ouhupilo...momikunda kamuna oilonga*". [The first point is people need to earn a living...there are no job opportunities in villages]. She elaborated her points by giving more practical examples that taking care of the family requires income that can only be obtained in town (OS 2). Her response corroborated the teacher's comment in the interview that, through the fieldwork project, learners are exposed to the reality of the topic (SIE 2).

The second learner asked: *"Oto dulu oku tu lombwela omaudjuu oo haa holokapo ngeenge ovanhu tava tembukile keedolopa? Kutya nee omodoolopa nenge okomikunda".* [What are the negative effects of rural-urban migration?]. A learner clarified that the question referred to the effects for both village and town. (OS 2). To this, another lady replied: *"Oshinima shimwe ngeenge omunhu okwe ya kodoolopa ndee inamona oilonga, wumwe oha tameke ta vake oinima yovanhu. Ngeenge omunhu okuna ounona, ohava tameke tava li oyeekelwashi".* [One thing is that when a person comes to town and doesn't get a job, he/she might get involved in stealing other people's goods"]. "*Oku wedapo, ngeenge omunhu okuna ounona, otava tameke tavali moimbodi, shaashi meumbo kamuna oikulya*".

[Furthermore, if that person came in with children to town, these children will start eating from dustbins as there will be no food at home]. Learners were listening attentively to the lady who introduced herself as one who had suffered and struggled to stay in town since arriving in 2010 (OS 2).

Learners were not only interested in problems created by the movement, but were also interested in the benefits of having more people in towns. To understand the other side, Learner 4 (L4) asked: "*Omauwa ashike elipo ngeenge omwaalu wovanhu owa hapupala meendolopa ile momikunda*" [what are the benefits if the number of people in town or village increases?] The three ladies elaborated on the benefits by giving practical examples for both village and town.

The last question, which Learner 4 described to be the most important, was what needs to be done to discourage (if not to stop) people moving from villages to town. *"Oshike shina okuningwapo opo ovanhu vakalekwe momikunda?"* [What needs to be done to keep people in rural areas?].

The lady replied: *"Oiyakulifo oya pumbiwa momikunda, neengeshefa opo di yadje oilonga kovanhu"* [Services are needed in villages and businesses to create job opportunities]. A number of points were discussed such as providing services to rural areas, creating job opportunities and opening businesses in rural areas (OS 2).

Although not everyone participated by asking questions, all learners showed interest in the conversation and remained focused throughout (OS 2). This reinforced the point raised by the teacher who mentioned that "learners enjoy going out of the classroom" (SIE). He explained by saying that this is another way to refresh and learn in a different way (ibid). After these discussions, learners met to discuss and reflect on the visit. The aim here was for the group to summarise findings while at the site and observe any evidence of anything mentioned during the interview.

This section has highlighted activities that happened during the Geography field-based investigation. It explored how these activities can contribute or not contribute to the development of knowledge about the existence of environmental issues and might help to raise concern and attention. The next presentation explores opportunities to develop knowledge about alternatives and ways to combat particular environmental issues that learners were investigating.

4.5.4 Fieldwork activities that supported visioning

This section explains conversations and activities related to learners' developing their vision of responses to local environmental issues during and after the Geography fieldwork project.

Evidence from the data indicated that the investigations into the four topics provided opportunities for learners to take an interest in the future. This was evidenced by their comments and inputs during the fieldwork and focus group discussions. In all cases learners indicated how the problem or issue can be reduced or avoided. The most dominant solution across all issues was that learners suggested education as a solution. "I think education is a better solution, from my point of view" [FG2. 2, L1]. To clarify her points based on what the group was investigating, she explained as follows:

> This process like monoculture, if you go to villages, if you are having capability of changing this monoculture, you can come up with a strategy of educating people village to village on the effects of monoculture and overstocking. If you tell farmers about the disadvantages of overstocking like educating them...they won't do it again [FG2. 2, L1]

An alternative to agricultural monoculture in the community was clarified further by Learner 2. In his opinion, farmers need to be encouraged to use other seeds instead of omahangu. He said: "Maybe people can also buy different seeds; maize, and groundnuts" [FG2. 2, L2]. He explained that people can sell them to encourage the usage of these seeds, and this may make a change. The challenge in this regard is, "people don't have trust in those seeds ... because they never practised them before" [FG2. 2, L1].

The issue of seeking alternative lifestyles to address ecological concerns also became evident also when learners considered ways to reduce air pollution. Learner 1: If people do not want to walk, "why doesn't one make a car that is using solar"? [FG2. 2 L1]. In response, another learner commented: "Maybe a solar power car is expensive, the bicycle on the other hand is another story ... people can afford a bicycle" ...but the challenge here is when travelling long distance [FG2. 2, L2]. Learner 1 did not see this as the only the challenge and she explained that: "if you come up with bicycle policy, no one who is working would ride on bicycle, it will look cheap" [FG2. 2, L1].

Defending education as the best option to deal with environmental problems, Learner 1 further insisted: "...if I become a family woman or family man...information I learnt, I will use them to educate my kids, and my kids will educate another generation, generation like that..." [FG2. 2, L1]

While supporting education as a solution, Learner 2 raised a concern about some societies' beliefs. "I think there is also this belief that many children will help you when you get old" [FG2. 2, L2]. On the same note, another learner stated: "traditional people believe that a man or woman can be respected if he or she has a lot of kids [FG2. 2, L1]. "By the way, if you have many children, how will you care for them, how will you send them to school, then you have to ask yourself these questions, then you will make a better choice" [FG2. 2, L2].

There were also various suggestions by learners to introduce a legal framework that will address some environmental concerns. On the rapid population growth, a learner suggested: "I think the government should introduce the policy that each couple should only produce a certain number of children" [FG2. 2, L3]. Another learner supported this idea by stating that "the policy of one child per couple can work...I also think on the solutions...to the population growth, I think if Namibia can legalise abortion" [FG2. 2, L1].

In their report on the topic about littering on the school ground, Group 1 recommended the introduction of fines for people seen purposefully littering (LRR1, **Appendix N**). In the same report, learners indicated that it is important for school rules to reflect the environmental policy and urged teachers to reinforce it.

Furthermore, learners visualised a future without some environmental issues such as air pollution by suggesting the following. "If one can come up with a car that is connected to solar panel and batteries, I think is impossible to come up with...but one day if one could create that, it will limit the air pollution" [FG2. 2, L1]. Replying to this suggestion, another learner explained that, "maybe solar power car is expensive, many people can't afford it" [FG2. 2, L2]. He further suggested that, "the bicycle on the other hand is another story. People can afford a bicycle".

The data presented here offers insights into learners' opinions and suggestions on how environmental issues can be addressed through imaginable alternatives. In the next section, I present the identified action possibilities that can bring about changes and the realization of the intended vision.

4.5.5 Fieldwork activities that supported action and change

This section addresses in a more detail those actions and changes that were evident during the fieldwork investigations.

It includes conversations, activities and opinions that explain what needs to done to achieve the intended vision, effects of such actions and possible barrier(s) to act. This discussion covers all four environmental issues investigated at School Two.

An explanation given by the teacher on why data collected through primary sources are recommended in fieldwork projects is very relevant to this discussion. The teacher argued: "If they use secondary sources, they will end up only doing recommendations based on the textbook" (SIE 2). He elaborated that the textbook recommendations were limited whereas "These [primary sources] are all about what is happening in our local area and learners can see issues, concerns around them, at their village and even in their own family". He explained that "some suggestions and recommendations or solutions of issues or problems require people in the community to understand it, including leaders, otherwise it will remain a suggestion" (SIE 2).

The action possibilities in this regard should be actions that can bring change to us, our local areas and our families. Which the teacher, in this case feels the textbooks are unable to do. In line with this, all four learners shouted "yes" to these concluding remarks during the focus group interview:

> You know, some textbooks give a solution to deforestation that people should use alternative building materials...this solution is not applicable in a certain local area because people cannot afford those alternatives... and really unless we go out...find out how things done in real life...Is that our standing position? [FG2.2].

Learners also recognised that changing peoples' mindsets is a type of action taken address environmental concerns. In response to how the fieldwork project leads to attitude change, one learner explained: "If they see the conditions people are living in during fieldwork, maybe they will change their minds and they will think twice" [FG2. 2, L2]. This might change the mindset described earlier as: "...traditional people believe that a man or woman can be respected if he or she has a lot of kids...no man want to be called a coward because you don't have a lot of kids [FG2. 2, L1].

On the same question, the teacher explained that actions and changes from the fieldwork project depend on the commitment of the teacher and the school. He elaborated that:

> If they recommend something that needs to be taken up by the school management, because this was an investigation of the issues/concerns preferable on the environment, then the school can look if it is possible to be done or if it needs other people from the community, we will then take it up from there (SIE 2).

To demonstrate commitment, Mr Kalenga advised: "It is always important that a teacher must request the raw data [of fieldwork project] in order to see if there are any important information that learners did not report" (SIE 2).

When I asked Mr Kalenga to give some practical examples of actions recommended from these projects, which were taken up by the school management or community level from previous years, he had this to say:

> ...there was a project on hygiene and sanitation at our school. These learners did very well and they recommended allocating or putting a new tap next to our pit-latrine for hand washing. This helps a lot and up to today learners and teachers are using this tap to wash hands after visiting the toilet. I am sure if learners could not make this research, this tap could not be there. There are a lot of more suggestions but due to time and bureaucracy in the society, is not easy to implement them (SIE 2).

Evidence of this action and change was confirmed through observation, that the school has two water taps with one located next to the pit latrine (OS 1).

When asked about any observed behavioural change in the learners following the Geography fieldwork project, the teacher explained:

> It is a bit difficult to prove at school level because these kids only stay here between 08h00 – 14h00, but looking at few examples of the other group research on littering caused by the vendors that sell junk food to our learners, since that day when learners interview vendors what need to be done, things improved. Maybe vendors also came to understand not to use newspapers when selling cakes, perhaps they understand now that there is a concern (SIE 2).

This section has focused on possibilities for action and change explored during the Geography fieldwork project at Marula Combined School. As noted by the teacher during the interview, these suggestions remain as such until someone takes it up with the community to understand them (SIE 2).

The following pages illustrate figures 4.8 to 4.10, which show learners during fieldwork at School Two.

CASE STUDY TWO: The following **Figures 4.8** to **4.10** illustrate learners carry out their Geography fieldwork project at school two as described in section **4.5**

Fig 4.8 Rubbish bin in the staffroom under a desk

Fig 4.9 School Dumping area

Fig 4.10 Learners sorting waste

4.6 CONCLUSION

This chapter has presented data generated at Omulunga Combined School and Marula Combined School during the Grade 10 Geography fieldwork project. Data were presented in two sections. The first section analysed the content of the three Ministerial policy documents that inform education in general and Geography as a subject in particular. The content analysis revealed that all three documents directed and encouraged learning through investigations of real issues in learners' local area. Furthermore, learners were encouraged to participate actively in the learning process. In line with the Namibian Vision 2030 national strategy, the three documents are seen to promote skills that are necessary for an economic-based society. These skills include 'learning to learn' skills, social skills and communication skills.

Section Two of this chapter described two cases of Grade 10 classes at different schools carrying out a fieldwork project in Geography. In each case, I explored evidence of learners developing action competence, and I established evidence of action competence in all aspects of the fieldwork project. Data collected revealed that learners developed some aspects of action competence. The next chapter will analyse and discuss the activities and perspectives presented here in relation to relevant literature, previous research and the study's research question.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1 INTRODUCTION

In chapter 4, I presented data gathered from various data gathering methods as explained in chapter 3. In this chapter, I now present and discuss analytical statements by reconsidering this data in the light of insights from literature reviewed in chapter 2. These discussions establish the evidence of learners' developing action competence during the fieldwork project and how the development of action competence related to the focus and expectations of Geography syllabus for Grade 10.

To facilitate the discussion towards the findings of the study (which are presented in sections 4.4 and 4.5), I begin by presenting the following six analytical statements, all of which are traceable to analytical memos as described in chapter 3 and illustrated in Appendix E:

- *Analytical statement 1*: The Geography fieldwork projects fostered contextual understandings of environmental issues in the local area.
- *Analytical statement 2*: The Geography fieldwork projects supported learners to develop multi-dimensional understandings of local environmental issues.
- *Analytical statement 3*: Fieldwork encouraged critical thinking and stimulated learners' commitment to taking indirect actions to address environmental issues.
- *Analytical statement 4*: Fieldwork created an opportunity for schools to interact with community and environmental issues, understand people's feelings and attitudes, and elicit emotional responses.
- *Analytical statement 5*: The Geography fieldwork projects enabled learners to identify barriers to school-initiated environmental actions and to explore alternative actions.
- *Analytical statement 6*: Learning processes associated with the Geography fieldwork project supported the development of action competence, but with some limitations.

5.2. Analytical statement 1: The Geography fieldwork project fostered contextual understandings of environmental issues in the local area

Support for the value and inclusion of fieldwork projects in teaching is evident in both the international literature and in Namibian educational policies. The National Curriculum for Basic Education (Doc 1) and Continuous Assessment Manual for Geography, Grade 8-10 (Doc 3) explain that Geography fieldwork projects aim to give learners opportunities to investigate topics in greater depth with an emphasis on high order skills such as analysis, synthesis and evaluation (see also Chapter 2, section 2.5.4). The aim of investigation is to create awareness of the immediate and wider environment, and foster understanding of people's interactions with the environment (Holmes & Moorhouse, 1991). In general, investigations cultivate learners' awareness, knowledge, appreciation and concern for the natural environment and effect of people's action upon it (Du Toit & Sguazzin, 1995). One of the aspects of action competence is gaining knowledge about environmental issues, how they arose and possibilities to resolve them (Jensen & Schnack, 1997).

In this case study, learners at both schools showed a deepening understanding of environmental issues in their local context at the introduction stage of project work (section 4.4.1 and 4.5.1). Learners answered questions such as: what is the issue/problem they are to investigate? Why it is a problem? And what is their reason for choosing to focus on such a problem? These are important questions which help learners, at this early stage, to develop concerns, focus their attention and create a starting point for a willingness to act (Jensen 2002; 2004).

In both schools, there was some evidence that learners developed understandings and concerns in relation to local social-ecological issues. For example, when asked why they opted to investigate water pollution, a learner answered: "*We see that it is very risky for people to live at this area where water is dirty*" (referring to Figures 4.1, 4.2, 4.5 and 4.6) (FGI (1) L1). The same learner explained that "*people can be affected when eating fish or meat from animals that drink water from this dam"* (OS 1, L1). Referring to Figures 4.16 and 4.17, a learner admitted that "*we realise that there are too much litters on the school ground... we ask ourselves how can we keep our school clean".*

Another learner referred to the seriousness of land pollution, (Figures 4.5 and 4.6) stating that: "*Animals will die once they eat these plastics and these bottles will cause injuries ... and the place will look ugly*" (FGI (1) L5).

These are examples of learners' contextual understandings being developed through the fieldwork project. As described in sections 4.4.1 & 4.5.1, learners were actively involved with collecting data about real environmental issues in their local areas. This motivated them to develop values and an attitude of commitment, which is an important aspect of action competence (Jensen & Schnack, 1997). As per Section 2.5.4, the most important aspect of enquiry-based learning is that it encourages learners to construct knowledge and discover solutions to issues under investigation. This is in line with a 'new Geography' approach (Beaumont & Wyn Williams, 1983); Tilbury & Williams, 1997; Kent et al., 1997) in which the emphasis shifts from the traditional 'Cook's Tour' (see Section 2.2.1) to projects, problems and learners' engagement with them.

As outlined in Section 2.5.3, local case studies are encouraged by Jensen and Schnack (1997), Mogensen (1997), Jensen (2004) as part of the action competence approach, as well as in the Geography syllabus (Doc. 2) due to their potential to develop learners' knowledge *in context*. Jensen (2004) explains that if students acquire an understanding of how pollution is threatening human life and natural environments, they are more likely to become involved and motivated to act. Equally, other scholars add that learners must have adequate knowledge about the situation in order to act in a competent way (Goran & Ewa, 2001).

These illustrations are consistent with scholars such as Van Harmelen (2005) and Haras (2010) who argue that the best way to sensitise learners and develop their contextual understanding of environmental issues is to visit an area where those issues occur. They further explain that when learners engage with the world outside the classroom, they have a greater opportunity of developing an understanding of a real problem. This reflects the perspectives of John Dewey (1938, cited in Ulrich, 1997 and Down, 2010) (Section 2.2.1) on "continuity of experience", as well as the experiential learning model described by O'Donoghue and Lotz-Sistka (2006) (see chapter 2, section 2.4.2.2, and Fig.2.1). The common idea in all these scholarly contributions is that in order for environmental education to be progressive, learners must have experiential learning opportunities.

Jensen and Schnack (1997) draw attention to the close links between experience and actions, explaining that "without action competence, one cannot become rich in experiences, which in their turn can help to qualify action competence" (p. 167).

However, even if the fieldwork experience developed learners' contextual knowledge about socio-ecological issues, Jensen (2004) notes that knowledge alone is unlikely to lead to action and change; learners also need to be motivated and committed to being part of the transformation. In this study, 6 of 12 learners (50%) indicated that they mostly valued the fieldwork project for the way it prepared them to answer examination questions [FG1. 2, L1, L3, L5 and 7] [FG2.2, L1 and L2]. For example, Learner 3 explained: "Okumona oku vulithe okulongwa ngi yaka ino mona...no mo makonakono oto shi dhimbululukwa nawa" [*To observe the phenomenon is better than being taught in the classroom about it ... you can remember well during examination]*. While this might seem to be a limited appreciation of the fieldwork project, Breiting, Hedegaard, Mogensen, Nielsen and Schnack (2009) remind us that schools are primarily educational sites meant to benefit learners, and any social-ecological benefit from the learning process is a secondary bonus. This implies that the contextual knowledge and understanding learners' obtained from participating in these Geography fieldwork activities should be evaluated in terms of their educational context (Breiting et al., 2009) and according to education criteria (Jensen & Schnack, 1997). The most crucial factor is what learners learn from participating in these activities.

5.3 Analytical statement 2: The Geography fieldwork projects supported learners to develop multi-dimensional understandings of local environmental issues.

Drawing on what he refers to as sociological approaches to environmental education, Jensen (2004) suggests that learners should be able to pose the crucial question: "Why do we have the problems we have?", and, from there, explore the complexity of their causes and resolution (p. 416). As discussed in Section 2.5.1, the Namibian Ministry of Education (2005) aims for learners to understand the inter-relatedness of biophysical, political, social, cultural and economic systems in their world. The Ministry (2005) advances the understanding that environmental issues and challenges are not only biophysical problems, but are also related to and caused by social, economic and political factors. In line with these policy directions, Geography fieldwork involves learners exploring knowledge about the root causes of environmental problems they face and their interconnections with economic, cultural, social and biophysical dimensions.

The case study data suggested that the Geography fieldwork projects created opportunities for learners to develop multi-dimensional understandings of local environmental issues. For example, when a group of learners investigated their local water source and found it to be polluted, they recognised that there were broader economic factors that influenced the problem. As described in Section 4.4.3 (also see figures 4.1 & 4.2), a learner observed: "*People here have to wait for the rain in order to wash their blankets [using water from the stream] as they do not want to pay extra money for piped tap water*" (OS1, L3). The root causes of water pollution is not just that people wash their blankets directly in a stream but also financial constraints forced upon them to reserve piped water for basic domestic uses like cooking and drinking. This is a clear illustration of Morgensen's (1997) aspiration that, through participating in this kind of learning project, "pupils become wiser as to mechanisms, phenomena and barriers that in a broad sense are connected with an environmental problem" (p. 56).

Moreover, some learners were able to indicate how elements of the environment are interlinked. This became evident when a member from the water pollution group, School One explained how polluted water can get into the food chain until it reaches people. A learner explained: "*Although we are not directly drinking water from this dam* [Fig.4.4], *we eat fish and meat from animals that drink water from this dam*" (L1, OS1). This learner has demonstrated her knowledge and understanding that if the biophysical dimension is affected, other dimensions (in this case, human health) can also be affected. Equally, during the focus group interview, a learner suggested the introduction of a law to punish culprits found polluting water [by bathing as shown in evidence Fig. 4.4]. This comment demonstrated that the learner understands how changes in the political sphere might influence people's behaviour for positive changes in the biophysical sphere. These kinds of insights reflect a holistic understanding of environment and people's interconnectedness and influence on it, as conveyed by international and Namibian environmental education agendas (previously outlined in section 2.5.1).

Further evidence of learners developing their understanding of root causes of environmental issues occurred during the focus group discussion in which learners discussed the causes of rapid population growth[2] in relation to their investigation as explained in section 4.5.1

[2] **Rapid population growth**: The area referred to here is a settlement closer to the fast growing town, Ongwediva. Residents are mostly people who moved out of town because they cannot afford municipal services and have less control over the number of occupants per residential unit.

One learner reflected: *"These traditional people believe that a man or woman can be respected if he/she has a lot of kids*" (FGI 2 (2) L1). She further explained that: "*No man wants to be called coward because you don't have a lot of kids*". In these examples, learners were able to consider the root causes of a local environmental issue (rapid population growth) and its connections to cultural beliefs, which is one of the steps in developing action competence. As explained in section 2.6.3, Jensen and Schnack (1997) explain that if learners are to contribute to the solution of contemporary environmental issues, they have to identify personal and structural causes behind these issues.

On the same note, learners showed a strong inclination to want political intervention. One learner suggested: "*I think the government should introduce the policy that each couple should only produce a certain number of children*" [FG2. 2, L3]. Another learner stated: "*I think Namibia can legalise abortion…" [FG2.2, L1].* Schnack (1996) and Breiting et al. (2009) would probably recognise these interactions as indicators of the learners' developing action competence; they possessed enough confidence to identify broad structural and systemic causes behind an issue (the high birth rate and population growth in Namibia) and suggested how the issue might be resolved. However, as Schnack (1996) cautions, some environmental issues require people to act at a level that goes beyond the school's or individual's sphere of influence, such as addressing human population growth. Jensen & Schnack (1997), Jensen (2004), and Bishop and Scott (1998) caution that action competence is not fully achieved when actions address symptoms rather than causes. Furthermore, appeals to external policies and laws – as suggested by some learners – reflect a reliance on behaviour modification and social control, which is contrary to the ideals of developing democratic competence (Breiting et al., 2009).

5.4 Analytical statement 3: Fieldwork encouraged critical thinking and stimulated learners' commitment to taking indirect actions to address environmental issues.

There are clear parallels between the characteristics of the desired Namibian citizen, able to respond to environmental issues, as described in the National Curriculum for Basic Education (Doc 1), and the characteristics of action competence presented by Jensen and Schnack (1997) (section 2.4.2). The latter argue that education is not about simple behaviour modification, but about creating a democratic process of participation in which students decide for themselves the action they will take.

This is referred to as an ability to think independently and find solutions to issues at a level appropriate to high school learners (Doc 2). Both cases suggested that learners were not merely adopting predetermined solutions; they came up with proposals based on their developing understandings of the issue in context and suggested what they perceived as a solution to an environmental issue in question.

Moreover, the fact that learners could not adopt predetermined actions to environmental issues, the concern is that some suggested actions might only deal with individual society or specific area. On this, Jensen and Schnack (1997) warn that schools "run the risks of teaching pupils a simplistic and individual approach to environmental problems" (p. 480). They argue that if the action is not contributing to the development of learners' critical and global understandings of the environmental issue, then it might counteract the development of their action competence.

As illustrated in section 4.4.5, after learners identified the extent of water pollution in their area, one suggested: "*We need to organise the community meeting and inform the community on the effects of using dirty water*" [FGI. 2, L1]. During the interview, one of the group members initiated a solution to water pollution and took responsibility to draft a letter to the village headman concerning the usage of water in the dam, as shown in Figures 4.1, 4.2 and 4.3 (OS 1, L1). Learners also made a request to the line Ministry of Health, Social Services (MHSS) for the community to be educated on how to use water purifying tablets (**see Appendix K**) after the proposal from one member of the group: *"Maybe the school can write a letter to the hospital or clinic requesting them to make it a priority to give information how to use water purifying tablets" [FG1. 2, L5].*

Examples such as these reflect learners taking what Jensen and Schnack (1997) and Bishop and Scott (1998) refer to as intentional actions (see Section 2.4.2.1). This means there must be an effort (and purpose) to achieve something. To align the learners' suggestions illustrated above with Figure 2.2 for criteria for development of action competence, there is evidence that these were not predetermined directions (Jensen & Schnack, 1997 and Breiting & Morgensen, 1999). In Chapter two, section 2.4.2.3, the comparison is made between actions, activity and behaviour. The key point is whether learners decided for themselves to take action and whether this action address the root causes of the environmental issue. The data suggested that learners developed their own possibilities to influence people indirectly, but uncertainty remains over whether people will act in accordance with the outcomes of the proposed meetings.

The intervention to write letters illustrated in section 4.4.5 to both the village headman and the local clinic is categorised as indirect action which is the least complicated and most common form of action in schools (Jensen & Schnack, 1997; Jensen, 2004; Bishop & Scott, 1998) (see section 2.4.2.5). However, a challenge is that indirect actions often encounter barriers in the form of insufficient response or no response at all (Jensen, 2004). This was evidenced, for example, when the various groups of learners interviewed local people about the causes of water pollution and about littering. These two attempts were not only social investigation actions, but also examples of indirect actions which focused on people-to-people interactions (Jensen & Schnack, (1997). Some community members reacted negatively or avoided the interviews. Nonetheless, evidence indicated that the attempts to interview people made an impact in promoting awareness which is a first stage for action competence (see section 2.4.4). Evidence is found in a comment made by a community member some hours later while in an informal conversation with a teacher as follows: "*Your school kids wanted to interview me about this waste* (see Figures 4.5, 4.6 & 4.7), *anyhow we are planning a cleaning campaign at this site*".

Further evidence of a social investigative action contributing to environmental action appears at School 2 as the teacher narrated:

> *The other group research on littering caused by vendors that sell junk food...since that day when learners interview vendors what need to be done, things improve. Maybe vendors came to understand not to use newspapers when selling cakes, perhaps they understand now that there is a concern* (SIE 2).

In this illustration, the social investigation seems to have led to vendors thinking that the school is planning something that might affect their business, therefore adopted a new way of conducting their business in a more environmentally responsible way. It was noted that vendors started controlling land pollution by avoiding selling cakes wrapped in newspapers and cleaning around their business area twice per week (SIE 2).

Equally, as suggested by Jensen and Schnack (1997), case evidence indicated that several conditions needed to be met for environmental actions taken through the Geography fieldwork projects to contribute to development of action competence. The proposed action was to relocate the dustbin in Figure 4.9 and to avail more dustbins at busy places [OS 1; FG1. 2] to address land pollution shown in Figures 4.6 & 4.7.

Learners at the same time suggested the introduction of fines [FG1. 2 L1] and charging people for shopping plastic bags (LRR1). These actions can also be regarded as indirect actions as they are trying to influence people to do something to contribute to solutions of an issue if not directly solving the environmental concern (Jensen & Schnack, 1997, Bishop & Scott 1998; Jensen, 2004).

Further evidence of learners developing commitment as an aspect of action competence appear in the following opinion about what to do with bottles lying around shown in Figures 4.5 and 4.6. A learner suggested that the brewer (Tafel lager) should be made accountable to recycle these bottles [OS 1; FG1.2].

During the focus group discussion, learners showed assertiveness, which is a part of commitment and indicator of action competence (Jensen & Schnack, 1997). They openly came up with ideas and visions of how they want their future to be. For example, to address air pollution resulting from over-use of natural resources, one learner suggested: "*If one can come up with a car that is connected to solar panel...solar is not polluting atmosphere*" [FG2. 2, L1]. In addition to that, another learner contributed: "*Maybe solar power is expensive...the bicycle on the other hand is another story"* [FG2.2, L2].

Finally, some learners also suggested direct actions as solutions to environmental concerns. Direct actions are those actions which contribute to solving the environmental problem that is being worked on (Jensen &Schnack, 1997; Bishop & Scott, 1998; Jensen, 2004). When learners were asked if they had engaged with fieldwork before, a learner responded: "*We use to go out in the community and pick some trashes"* (L1). Two learners gave same opinions to control land pollution as follows, Learner one: "*I know we can control land pollution by picking up litters*" [FG1.2]. Another learner commented: *"One can call the people from Tafel lager to come and pick up these bottles to use them again"* [FG1.2, L5]. To prevent animals from using the same water sources as people (see Figure 4.3), a learner suggested fencing off the water source as a direct action [FG1. 2, L1].

Another direct action to address the root cause of an environmental issue as explained in section 2.6.3 was evidenced when the teacher reflected:

> *There was a project on hygiene and sanitation at our school, these learners did very well and they recommended relocation or putting up a new water tap next to our pit-latrine for hand washing. This helps a lot and up to today learners and teachers are using this tap to wash hand after visiting the toilet* (SIE 2).

As per the criteria of developing action competence illustrated in section 2.4.4, the changes described here brought the school closer to their vision of reducing the spreading of diseases as a result of unhygienic ways of using the toilet.

Despite the above indirect and direct actions suggested by learners, the schooling system does not necessarily mean to benefit the environment but rather to pass learners to the next level based on how they perform in examinations. According to the assessment policy for Geography education (Doc. 3), learners qualify to be awarded marks once suggested any solutions (see section 2.5.4 and Table 2.4), nonetheless that solutions are yet to be actions as defined by Jensen and Schnack (1997) and Jensen (2004). Equally, almost all of the above direct environmental actions are categorised as activities (see section 2.4.2.3 and Table 2.1). These activities can lead to short-term disappearance of the symptoms without addressing root causes of the environmental concern.

5.5 Analytical statement 4: Fieldwork created an opportunity for learners to interact with community and environmental issues, understand people's feelings and attitudes and elicit emotional responses.

The case study data showed that Geography fieldwork projects provided opportunities for learners to experience issues and 'get into other people's shoes' so that they could understand their own and others' values, feelings and attitudes. Through these learning processes, learners interacted physically, mentally and emotionally with issues and the people related to them. This suggests that learners were primarily involved with social investigative actions which Jensen (2004) describes as actions which survey people's opinions on a potential environmental hazard, rather than conducting scientific investigative actions which are more focused on collecting scientific data. In both cases (as reported in sections 4.4 and 4.5), learners were involved in investigating environmental issues in their schools and surrounding community by asking people's opinions to understand the situation and identify the best action to address the environmental issue in question.

One of learners who collected data about rural-urban migration explained: *"One can go and experience, see and feel the problems by collecting information from the people who stay in this settlement in order to understand them*" [FG1. 2, L1].

On the same note, one group member of those who collected data about water pollution expressed the following: "*We manage to get more information that is not even written in books on how we can deal with environmental issues"* [FG1. 2, L3].

These findings are consistent with Dewey's (1938) concept of continuity of experience (as cited in Jensen and Schnack, 1997 and Ulrich, 1997). This concept reminds us that education is not only about abstract knowledge gained through books but about experience and connecting what one reads and hears with on-going observations and experience (Down, 2010). Findings presented above are also in support of section 2.4.2.2 and Table 2.1 (O'Donoghue & Lotz-Sisitka, 2006). This implies that in order for education to be progressive there has to be an experiential component to the lesson. As a proponent of experiential learning, Jensen (2002) maintains that if schools want to help learners to understand the world, schools should bring them face to face with controversial issues.

As a result of experiential learning as explained in Section 4.4.3, one learner reflected on her increasing understanding of her own and other people attitudes and values towards issues as follows: "*We have seen that it is very risky for people to live at the area where water is dirty and they use this water for drinking, cooking ... it is very risky for health* [FG1. 1, L1]. She further clarified that people's health is at risk of waterborne diseases like cholera and diarrhoea (OS 1, L1).

Emotional responses such as compassion and concern, aspects of developing action competence (Jensen, 2002), were evident after learners experienced land pollution and commented during the focus group discussion: "*It is very dangerous to animals, if animals eat these plastics.* On the same point, after interviewing community members at Olefa location (see Section 4.5.2), a learner reflected on how people live: "*If they see the condition people are living ... they will change their mind and they will think twice*" [FG2. 2, L2]. The teacher, Mr Salomon verified that his learners' attitudes were influenced by the interactions they had with people and environmental issues. He reflected: *Learners' minds opened ... they came to understand very well what the impact or what causes ... and what a danger is* (SIE 1).

5.6 Statement 5: Fieldwork projects enabled learners to identify barriers to school-initiated environmental actions and explore alternative actions.

The proposed environmental actions initiated by learners in Section 4.4.5 for School One and 4.5.5 for School Two, indicated that barriers are inevitable at implementation stage. This claim is consistent with Jensen and Schnack (1997) who argue that actions will often come across obstacles and these obstacles should be put in perspective in order for the teaching not to lead to incompetence. When asked whether he believed that fieldwork projects in Geography can lead to action and attitude change, Mr. Kalenga replied: *"Some suggestions and recommendations or solutions of issues or problems require people in the community to understand it ... I mean, even the leaders around villages and town ... otherwise it will remain as suggestions"* (SIE 2). This implies that even if learners come up with solutions to environmental problems in the local area, the implementation of these solutions requires a collect effort from all community members.

Equally, in addressing concerns about the impact of monoculture in the local area, a learner suggested different seeds be made available, and during the focus group interview another learner responded: "*People don't have trust in those seeds...because they never practiced them before*" [FG2.2L1]. In another example, where the action aimed to reduce habituated practices that contribute to air pollution, a learner suggested that people ride bicycles as many people can afford it. Another learner explained:

> *If you come up with bicycle policy, no one working would like to ride on bicycle, it will look cheap, some of them will like, they think they look cheaper when they are on the bicycle while other people are driving cars* [FG2. 2, L1].

Evidence of learners realising the need for alternative actions, as recommended by Jensen and Schnack (1997), occurred in the data when learners suggested the introduction of fines and incentives in the form of farmer subsidies to encourage them to grow other seeds and avoid monoculture. Another constructive reaction was evident when learners received feedback from the local clinic about staff shortages making it impossible to educate the community in the proper usage of water purifier's tablets. One learner recommended: "*We need to organise the community meeting and inform the community on the effects of using dirty water*" [FG2. 2, L1].

In all cases, learners tried to keep possible barriers in perspective so that education does not lead to powerlessness (Jensen & Schnack, 1997).

5.7. Analytical statement 6: Learning processes associated with the Geography fieldwork project supported the development of action competence, but with some limitations.

The two schools' Geography fieldwork project process and procedures displayed aspects of developing action competence, but with some limitations. As discussed below, these limitations included: a predominance of social investigation over scientific investigation; a limited range of issues under investigation (largely pre-determined by the syllabus and thereafter the teachers; Geography, which studies the interactions between humans and the physical environment (Beaumont & Wyn Williams, 1983; Holmes & Moorhouse, 1991; Tilbury & Williams, 1997) encourages investigation for a deeper understanding. In Namibia, through Geography project work, learners are required to investigate a Geographical topic outlined in the syllabus in greater depth (Doc. 2).

None of the Ministerial directives on education (see Section 4.2), however, specify the *types* of investigation learners should conduct. In the two cases reported here, it was interesting to note that learners investigated environmental issues purely by observing and asking people's opinions (social investigation); there was no scientific investigation. (As discussed in section 2.4.2, scientific investigation refers to the collection of scientific data, for example testing the content of oxygen in water, or measuring contaminants). In Bishop and Scott's (1998) and Jensen's (2004) view, schools should engage learners with *both* social and scientific investigations as they supplement each other and there is a need for scientific evidence to make cases much stronger. The learners were proposing action responses to local environmental concerns based on their own and other people's experiences and opinions without accurate information about the social-ecological situations at hand, and sometimes without in-depth or robust understandings of the issues.

Fieldwork processes encourage critical thinking and commitment in dealing with environmental issues. As outlined in the National Curriculum for Basic Education (Doc 1) and Geography syllabus (Doc 2), learners are expected to develop new ways of thinking and apply new knowledge in new situations.

As a form of enquiry-based learning, the Geography fieldwork project provides an open learning framework that encourages learners to make choices, negotiate and reflect on the

learning and teaching process (MoE, 2005). The most important aspect of enquiry-based learning is that it is open to possible solutions that learners or other people may be able to suggest and where possible implement in their vicinity (Doc.2). These aims of Geography fieldwork projects resonate with conditions for developing action competence in learners as outlined by Jensen and Schnack (1997). These conditions include developing a critical perspective on environmental issues and equipping individuals with the ability to act in whatever way they choose (Jensen & Schnack, 1997; Bishop & Scott, 1998 and Jensen, 2004).

In this study, although the fieldwork investigations were contextually relevant, they were not initiated by the Grade 10 learners. At a national level, the Geography syllabus provides a list of recommended environmental issues for learners to investigate, indicating that learners should understand reasons for the deterioration of the Namibian environment and how people use nature to meet their needs (Doc 2). In both cases, this was translated at the classroom level when the teachers modified the syllabus's list and directed their learners to a smaller range of local environmental issues (**See Appendices I and M**) which they had identified as contextually relevant and of interest and value to their learners.

In response to whether learners were comfortable with investigating issues pre-determined by the syllabus, a learner said: "*All these topics are of concern here*" (OS 2, section 4.5.1). Similar sentiments were shared by one of the teachers*: "These topics are all about what is happening in our local areas ... in their villages and even their own family"* (SIE 1). However relevant these topics were, from a pedagogical point of view learners were limited at this early stage to a prescribed list of environmental issues that had been prepared by the teacher, via the syllabus. This is something which Breiting et al. (2009) would regard as behaviour regulation. According to Jensen and Schnack (1997), these topics, as the focal point of potential actions, were not reached by negotiated consensus. They insist that learners must make a conscious decision themselves as to what they want to investigate and how that will be achieved.

Data indicated that teachers selected topics for investigation from the syllabus content, where the syllabus' basic competencies required learners to develop their understanding through describing or explaining. This is contrary to the commonly held understandings of developing democratic action competence, in which individuals develop a willingness and ability to

select and get involved with issues or concerns of their own choice (Jensen & Schnack, 1997). By limiting learners to the prescribed list of issues (**Appendices I and M**), the indication is that learners are directed towards what adults (in this case, curriculum developers and teachers) have identified as the desirable end-points of learning without giving learners early opportunities to make choices and reach conclusions through their own thinking (Roberts, 2003). Learners' sense of ownership of learning processes was thus limited.

Geography fieldwork projects take a problem-solving approach (Doc 2). According to the assessment guidelines, learners should present their plan of action about an environmental issue about what needs to be done to change. This concurs with the ideas of action competence. However, most of the solutions given are mostly activities that can only lead to the disappearance of symptoms for environmental issue. Jensen and Schnack (1997) make an important distinction between actions and activities. They define action into two ways. The first one: it must address to find solutions to the problem being studied and secondly learners themselves must initiate what to do. Analysis of the case study data reveals that at both schools, actions initiated by the learners remained at the level of 'activities' that could only address environmental issues on a temporary or superficial basis; the action plans could not address the deeper systemic or cultural drivers of the environmental concerns.

5.8 CONCLUSION

This chapter has discussed the case study data as presented in chapter 4 in order to answer the study's research question regarding the development of action competence through Geography fieldwork projects that focus on social-ecological issues. Through a series of analytical statements, the chapter has shown how Geography fieldwork projects promote contextual understandings of environmental issues in the local area and create opportunities for learners to understand social and structural causes of ecological issues which form a basis for the development of action competence.

It was also noted that the fieldwork project involved learners in making suggestions aimed at mitigating local environmental issues through direct and indirect actions. Most issues, however, proved to be insoluble by these learners' actions alone, thereby challenging the effectiveness of environmental action-taking, and posing a challenge to the development of action competence.

In the next and final chapter, I present a summary of the study and recommendations on how schools can prepare learners to be able to act for the environment. The chapter also includes some reflections on the strengths and limitations of the case study, and makes recommendations for further research.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

INTRODUCTION

This chapter starts by outlining the study's findings in relation to the research question and sub-questions. Thereafter, the chapter makes recommendations for the design and implementation of Geography fieldwork projects that create opportunities for learners to develop their action competence in relation to social-ecological concerns. Finally, the chapter concludes with some reflections on the study as a whole, and on my experiences as a novice researcher.

6.1 A SUMMARY OF THE STUDY

This study set out to explore the potential of Grade 10 Geography fieldwork projects to develop learners' action competence in responding to environmental concerns. To answer this research question, three sub-questions were formulated, namely:

- Is there any evidence of an action competence approach in the design and implementation of the Geography fieldwork project?
- Is there any evidence of learners developing action competence through participating in the Geography fieldwork project?
- How is this developing action competence related to the focus and expectations of the Grade 10 Geography syllabus?

This study's focus on action competence involved understanding how the Geography fieldwork project (a substantial assessment task) prepares learners to go beyond mere knowledge acquisition about environmental concerns to work together and take action in response to Namibia's social-ecological challenges. In line with the on-going education reform, the study explored opportunities to develop citizens (learners) with an ability to make wise environmental choices and contribute to the Namibian national development plan, Vision 2030 (MoEAC, 2015). Equally, the study sought to contribute to the global effort on UNESCO's Global Action Programme on Education for Sustainable Development. Therefore, this study responds to UNESCO's calls for an urgent shift in lifestyle and in the way we think, and to incorporate sustainability concerns in education (UNESCO, 2014).

The study was conducted into two stages. In the first stage, the three ministerial documents that direct teaching and learning in Geography education in general, and Geography fieldwork projects in particular, were analysed. The analysis established that national

educational policies emphasise and promote action-oriented activities needed for a sustainable, knowledge-based society, and that these characteristics resonate with some aspects of action competence as described by Jensen and Schnack (1997).

Investigation skills are one of the core skills outlined in the three ministerial documents. In Grade 10 Geography education, investigation skills are assessed as a component of Continuous Assessment. During their fieldwork project, learners are expected to investigate a selected issue and transfer their understandings into action and seek solutions to environmental issues in their locality. This is in line with Namibia's Learner-Centred Education approach and also reflects an action competence as highlighted by Jensen and Schnack (1997) who argue that in a democratic society, members are not spectators but participants.

6.2 SIGNIFCANCE OF THE FINDINGS

After reviewing the policy context, the second stage of the study analysed data from the Grade 10 Geography fieldwork projects conducted in two schools. I now synthesise the study's findings by returning to the three sub-questions and summarising what the case study data revealed in relation to each sub-question:

Research sub-question one: **Is there any evidence of an action competence approach in the design and implementation of the Geography fieldwork project?**

There is strong evidence of an action competence approach in the design and implementation of the Geography fieldwork project. As presented in Table 2.3, project work in Geography requires learners to formulate aims, collect data, analyse, interpret and present data. One project per year should be based on fieldwork (MoE, 2005). This curriculum feature created an opportunity for the schools to interact with their local community around environmental issues. By experiencing an environmental issue or engaging directly with the people concerned, learners had opportunities to understand their own and other people's values, attitudes and feelings. The last stage of the project cycle required learners to suggest solutions to the environmental problem under investigation. This encouraged critical thinking and facilitated the development of learners' environmental problem-solving skills through direct and indirect action-taking.

However, as much as the overall *design* of the Geography fieldwork project reflected an action competence approach, the *implementation* posed some challenges in terms of the

democratic and transformative concerns associated with action competence. For instance, the social-ecological problems under investigation were largely syllabus and teacher-driven, with learners having limited influence over identifying topics in the first place that they prioritised and wanted to solve. Through the fieldwork projects, learners are more exposed to social investigative actions than to technical, scientific investigative actions. In terms of the action competence approach, this could be seen as a shortcoming because both social and technical scientific perspectives are needed to achieve good understandings of the problems at hand. A common challenge associated with the action competence approach is whether learners' actions can really bring about change in an adult-dominated society where most social-ecological problems are caused or sustained by social, cultural, political, economic and biophysical characteristics that are not easy to change. In both case studies, teachers and learners seemed to focus mostly on finding immediate, practical solutions to local environmental problems (such as providing rubbish bins) without considering in depth how their actions and proposed solutions are affected by the bigger societal causes of those problems.

Research sub-question Two: Is there any evidence of learners developing action competence through participating in the Geography fieldwork project?

There is substantial evidence that the Grade 10 Geography fieldwork projects mediated learning about the geographical, social, cultural and economic dimensions of environmental problems in ways that developed learners' action competence. Through their investigations into a local environmental issue, learners came to understand the social factors that influence people's behaviour towards things such as littering, and they gained more knowledge about the root causes of social-ecological problems and how they are connected to social, economic, cultural and biophysical factors. This developed learners' confidence in dealing with real causes of issues rather than treating symptoms of environmental issues. Even so, as already noted, the study's findings revealed that most of these solutions are beyond the influence of the school or individual learners. Nonetheless, there was strong evidence to suggest that the experience of conducting the fieldwork project had developed learners visioning of local environmental problems and directed them to propose direct and indirect actions that could bring about positive change.

Despite the aforementioned barriers of time, community resistance, and the complexity of root causes, as well as concerns that the root causes of local environmental problems were not effectively solved by learners in the two schools, Jensen and Schnack emphasise that the

purpose of schooling is not to solve the world's environmental problems but to provide educational processes that develop children's action competence as future citizens. With this in mind, the study can conclude that learners did show evidence of developing their action competence through their concern for local problems, ability to analyses them from multiple perspectives, and finally to propose direct and indirect actions to improve the situation.

Research Sub-question Three: How is this developing action competence related to the focus and expectations of the Grade 10 Geography syllabus?

Although the broad intention of action competence resonates with the broad goals of Geography education as outlined in the Namibian policy documents, the nature of the examinations-driven, content-oriented schooling system makes it difficult to adhere to an action competence approach. On a positive side, Geography as a subject allows learners to investigate and understand the world and how the environment helps people to survive. Equally, the syllabus encourages teachers to use local case studies when teaching. This creates an opportunity for schools to interact with community and environmental issues, encounter people's feelings and attitudes and thus draw out emotional responses. By experiencing a social-ecological issue or engaging directly with the people concerned, learners come to understand their own and other people's values, attitudes and feelings.

In this study, the Geography fieldwork project fostered contextual understandings of local environmental issues. By being tasked with investigating a social-ecological issue in their area, learners gained a more complex understanding of why the issue existed, they investigated real issues and considered various action possibilities. Despite this, the environmental issues investigated were all pre-determined by the Geography syllabus rather than initiated by learners and this is contrary to developing a democratic sensibility and willingness to act. Within an action competence approach, upon understanding a social-ecological concern, learners are expected to apply the knowledge gained from their investigation to resolve such issues in their locality. However, as Geography students, the learners' academic progress is linked to how they perform in the content-based examination rather than on how their understanding manifests as action-oriented care for their environment.

6.3 LIMITATONS OF THE STUDY AND LESSONS LEARNED

The focus of this study was to explore the potential of Geography fieldwork projects in developing action competence in response to social-ecological concerns. In my view, the following aspects limited this study:

- As noted in Section 4.4.5, learners at School One proposed to conduct community meetings to discuss issues around water pollution and usage of water in the dam with the community but I could not attend these meetings due to time limitations. Outcomes of these meetings could have enriched findings of this study.
- If I were to conduct this study again, I would encourage the learners and their teachers to implement their action ideas and to follow up to whatever they recommended as solutions to environmental concerns in their written report, including community meetings.
- Furthermore, I would also collect additional data during reflection sessions when participants are watching the recorded video for the fieldwork.

6.4 RECOMMENDATIONS

As explained in section 6.1, this study set out to explore the potential of Grade 10 Geography fieldwork projects to develop learners' action competence in responding to environmental concerns. The recommendations outlined here aim at enriching and creating opportunities for Geography fieldwork towards development of learners' action competence. Although these recommendations are meant for Geography teachers, they can also be employed in other subjects that have fieldwork projects as an assessment tasks.

Recommendation one: Learners should identify and choose for themselves a socio-ecological issue to investigate rather than a teacher-led choice.

This study identified that in both case studies (school one and two), learners' choice of the socio-ecological concerns for investigation was more influenced by the pre-determined list adopted from the prescribed Geography syllabus. This is contrary with the IVAC approach developed by Jensen and Schnack (1997) on developing action competence in section 2.4.2.4 and Fig 2.2 on criteria to develop action competence in section 2.4.2.3. In this cases, learners are pushed to do something rather than self-driven. As presented in section 2.4.4, learners are to be given opportunity to identify what is significance to them. In order to develop a full willingness to act for the environmental concerns, learners should not be imposed on what

investigate. This knowledge (of self-driven) awakens concern and attention and creates a starting point for a willingness to act (Jensen, 2004).

Based on this, learners should be given opportunities to identify environmental concerns in their local area that they find significance and they find to have a hope to suggest solutions.

Recommendation two: The study recommends that Geography fieldwork projects should combine both social investigative actions and technical, scientific investigative actions.

For the Geography fieldwork outcomes to be more useful across all learning areas at school and convincing to the society it should be informed by both social and scientific sources. As explained in section 2.4.2.4, this creates better and deeper understanding of the action dimension of action competence. Jensen (2004) identify and differentiates between the two types of investigations as environmental action, namely: collecting scientific and technical data, and collecting opinion in a social context. Both actions are required to supplement each other for effective environmental actions and multi-dimensional understanding of the socio-ecological concerns.

Recommendation three: This study recommends opportunities to be created for learners to discuss and reflect critically on the findings of fieldwork projects to fortify the development of action competence.

The study recommends to always create dialogues at school for learners to fully involve and engage other learners and nearby community with recommended actions. These assertiveness ideas such as introduction of fines, deployment of dustbins, recycling ideas as discussed in section 4.4.5 and 4.5.5 should be discussed with all learners and teachers rather than merely for assessment purpose. In this way, the project will enforce commitment to address environmental concerns which is an indicator of action competence (Jensen and Schnack (1997).

Equally as explained in a more detail in the next section, this reflection can be done by creating a link with the community and this will serve as a good opportunity to create a community of practice for various learning areas at school and the local community. This can be done during the afternoon, depend on school afternoon session as it will also serve as remedial opportunities to understand environmental concerns in boarder term. Equally, for

the pedagogical recommendation, the project cycle, table 2.3 can be changed by adding another row to formalise evaluation and reflection as a part of assessment.

Recommendation four: This study recommends a whole school approach to environmental learning in which subject teachers within one school or two different schools collaborate to plan and implement Geography fieldwork projects. More cooperation within and across schools could support learners to work together towards a common goal in their local area as well as promote more awareness and interest in the local community. Developing more concern for social-ecological challenges and stimulating action-oriented responses is an important starting point of being action competent.

Networking of investigation findings does not only reduce constraint to learners to repeat topics, but it also allows learners to relate information across all subjects. This can also be an introduction of the whole school approach to environmental learning suggested by the curriculum guidelines (MoE, 2005). Networking between subjects will also create an opportunity for learners to engage in both scientific and social investigation as investigation will be carried out from different angles across various school subjects. Equally important, schools can come together to organise an information sharing day to exhibit school project results and ways forward.

Recommendation five: This study recommends that teachers should encourage learners to think critically to address environmental issues beyond solving symptoms only, but rather addressing roots causes.

As explained in section 2.5.4, the main idea behind doing project work is to ensure that learners recommend a plan of action to address the environmental issue in question. According to this section, (2.5.4, Table 2.3), learners get marks once they suggest solutions to environmental issues in question. On this idea, the study recommends to modify the Table 2.3 by suggesting that solutions in stage 4, should be actions that address roots cause rather than symptoms of the environmental issue (Jensen and Schnack,1997; Bishop and Scott 1998 and Jensen, 2004).

The current situation is that teacher evaluate learners' project report only, by awarding marks for continuous assessment without engaging them and involve other stakeholders reflected in the report. As a part of practical knowledge, this can be done in a week, where individual group or groups with related topic combine to do presentation and reflection. Schools can

plan it in the way that community members or other stakeholders involved are invited to contribute I order to understand structural issues that lead to ecological concerns.

6.6 RECOMMENDATIONS FOR FURTHER RESEARCH

This study locates possibilities for other researches to equally contribute on how and what Geography activities can contribute to the development of action competence such as:

- This study's data suggested that there is an important relationship between different types of knowledge and different types of investigation, but these could not be explored within the parameters of the research. Further studies could focus more specifically on how social enquiry and technical, scientific investigations can complement each other for an understanding to develop action competencies on ecological concerns. It would also be interesting to investigate the potential of indigenous knowledge in Geography fieldwork projects.
- This study ended at the point of learners making recommendations for local actions. Further research could explore different approaches for learners to transfer and apply knowledge and understanding into their local area in more sustained ways than were evident in this study.

6.7 CONCLUSION

This qualitative case study explored the potential of Grade 10 Geography fieldwork projects to develop learners' action competence in responding to social-ecological concerns. The enquiry was set against the broader backdrop of UNESCO's call for schools to play a critical role in societies transitioning towards sustainability, especially through school subjects such as Geography. The study revealed that the action competence approach aligns well with the kind of citizen envisaged in Namibian educational policies, that is, a citizen with: (i) learning to learn skills, (ii) personal skills, (iii) social skills, (iv) cognitive skills and (v) communication skills who can contribute to a knowledge economy.

The study was conducted in response to the research question: "*What is the potential of Geography fieldwork projects to develop learners' action competence in response to social-ecological problems?*" The study documented how the Geography fieldwork projects took learners beyond the classroom and into their local community where they observed the details of authentic social-ecological concerns. This gave learners insight into people's feelings and

attitudes to those concerns, and also developed their own emotional responses and commitment to take action.

The investigative nature of the fieldwork project developed learners' critical and multi-dimensional understandings of local concerns, and helped them to identify barriers to school-initiated environmental actions and to explore alternative actions. Cumulatively, these learning processes align closely with the IVAC model associated with action competence, where learners move through stages of 'investigation', 'visioning', 'action-taking' and, ultimately, positive 'change'.

However, the established structure of the schooling system (such as timetabling and the way school-community links are managed) and school culture (such as the authority of teachers in deciding what and how to investigate environmental issues) placed limitations on the ideal of developing action competence.

Although this study represented only two Grade 10 classes from two schools, my hope is that the findings and recommendations of this study will inform other Geography teachers, Senior Education Officers for advisory services and other researchers who are interested in the potential of Geography education, especially fieldwork projects, to develop learners' action competence in response to social-ecological concerns.

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Semi-Structured Interview, Educator 2, School 2 [2014] Appendix A

Me: Good afternoon Mr. Kalenga (Pseudonym)

T 2: Good Afternoon sir

Me: I am fine. Thank you very much for your time. Let me first introduce myself.... for formality sal name is Modestus Mwiila, doing a Master in Environmental Education. I am doing a research on the geography fieldwork project, specifically on the potential that field project have to develop action competence in learners. The concept action competence here, in a simplest ways implies that in wh geography fieldwork project can make learners to gain a deeper understanding and explore ways to willingness in children to act for the environment. I have few questions that I want you to feel free

T 2: Okay, I see.

Me: The first questions that I want to ask you is just for the purpose of getting your profile. I have t your school here, Marula C/S (Pseudonym), Oshana region, in which circuit are?

T 2: Eheke Circuit.

Me: Okay, for how long have you been teaching at this school?

T 2: This is my 4th year here. I have been teaching in Omusati Region for the past 12 years.

Me: So you joined Omusati immediately after graduation from....?

T 2: I completed my grade 12 at Iipumbu SS, and further my studies with University of Namibia, where the High Education Diploma in Secondary Education, specialised to teach geography and Biology.

Me: Okay. And after UNAM, did you enrol with any other institution or training for further professi guide?

T 2: I did not enrol with any institution since then... but i happen to the one of the luckiest teacher to selected for the Instructional leadership training done by NIPAM. This is week training where we are t ways to run schools.

Me: Okay...what about training additional training specifically on geography education?

T 2: Except regional workshops that we usual have...any how I am also one of the facilitator for the re responsible for helping other teachers during workshops and coordinate between the advisory servic teachers in our region.

Me: Okay...maybe the next question is more on the topics, fieldwork: How often do you get your G learners to do projects in geography?

T 2: Thank you, I got it. Iyaa... we mostly give three times a year for grade 8 to 10. At least one projec and because grade 10 is only taught for two terms here, I only give two projects per year.

Me: Good afternoon Mr. Kalenga (Pseudonym)

T 2: Good Afternoon sir

Me: I am fine. Thank you very much for your time. Let me first introduce myself.... for formality sal name is Modestus Mwiila, doing a Master in Environmental Education. I am doing a research on the geography fieldwork project, specifically on the potential that field project have to develop action competence in learners. The concept action competence here, in a simplest ways implies that in wh geography fieldwork project can make learners to gain a deeper understanding and explore ways to willingness in children to act for the environment. I have few questions that I want you to feel free

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T 2: This is my 4th year here. I have been teaching in Omusati Region for the past 12 years.

Me: So you joined Omusati immediately after graduation from....?

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FOCUS GROUP INTERVIEW, SCHOOL 2. APPENDIX: B

Me: Good Afternoon once more.

L: Good afternoon sir.

Me:Thank you for your time, Mr Kalenga (Pseudonym) already introduced me to you last time whe in your class, when we where introducing to you the fieldwork project and the purpose of this inter today is to summarise what we did during the fieldwork project and feel free to express, whatever information that you want to give. And the most important is this things will help us to improve do fieldwork project in Geography, that is a purpose for the next students and for the future. So I have questions that I want to ask you and the first question is: Do you understand the concept of fieldwo

L 2: My understanding fieldwork is just about going out, not just in the school but to go out and to fin more about the topic you studied or you are studying.

Me: Okay, I think, that is a good answer and do you think is important to carry out a fieldwork?

L 1: I think is very important, it gives a bigger understading of the topic that you are reading from the because you have to see things with your eyes and explores what are doing.

Me: Okay, any contribution again, on the important of fieldwork. I think is very much important wi point that you made early.

L 2: It is important because may be when you are studying a certain topic and you don't understand c fieldwork will help to understand better, and during test may be you can remember what you saw, w went, what the conditions are and then you use them in your test.

L 4: It is also important because it make us learners to understand more about topics example you giv different topics and just to go...some went out and some remains in the school. It is important becau people who went out, they ask different people to get information.

L 3: I think is important because fieldwork gives us a clear picture about the topic, even if you don't understand it make you understand

Me: okay, very good. May be we can move to the next questions: You were investigating an ecolog I mean an environmental issue. Which environmental issue were you investigating?

L 1: Ours was, putting pressure on natural resources.

Okay, putting pressure on natural resources, were you doing the same topic?

L3: Ours was on problems and benefits of the rapid population growth.

Me: Okay, problems and benefits for the rapid population growth?

L 3: Yes.

Me: Good afternoon Mr. Kalenga (Pseudonym)

T 2: Good Afternoon sir

Me: I am fine. Thank you very much for your time. Let me first introduce myself.... for formality sal name is Modestus Mwiila, doing a Master in Environmental Education. I am doing a research on the geography fieldwork project, specifically on the potential that field project have to develop action competence in learners. The concept action competence here, in a simplest ways implies that in wh geography fieldwork project can make learners to gain a deeper understanding and explore ways to willingness in children to act for the environment. I have few questions that I want you to feel free

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APPENDIX: C

OBSERVATION GUIDE: Fieldwork project

Name of the school: ***Subject:*** ***Date:***

Stage	Focus area	Specific Observation	General Observation
Fieldwork project preparation	Number of learners Age group: Gender:		
	Problem/Issue Who suggested the topic Motives of the fieldwork		
	Curriculum/Syllabus link		
	Policies in place		
	Other supportive arrangements		
	Type of support given to learners		
	Learners willingness and interests		
	Who and how involve in planning		

APPENDIX: **D**

Document ANALYTICAL TOOL 1: Data Summary

Inductive analysis tool: categories emerge from analysing Ministerial policy documents and informed by the research questions: Prior to Interview and observation: Organizational categories for further analysis

	CATEGORIES				
DOCUMENT	*Desired skills advocated(Core skills)*	*Roles of teachers/learners*	*Goals for learning and teaching*	*Teaching and learning approach*	*Usage of Local area*
Doc 1:National curriculum for Basic education (2010)	In order to fulfil the implications of Namibia Vision 2030 for Basic Education, the curriculum identifies learning in terms of core skills and key learning areas (p.10) ...skills which are relevant to the knowledge- based society...P.30. Characteristics of knowledge-based society are the effective and wise use of existing knowledge and the creation of new knowledge...research to create innovations and sustainable development for people and	"...all teachers are fully conversant with the curriculum and its implications, the process of knowledge creation, and teaching, learning and assessing in a learner-centred way..."(Doc.1 p.37). Teacher reflections should be done after the delivery of each lesson, (P.37). The teachers develop learners' thinking by engaging the learners in problem- solving activities ...where are applied to ever more complex	An environmentally sustainable society, (p.8) ... it is intended that the curriculum be learning-driven, not assessment and examination driven. Assessment and examination are to support learning....P.30 The direction of a teaching/learning process must always be to develop higher-order thinking skills...P.30. They make decisions about the risks and	Preparation for a knowledge-based society requires a learner-centred approach to teaching and learning, (p.4) ...to use the learner's existing knowledge and ideas, to bring in new knowledge, and to facilitate and direct them in transforming knowledge....P.37 " If they are taught in a way which builds on what they already know and have experienced, and	The community around the school can be an important support and resource, as well as a source of knowledge. Doc.1, The community may have persons

APPENDIX**: E**

ANALYTICAL TOOL 2: Analytical MEMO 1: Evidence for the development of AC

Aspect: Knowledge of the problem/issue/concern

Quotes	**Data source code**
..They develop like positive attitude toward the exercise, because they mind were opened they came to understand very well what the impact or what causes of deforestation are and what a danger.	SIE1
I think important, it makes a person to remember during examination. One can be able to recall well things that you have seen.	FG 1 (L1)
we wanted to find out whether what we were taught is true, because like some of us it is difficult to understand where a teacher teach, but then when I did not see something it is difficult for me to take it that it is true, but now since i went out and like check out things, i real found out that what i was taught is real.	FG 1 (L1)
there are some topics that one needs to go outside in order to have a full understanding	FG 1 (L5)
You are to find out why people throw rubbish on the land....	FG 1
Learners selected a topic that they believe affected the surrounding most...but they were concerned for people not understand what they one to find out. “What if people do not understand our questions” (L1).	OS 1
..if i can recall, we did something in Agriculture investigating on how sand works... we observed which one dry quickly and which one got high water capacity.	FG 1 L1 (L#121-123)
I think what water pollution in our area is that people are dumping waste in water.. People take bath in this dam. “This net and Vaseline tin are evidence that someone usually come and take bath here” (L1).	FG 1, L2 (L#143), OS 1
No dustbins around the area...People dump waste behind the cuca shops.	OS 1

APPENDIX: F

16. 03. 2014

To: The Permanent Secretary
Ministry of Education
Windhoek
Namibia

Dear Madam

SUBJECT: Application for permission to conduct research in two schools in the northern Namibia.

I am a teacher at Oluteyi Combined School in Omusati region and a part-time student toward a Master in Environmental Education with Rhodes University, South Africa. I am hereby seeking your permission to conduct a small-scale research project entitled: **An investigation into the potential of Geography fieldwork projects to develop action competence: A case study of two Grade 10 Geography classes in Northern Namibia.** Attached please find the approved proposal.

I will observe lessons based on Geography fieldwork projects and interview teachers and selected learners at these two schools. All interviews will be done in the afternoon within one hour and thirty minutes and will not disrupt school work. All interviews and observations will be video-recorded with the permission of the participants.

Parents will be introduced to this research during the teachers-parents meeting at both schools and parents of selected learners will also be requested to sign a consent letter for final approval.

This study is not only important for my own academic progress but it is also important for me as a Geography teacher to gain a deeper understanding and explore ways to develop willingness in children to act for the environment. The recommendations in this study will be shared with fellow teachers with the aim of improving ways to conduct meaningful fieldwork projects in Geography.

For further information and details, kindly do not hesitate to contact me on the abovementioned contacts.

Yours in education

Mwiila Modestus
MEd Student
Rhodes University

APPENDIX G

REPUBLIC OF NAMIBIA

MINISTRY OF EDUCATION

Enquiries: Mr C. Muchila
E-mail: Cavin.Muchila@moe.gov.na
Tel: +264 61 2933200
Fax: +264 61 2933922

Private Bag 13186,
WINDHOEK
Namibia

File no: 11/1/1

Date: 14 April 2014

To: Mr Mwiila Modestus
P. O Box 214
Oshakati, Namibia
Cell: 0812788592
Fax: 0886548074

Dear: Mr Modestus

SUBJECT: PERMISSION TO CONDUCT A RESEARCH STUDY IN OSHANA AND OMUSATI REGION

Your correspondence regarding the subject above, seeking permission to conduct a research study in the schools of Oshana and Omusati Regions has reference.

Kindly be informed that the Ministry does not have any objection to your request to conduct a research study at identified schools in the region concerned.

You are, however, kindly advised to contact the Regional Council Offices, Directorates of Education, for authorisation to go into the schools and for proper information coordination.

Also take note that the research activities should not interfere with the normal school programmes. Participation by either teachers or learners should be on a voluntary basis. Should you involve minors in your research activities, consent for participation should first be obtained from the parents/guardians of the minor(s).

By copy of this letter the Regional Education Directors are made aware of your request.

Sincerely yours

MINISTRY OF EDUCATION
Office of the Permanent Secretary
16 APR 2014
Private Bag 13186, Windhoek, Namibia

16/4/14

Mr. Alfred Ilukena
PERMANENT SECRETARY
cc: Directors of Education: Oshana and Omusati

APPENDIX: H

22. 06. 2014

To: The parent

Dear Sir/Madam

SUBJECT: Request for permission to involve your child in a research

I am a teacher at Oluteyi Combined School, Omusati region and a part-time student toward a Masters degree in Environmental Education at Rhodes University, South Africa.

I hereby seek your permission to involve your daughter/son_____ who is a learner at Oikango Combined School in a research project to do with fieldwork project in geography. My research focuses on how teaching and learning can contribute meaningful to the lives of children.

During May and June 2014, I will observe lessons based on a Geography fieldwork project and interview teachers and learners. All interviews will be done in the afternoon within one hour and thirty minutes and will not disrupt school work. All interviews and observation will be video-recorded with the permission of the participants.

This study is not only important for my own academic progress but it is also important for me as a Geography teacher to gain a deeper understanding and explore ways to develop willingness in children to act for the environment.

For further information and details, kindly do not hesitate to contact me on the abovementioned contacts.

I you wish for your child to participate in this project please sign below:

Yours in education

…….

Mwiila Modestus
MED Student
Rhodes University

Consent letter

I … ……..hereby giving permission for my son/daughter to take part in this research project between May and June.

Date: ……

Sign:

……

APPENDIX: I

Geography project **Marks**: 30 **Grade**: 10
Due date: 04.04.2014

ENVIRONMENTAL ACTION PROJECT

In groups, you are going to investigate an environmental problem. You can choose a problem in or around your school, in a garden or park or anywhere in your local community **(Walking distance and not affecting other lessons)**

4 Steps for the project:

1. Identify an environmental problem/issue
2. Collect information about causes, negative effects
3. Suggest possible solutions to the problem
4. Present a report on your investigation.

1. **Identify the problem**
    - Choose a problem that you can investigate: Some examples: Air pollution, Water pollution, Littering, soil erosion, deforestation, Bush encroachment, Acid rain, and so on. You may choose any other environmental problem and to be approved by a teacher.
2. **Collection information** *(Observation, Interview, Document analysis, Questionnaires)*
    - What information do you need to find.
    - Facts about the problem.
    - Photographs and maps, tables and graphs.
    - Some opinions about the problems from community
    - Library
    - TV and Radio programmes.
3. **Suggestion for solutions**
    - Possible solutions to the problems/issue identified.
    - Present your plan of action (solutions) to the teacher
    - Discuss these solutions in the class and decide if your suggestions are practical or not.
4. **Presenting a report.**

    Introduction: **state clearly what the problem is? Why is it a problem? Why did you choose this problem?**

Oluteyi Combined School
P O Box 113
Ohohao
27 October 2014

APPENDIX K

OLUTEYI CLINIC
Private Bank 505

Dear Madam

The purpose of writting this letter is to request local health official to give education on how to use the purifying water tablets or water maker.

We have ~~xxxxxx~~ water from dam and well, and I want to ask many question on this water maker. what is the aim of water maker? why we use this purifying water tablets [water maker] ? what are the benefits and challenges of water maker? When people given this water maker we want to use it but there is no way that we can do because there is no education done by the local health official. We have a problem because, we don't know how to use this purifying water tablets or water maker, and I want to request you to come and teach us on how to use it and in which way we must use it. I want you to deal with it and combat it.

We want this help, because we have water from well and dam that are dirty and no way that we can do to get clean water.

Yours faithfully
Iyambo Ester ~~xxxxx~~ [Learner]

APPENDIX: L

N $4 500 fines for impregnating a married woman

Submitted by **NamibianSun101** on Tue, 2014-09-30 02:00: **06.10.2014**

Fornication in the North has just become more expensive with traditional authorities upping their fines that are normally paid in cattle, by an increase of N$500 per head.

Cattle were normally valued at N$1 000 per head, but this value has now increased to N$1 500, hiking the fine for a man impregnating a married woman from N$3 000 to N$4 500 (or three head of cattle). A married woman found committing adultery will now be fined N$1 500 or one head of cattle.

The increases apply to the eight Ovawambo traditional authorities in the North and were agreed to at a recent summit. The leaders who were present are from the Ondonga, Oukwanyama, Uukwambi, Ongandjera, Uukwaludhi, Uukolonkadhi, Ombalantu and Ombadja traditional authorities. This will be the third adjustment on the price of cattle in eight years, with the value for one head of cattle pegged at N$600 in 2006 and at N$1 000 in 2010.

According to the new law, villagers who commit a crime of murder have to pay the deceased's family 10 head of cattle or N$15 000, which includes a punishment of N$13 500 for taking someone's life and N$1 500 for the reconciliation of the families. Those accused of impregnating a young woman will pay two head of cattle or N$3 000. In the event that a man impregnates a girl as a result of rape and the girl is under 18 and/or is living with a disability or is mentally disturbed, or is a learner or student, the offender is required to pay three head of cattle or N$4 500. The new laws further stipulate that if a villager seriously injures someone either in the arm or leg or eye, five head of cattle or alternatively N$7 500 should be paid to the victim for each of the listed body parts injured. An injury to the head carries a penalty of N$1 200. Traditional leaders have also decided to impose penalties on people accused of insulting someone's body part. According to the set laws, insulting someone's physical body part from the head to the navel will result in a N$100 penalty while insulting someone's body part from the waist down carries a N$200 penalty.

Traditional leaders decided not to put a value with theft, with those present reaching a consensus that each traditional leader will decide on the penalty depending on the value of the stolen goods.

It is further stipulated that those accused of spoiling natural water used for human and animal consumption will pay a fine of N$200.

The fee for the allocation of a mahangu field is one head of cattle or N$600, while land for setting up a shebeen is N$ 150.

1. **Geography Investigation project** **APPENDIX: M**

Grade: 10

Topic: Littering on the school ground

Stage 1: **Introduction**: briefly write what the research is all about and why you choose this topic and why the topic is important.

Stage 2: List the methods to be used for collecting data, Why you choose these methods, How are you using this method. **(Observation and Interview preferred)**

Interview questions *for both 2 learners/ 1teachers: This is just a guide/key questions, you can ask more follow up questions.*

- *What are the main root causes of littering in our school?*
- *Which types of litters are common in our area?*
- *What are the effects of this pollution?*
- *What possible actions to be taken to address littering at our school?*

Observation Guide*: Write anything you can see about:*

- *Who is mostly littering at school?*
- *Why people litter at school?*
- *Look at the rubbish bin/land fill at school to identify type of rubbish in the bin/land fill.*
- *Suggest solutions.*

Stage 3: Presentation of data

Write an essay about your findings/ Use a poster to present your findings

Stage 4: Conclusion: Write anything you observed as a solution to the problem.

Stage 5: Reference: List names of people you interviewed and a list book (s) that you read about the topic.

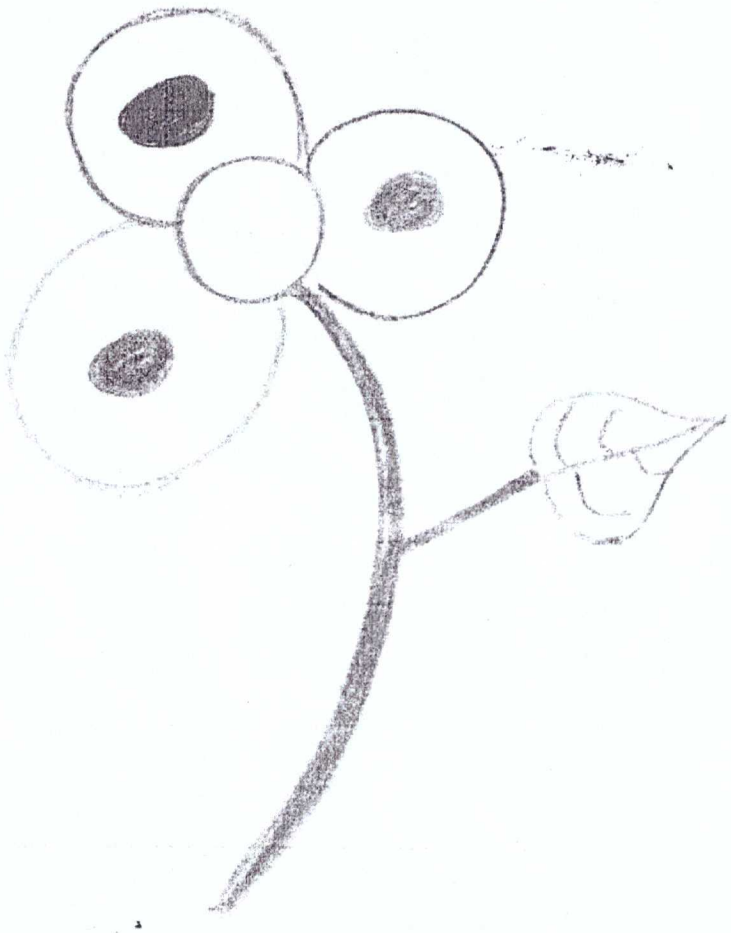
Report 1

APPENDIX N

GEOGRAPHY

PROJECT 1

LITTERING



Mundilo Letisia
Hayfitku Hendrina
Andreas Johannes
Kambonde Selma
Titus Wilhem
Jacob ~~Paul~~ Petrus

TOPIC . Littering on the school ground

INTRODUCTION

Litter is all forms of waste matter that is shown on the ground. Litter include papers, plastics, tins & bottles found lying around on the ground in places where they are not supposed to be. Our research is all about littering on the school ground. We choose this topic because the school (1) looks dirty and to find how learners and teachers litter (2) around the school ground. This topic is most important as we will get more information on how and what cause littering and find the solutions.

STAGE 2

We walked around the school ground and observed what cause littering. We interview people at school. According to 1 learner in grade 9 type of litter are. plastics, papers, broken glasses, grass and dry leaves.

CAUSES OF LITTERING

Ignorance of damage (2) Litter can do to our ~~environment~~ school.
Lack of (2) pride in our surrounding.
Lack of refuse collection (2) dustbins
Lack of recycling (2) facilities

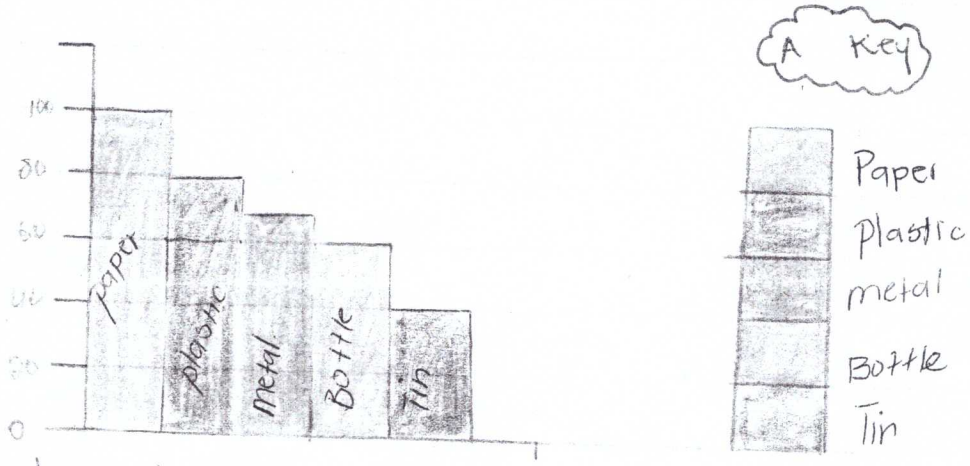
EFFECT OF LITTERING

Littering makes our surrounding (3) to look very dirty.
If our school looks very dirty people could not visit us.
Broken bottles and cans may cause injury (3) when people steping on them.

Plastics also non-biodegradable as they are not broken down by decomposes.
Plastics produce a lot of ~~sunshine~~ smoke when they are burnt.

: Possible action:

According to our observation, the most people who are littering at school are learners. Mostly people litter at school ~~the learners~~ because there is no (2) many dustbins When people are at the breaking don't use to put their rubbish in the dustbin and as a result, dustbin are only in classes but especially at open markets, there are not dustbins and learners throw papers around the gaund instead to go and put them in the (2) dustbin in the class. Broken glasses are just around the school instead to be packed in a certain room or store room (4)



A bargraph show material that couse littering around our School Dikanga

Possible solutions

Educate people on harmfull effect of littering (4)
Create laws and introduce fines (4) for those who litter
Develop methods of recycling materials. (4)
Recycle some items eg the cans.
Provide many dustbins (4) so that people will reduce littering especially at open market.
Reduce the production of the some items (4) eg plastic bag.
They must build a store room (4) for putting broken plates.
Cleaners must work hard to clean and clean the yard.

Conclusion

According to ur Observation, the most people who are lettering at school are learner, littering including paper plastic tin, bottle are lying around the school, the couse of littering are: Lacke of recyclinge facilities, Lack of refuse collection dustbin littering make our school to look dirty, if our school look dirty people could not visit us, Broken bottle ~~may~~ may couse enjuries when people are steping on them

Bibliography

Grade 9 text books Lifescience
We ook Shaikati kinte ca agrade 9 learner