

**AN EXPLORATION OF THE AKANS' (GHANA) AND ZULUS'
(SOUTH AFRICA) CULTURALLY-SPECIFIC ENVIRONMENTAL
ETHICS: IMPLICATIONS FOR CULTURALLY-SPECIFIC SENIOR
HIGH SCHOOL BIOLOGY/LIFE SCIENCES CURRICULUM
DEVELOPMENT AND TEACHING**

By

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ABSTRACT

Indigenous and local communities are repositories of the world's genetic resources and biodiversity is interwoven with the well-being of indigenous people who have utilized it throughout millennia. This constant interaction by indigenous people with biological components of the environment has brought about various innovative ways of knowing and practices which include both science and indigenous knowledge. Many indigenous practices have been found to foster and enrich biodiversity at the local level, as well as help sustain salubrious ecosystems. This study explored the Akans of Ghana and the Zulus of South Africa Culturally-Specific Environmental Ethics (CSEE), how these CSEE could be taught in senior high schools' biology/Life Sciences curriculum, and the implications (prospects and challenges) for such teaching. The main purpose of the study was to explore the participants' (indigenous knowledge holders of the Akan and Zulu cultural groups') understandings, perceptions, practices and communication regarding their cultural groups' peculiar environmental ethics, referred to as CSEE in this study. The study sought the views of both the indigenous knowledge-holders of the respective cultures and their senior high school biology/Life Sciences teachers.

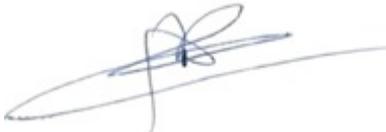
The research employed a multi-site ethnographic, naturalistic research style situated within the interpretivist paradigm to explore the phenomena under study. In-depth conversational interviews were used to collect qualitative data from the purposively selected participants using the snowball technique. The data generation process involved the production of a narrative analysis for each participant. The study found that there are diverse understandings, perceptions, practices and modes of communication among the Akan and Zulu cultural groups used to help value and care for their natural resources, as well as utilizing them sustainably. The understandings, perceptions, practices and communication for their CSEE are interwoven together and inform one another. A model for how to teach CSEE and other indigenous knowledge related topics in senior high schools' science classrooms in Ghana and South Africa was developed from the research findings.

The study found that in spite of the many prospects for teaching CSEE in senior high schools, its effective teaching and resilience might be threatened by political, religious, socio-cultural and economic issues; and that the demand for proof and experimentation for many of the CSEE perceptions and practices, coupled with various forms of stigmatization are key challenges anticipated.

DECLARATION

I, Maxwell Jnr Opoku, declare that:

- i) The research reported in this thesis, except where otherwise indicated, is my own original work.
- ii) This thesis has not been submitted for any other degree or examination at any other university.
- iii) This thesis does not contain other persons' data, tables, graphs, or any other information unless specifically acknowledged as such.
- iv) Where other writers' sources have been quoted, either their material has been re-written, and the information attributed to them by reference, or, where their words have been used exactly, the writing has been placed inside quotation marks and referenced. No other person's writings have been used unless specifically acknowledged.
- v) No text, tables or graphics have been copied and pasted from the internet unless specifically acknowledged, and the source has been detailed in the thesis and in the references.



.....
M.J. Opoku

March, 2019

.....
Date

SUPERVISOR'S AUTHORISATION

As the candidate's supervisor, I agree/do not agree to the submission of this thesis.

Supervisor: Dr Angela James



Signed:

Date:March, 2019.....

DEDICATION

This thesis is dedicated to

Rev Charles Ofosu-Ayarkwa

(Principal, Kibi Presbyterian College of Education, Gh);

Episcopal Sister Dr. Joy Bruce

(Senior Pastor, First Love Church, Ayeduase Kumasi Gh);

and

Pastor Benjamin Asamoah

(Meizona Ministries, Ghana).

Through you, the LORD Jesus Christ, by His Holy Spirit, made me receive deliverance, counsel, direction, prophetic prayer covering and blessings to embark on this journey to South Africa to pursue this PhD and to succeed – I am forever grateful to you, glorious ministers of the gospel of our LORD Jesus Christ; and to

Abigail Dansowaa Opoku Jnr,

(My dearest wife, my pretty precious princess, you are a **PEARL**)

You stood with me, through thick and thin to complete this PhD. I love you, for the LORD Jesus Christ; blessed us with the first twins you gave birth to in Addington Hospital, Durban, but who lived for only one day. You will have more children who would live to fulfill Jehovah's plan and ministry for their lives and their generations and generations yet unborn. I love you, my pretty precious PEARL. Gladly, the wonderful bouncing baby boy is on the way. We will be celebrating him in a couple of months in Jesus' mighty Name. Glory be to God!

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LIST OF ABBREVIATIONS

IK	Indigenous Knowledge
IKS	Indigenous Knowledge Systems
DST-CIKS	Department of Science and Technology Centre in Indigenous Knowledge Systems
UNEP	United Nations Environmental Programme
UNESCO	United Nations Economic Social and Cultural Organization
WWF	World Wide Fund
IUCN	International Union for Conservation of Nature
COMEST	World Commission on the Ethics of Scientific Knowledge and Technology
NRF	National Research Foundation
EE	Environmental Ethics
IEE	Indigenous Environmental Ethics
WEE	Westernised Environmental Ethics
CSEE	Culturally-Specific Environmental Ethics
ACHPR	African Commission on Human and Peoples' Rights
IEI	Indigenous Educational Institutions
CRDD	Curriculum Research Development Division
SHS	Senior High School
B/LS	Biology/Life Sciences
SHS-B/LS	Senior High School Biology/Life Sciences
RQ	Research Question
IQ	Interview Question
CIQ	Conversational Interview Question
CAPS	Curriculum Assessment Policy Statement

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter introduces the study and explores the background and discusses the purpose and rationale - for undertaking the current study. In addition, the research problem and consequently the objectives for this study are presented. Furthermore, keeping the research in line with the objectives of the study, an outline of the research questions that guided the study is provided, followed by the significance and or relevance of this study. The research design and methodological considerations are briefly elaborated on and key terminologies used in the study are also provided. Finally, the chapter gives an overview of the entire study and the roadmap for the following chapters respectively.

For centuries, many indigenous cultural groups have sustainably conserved biodiversity, lands and water resources through their cultural value, care and respect for nature wholeheartedly without a feeling of being pressured and persuaded by government agencies (Freitas, Kahn, & Rivas, 2009; Zeppel, 2006). Presently, these values, care and respect for nature are gradually being eroded through modernity, Western culture, Christianity, Islam, urbanization, overpopulation, economic improvement. Meanwhile, there is a global outcry for conservation of biodiversity in light of their alarming loss and habitats (Awuah-Nyamekye, 2014; Horsthemke, 2009). Teaching a cultural curriculum involving indigenous people's value and care for nature may be crucial to the revival of environmental sanity locally and globally. It may also enhance general educational goals and objectives regarding nature or environmental studies (Kamwendo, 2016; Kaya & Seleti, 2014). This study is an exploration of the Culturally-Specific Environmental Ethics (CSEE) of the Akan cultural group in Ghana, the Zulu cultural group in South Africa and the implications (prospects and challenges) of teaching CSEE in Senior High School (SHS) Biology/Life Sciences (B/LS) classroom. The Environmental Ethics (EE) of the Akans and Zulus was deduced from the meaning of Indigenous Knowledge (IK) as being culturally-specific and a social practice (Fien, 2010; Kaya, 2015; SciDev.Net, 2010; Stabinsky & Brush, 1996; Warren, 1991, 1996).

The study was guided by the conceptual framework on African Environmental Ethics (AEE) adopted from Goduka (2000), see section 3.1 and conceptual framework on how to teach cultural environmental ethics developed from Simpson (2002), see section 3.2. The discussion of the conceptual framework developed from Goduka (2000) is further elaborated with views from Awuah-Nyamekye (2012b), Murove (2009a), Ntiamoa-Baidu (2008), Ogungbemi (1997a), Ramose (2009), Tangwa (2004), and Workineh (2011), among others. The study focused majorly on the views of SHS B/LS teachers and IK-holders of Akan (Ghana) and Zulu (South Africa) cultural groups regarding their indigenous (cultural) value and care for nature and on how their CSEE could be taught in the SHS B/LS curriculum, as well as the prospects and challenges of such teaching. Moreover, the study highlights, the disconnection that the Western way of conserving the environment imparts on the indigenous people, thus disengaging them from their own cultural practices. However, they need to be engaged in their own cultural (indigenous) practices that help them to value and care for nature. This is because Western knowledge is alienating to indigenous people and has not been effective in developing sustainable development among the indigenous people (Kaya, 2015; Kaya & Lyana, 2014; Kaya & Seleti, 2014; Nkondo, 2012).

1.2 Background to the study

The universal environmental slogan, “Think globally, act locally” Yang (2006b, p. 25) which practically refers to universal environmental ethics is the direction proposed by the environmentally aware (Gough, 2002; UNESCO-UNEP, 1991; Yang, 2006b). This modern proverb has been used to encourage people to embrace a global outlook and be motivated to have concern for their own home countries, towns, cities, states, provinces etcetera (Heise, 2008; UNESCO-UNEP, 1991). Nonetheless, to achieve this goal, stakeholders or communities are expected to decipher which principles are similar or differ and conscientiously explore how such principles could be educationally advanced. The starting point towards the above-mentioned goal is most likely grounded in “studying environmental cultures and ethics across borders of time and space” (Callicott, 2001; UNESCO-UNEP, 1991). By doing this, UNESCO-UNEP is optimistic of reconciling different and similar principles geared towards the universalisation of Environmental Ethics (Rai, Thorheim, Dorjderem, & Macer, 2010; UNESCO-UNEP, 1991, p. 2). Reports on the alarming loss of biodiversity and the effects of climate change are crucial environmental challenges confronting all nations of the world currently.

At the Rio de Janeiro, “Earth Summit’ in 2012, indigenous groups expressed their dedication to a sustainable future grounded in the knowledge and worldviews of their elders by making the statement: “We, the indigenous people, walk to the future in the footprints of our ancestors” (Carneiro da Cunha et al., 2012, p. 2). The Rio, “Earth Summit’, for the first time bestowed global awareness on the significance of local and indigenous knowledge through the Rio conventions on biodiversity, combating desertification, and recently the convention on climate change. The need for the conservation of nature to ameliorate the global ecological crisis stands undisputed and is a matter of great concern (Chapin III *et al.*, 2000; Hughes, Daily, & Ehrlich, 2000; Union of Concerned Scientists, 1992). The earth’s biodiversity keeps on dwindling; its species are progressively getting extinct at rates that majority of scientists find startling, probably as much as 150 daily. At the same time, there is a rapid decline in the populations of surviving species (Karaim, 2012).

In some recent debates, the role of culture became a contentious issue at an International Conference on Environmental Ethics and Indigenous Knowledge Systems held in April 2015 in Durban, South Africa (UKZNDABA online, May 2015). In contribution to this debate, Kaya (2015), the director of the UKZN’s DST-NRF Centre of Excellence in IKS stated that to inspire people to protect or conserve their natural environmental resources, one must understand their relationship with the environment. This statement was buttressed with the point of view that environmental ethics is, “culturally-specific’ taking the cue from the meaning that indigenous knowledge is, “culturally-specific’ and a social practice produced in the local communities. Callicott (2001) identified that since people inhabit numerous diverse cultural worlds and at the same time one ecologically ideal biosphere, a single planet covered with one ocean sheltered under one atmosphere, this means that “we are many and different but at the same time one and the same” (p. 95). Therefore, Callicott (2001, p. 95) rhetorically asked, “can we not correspondingly, have many different culturally specific environmental ethics and one global ecological ethic to unite and coordinate them?” To do this, Callicott (2001, p. 95) and Dei (2000b, p. 113) suggest “co-creation” by all cultures where the wealth of indigenous and religious worldviews are drawn upon. Awuah-Nyamekye (2012b), Kronlid and Öhman (2013), Mawere (2013), Shava, Krasny, Tidball, and Zazu (2010), have argued for the integration of indigenous conservation practices into the school curriculum.

The integration in this direction would be an efficacious means to fostering sustainable use of natural resources and would simplify the process of integrating them into contemporary conservation of nature. To this, Ojomo (2011) posited that, if environmental crisis is a global issue, then the current knowledge and actions of Environmental Ethics must extend beyond the borders of the Western world. The possibilities in this regard are about embracing the African worldviews on Environmental Ethics and their cultural understanding of environmental concerns, as insignificant effort has been placed on this (Ojomo, 2011). Besides, developing a framework for the integration of ethics around human relations with the environment from diverse worldviews into schools, has to be upheld (Gumbo, 2016; Kamwendo, 2016; Shava, 2016). More so, schools are enshrined in cultural systems; therefore, societal and organisational cultures have a great impact on the educational structures, its processes and the practices connected to education reforms (Walker & Dimmock, 2000, 2002). Societal cultures influence the comprehensive organisational cultures, and although organisational values, beliefs and norms can be controlled and amended, those societal values that are profoundly entrenched are usually long-lasting (Walker & Dimmock, 2000, 2002).

The culture and curriculum development in many African countries have been directed by the British educational system since colonial days. Many African countries including Ghana and South Africa are trying to initiate an autonomous educational system that takes indigenous cultures into consideration (Dei Ofori-Attah, 2006). This underlines the significance of acknowledging the cultural dimensions when an educational curriculum is to be developed. Procedures and processes involved in educational curriculum development performs a very critical part in promoting the implementation of educational transformation in both students' learning and pedagogical strategies (Dei Ofori-Attah, 2006; Odora Hoppers, 2009a). This development was earlier called for in June 2012, at an International Council for Science (ICSU) forum on science, technology and innovation for sustainable development held in Rio De Janeiro, Brazil. The co-conveners of the forum indicated that there was an unfolding change in ideas or methods on the indigenous knowledge and science amalgamation. Therefore, some of the recommendations the co-conveners (Carneiro da Cunha *et al.*, 2012, p. 2), gave included welcoming "knowledge co-design and co-production" that put scientists and indigenous knowledge holders on a fair and impartial platform.

This is necessary to support the effectiveness of indigenous knowledge, which must commence in the local communities, and be established on promoting culturally suitable means of knowledge transfer. To this end, the co-conveners prioritised the remodeling of formal and informal education to acknowledge indigenous languages, indigenous ways of knowing and modes of knowledge transfer (Carneiro da Cunha *et al.*, 2012).

1.3 Purpose of the Study

The purpose of this study was to explore the understanding, perceptions, practices and communication of CSEE of the Akans (Ghana) and the Zulus (South Africa) and how the CSEE could be taught in SHS B/LS curriculum and the implication of such teaching. In conducting the study, only the EE of the Akans and Zulus were explored; not the broader aspects of EE that embrace different schools of thought and many theories relating to it. The focus though was to explore the long-standing traditions regarding EE of the Akan and Zulu people and that which is specific to each culture. The purpose was to develop a deep understanding of the way these cultural groups take care of nature and its resources using their unique perceptions, practices, and understanding, as well as how they communicate these EE amongst themselves. The study also aimed to explore what the views of the IK-holders of these cultural groups are regarding how the CSEE of their cultural groups could be taught within the B/LS classrooms and the implications against the background of Ghanaian and South African SHS curricula for Biology and Life Sciences teaching. The views of the SHS B/LS teachers were sought as well to explore their suggestions on how the CSEE could be taught and the implications. This CSEE was located within the African Indigenous Knowledge System (AIKS) on EE as described variously by some researchers (Awuah-Nyamekye, 2012b; Kaya, 2014; Murove, 2009a; Ntiamoa-Baidu, 2008; Ogungbemi, 1997b; Ramose, 2009; Tangwa, 2004; Workineh, 2011).

1.4 Rationale and Motivation for the Study

The geographical location of numerous indigenous and local communities are repositories of the bulk of the world's genetic resources which, according to Klugman (2011) indigenous people have lived on interdependently. Evidently, biodiversity is inseparably interwoven with the well-being of indigenous people who have cultured and utilised biological diversity through millennia (United Nations Inter-Agency Support Group, 2014; Thaman, Lyver, Mpande, Perez, Cariño, & Takeuchi, 2013).

The constant interaction of indigenous people with the biological components of the environment have evolved various innovative ways of knowing and practices which include both science and indigenous knowledge (Thaman *et al.*, 2013). Many of the indigenous practices have been found to enrich and foster biodiversity conservation at the local level and to help sustain salubrious ecosystems. Therefore, researching and then integrating indigenous knowledge and practices of the local communities in schooling could play a very crucial role in natural resource management and conservation (Thaman *et al.*, 2013). In addition, notwithstanding the fact that indigenous knowledge has gained growing recognition as a vital building block for global sustainability in many fields such as biodiversity conservation and management, food security, climate change assessment and many others, its values need to be strengthened (United Nations Inter-Agency Support Group, 2014). This is to strengthen its immense contribution to sustainable development policy and science and promoting the effectual involvement of indigenous knowledge holders and people within the local communities (United Nations Inter-Agency Support Group, 2014).

My decision to embark on the study was spurred by the contentious issue raised by conference participants at the International Conference on IKS and EE, held in Durban, South Africa in April 2015 (UKZNDABA online, May 2015), on the role of culture in EE. But as much as the researcher's desires were to delve into exploring indigenous knowledge systems and curriculum development, this stirred further motivation to explore the indigenous worldviews that underlie the perceptions and understanding of Environmental Ethics of some cultural groups, particularly the Akans of Ghana and the Zulus of South Africa. The choice of these two cultural groups was inspired by the fact that the author is an Akan born and bred from Ghana who has experienced the Indigenous Akan culture. Presently, the researcher lives, works and studies among the Zulu cultural group in the Republic of South Africa (RSA). Besides, the director of the DST-NRF Centre in IKS, Professor Hassan Kaya (on 4th May, 2015 *pers. comm.*) indicated that, 'IKS is more beautiful and interesting when it comes from a person's own experiences'. The researcher was motivated by such a statement to conduct the current study, coming from such backgrounds where the cultural practices are highly regarded.

Within their respective countries, the Akan and Zulu cultural groups have experienced colonialism and use the western-based conservation strategies in their normal day-to-day actions (Adeyemi, 2012; Awuah-Nyamekye, Sarfo-Mensah, Amisah, & Owusu-Bi, 2014; Odora Hoppers, 2002c, 2009b). Thus, their indigenous environmental conservation strategies have been adulterated with the Westernised ways of environmental resource management (Awuah-Nyamekye, 2009; Kaya, 2015; Mawere, 2012b, 2012c; Odora Hoppers, 2001, 2009a, 2009b). Therefore, the author chose to explore these two cultural groups as study cases on CSEE broadly located in the meaning of IKS given by Kaya (2015) and (SciDev.Net, 2010). Moreover, at the same international conference on EE and IKS, the participants expressed the need to develop a framework for the integration of ethics around human relations with the environment from the diverse worldviews and IKS in policy-making, education, in research and in life (UKZNDABA online (May 2015).

Another recommendation that influenced this study's approach was one of the Rio 2012 co-conveners on Indigenous Knowledge and Science recommendation that the scientific community and policy-makers recognize and actively engage with IK-holders within indigenous communities. This effort according to the Rio 2012 co-conveners should be to sustain the dynamism of indigenous knowledge within the indigenous communities to promote sound and culturally-appropriate modes of knowledge transmission (Carneiro da Cunha *et al.*, 2012). With a background as a biology and environmental scientist, and a teacher and lecturer majoring in Natural sciences and Life sciences, the author decided to explore the views that the Akan and Zulu cultural people themselves, their IK-holders and SHS teachers have with regards to how the teaching of their CSEE could happen in the science classrooms as well as the prospects and challenges of such CSEE teaching.

1.5 Context of Study

The study focused mainly on the Akan and Zulu cultural groups IK-holders and Biology/Life Science teacher in the Ashanti region of Ghana and the Zululand district of the KwaZulu Natal Province. The study was focused on the Asante group of the Akans who are approximately 14.8% of Ghana's population (Ghana Statistical Service, 2012). The study participants in Ghana were selected from Ejisu, Asaman, Agona, Paakoso, Gyakye, Asantemanso, Owabi and Bonwire in the Ashanti region where the study was located. The Zulu participants were selected from Nongoma, Ulundi and uPhongolo within the Zululand district and Nkandla in the King Cetshwayo district where the study was located.

1.6 Problem Statement

Although change in a tradition is inevitable, the argument is that it can occur without tradition being lost (Oduro & Sarfo-Mensah, 2010; Sarfo-Mensah, Oduro, Antoh Fredua, & Amisah, 2010). However, in the context of colonialism, this was not the case. Many indigenous customs and traditions were nullified, side-lined and viewed as unacceptable (Appiah-Opoku, 2007; Dei, 2000a, 2000b; Department of Education, 2003a). The concern is that much has been lost, particularly traditions that made indigenous people conserve their natural environment. The traditional African religion which is the bedrock for indigenous environmental ethics has been under vehement attack by Westernised education, and Christianity and Islamic religions (Awuah-Nyamekye, 2014; Awuah-Nyamekye *et al.*, 2014; Dei, 2000b; Workineh, 2011). This has been referred to as a “religious and educational war” Goduka (2000, p. 10) purported to subvert and denigrate the cultural practices and spiritual values that were willingly and enthusiastically held on to by the African people before colonialism (Appiah-Opoku, 2007; Goduka, 2000, p. 10).

The woeful loss of IK relating to traditional natural resource management has become a matter of concern for researchers and environmentalists in the related field (Sarfo-Mensah *et al.*, 2010). Researchers in this field advocate for sustainable traditional natural resource management for biodiversity preservation (Appiah-Opoku & Hyma, 2006; Campbell, 2004; McNeely & Pitt, 1985; Sarfo-Mensah *et al.*, 2010; Shava *et al.*, 2010). In a nutshell, indigenous people blame Western education (which brought Christianity and Islam) for facilitating the diminishing respect for the spiritual power linked to the traditional representatives, who happen to have been the main engineers of the indigenous environmental ethics embedded in indigenous cultures, like that of the Akans of Ghana (Attuquayefio & Gyampoh, 2010; Oduro & Sarfo-Mensah, 2010; Sarfo-Mensah, 2002). The respect and values accorded to biodiversity and other natural resources by local and indigenous people are waning. In addition, the traditional beliefs and their related taboos, which regulated the management of traditional natural resources, are gradually being eroded (Arhin, 2008; Hens, 2006; Kaya, 2014; Oduro & Sarfo-Mensah, 2007; Workineh, 2005). Nevertheless, these are dangers to sustainability of the indigenous cultural practice which aided natural resource management (Mawere, 2011).

According to the South Africa Department of Education (2003b, p. 10), much “valuable indigenous wisdom have been lost in SA in the past 300 years”. Consequently, it is very vital that every endeavour is put in place to explore such wisdom and to decipher its applicability in present times. Therefore, Oduro and Sarfo-Mensah (2007) and Mawere (2011) propose further studies on humans and their culture with respect to their views on the impact of their indigenous knowledge and influence of their traditional beliefs on conservation and management of biodiversity, forest space, and landscape resources.

Raudsepp-Hearne *et al.* (2010) and Curran and de Sherbinin (2004) posit that human interactions with nature and their absolute reliance on natural resources in conjunction with population increases has resulted in environmental degradation, and their depletion as humans attempting to adopt diverse strategies to survive. Meanwhile, advances in agriculture have been seen as a form of disrespect for nature as it has led to loss of forests, lands and biological resources that are of value for the wellbeing of humans (Inglis, 2008). Arhin (2008) still asserts that irrespective of the emergence of current technological advancement and other contemporary lifestyles, a lot of indigenes still unflinchingly accord respect and hold onto their cultural beliefs and practices regarding wildlife and their habitat. Consequently, Arhin (2008) still believes that, the values placed on the sanctity of wildlife and their relationship to these are still existent, in present times. Therefore, considering the various opinions, arguments and assertions from literature regarding these foregone discussions on indigenous (cultural) environmental ethics, research in this direction is required. Moreover, Diwu and Ogunniyi (2011), Jansen and Christie (1999), Ogunniyi (2004) and Ogunniyi (1997) have pointed out that one of the key challenges why science teachers of SHS in South Africa have been failing in their integration of IK into science curricular is that there is lack of a vivid description of how a science-IKS curriculum could be crafted and taught in the classroom. Presently, South Africa’s Department of Education has implemented the integration of IK into science teaching as enshrined in the Curriculum Assessment Policy Statement (CAPS) document (Department of Education, 2011).

1.7 Objectives of the Study

This study seeks to explore the following objectives:

- 1) To explore the Akan (Ghana) and the Zulu (South Africa) cultural groups' understanding, perceptions and practices for their Culturally-Specific Environmental Ethics and establish how these ethics are communicated to other members of their cultural groups.
- 2) To explore the views of the Akan (Ghana) and the Zulu (South Africa) cultural groups and Senior High School Biology/Life Science Teachers on how to teach their Culturally-Specific Environmental Ethics in Senior High Schools.
- 3) To analyse why the Akan (Ghana) and Zulu (South Africa) cultural groups and the Senior High School Biology/Life Science Teachers have particular views (prospects and challenges) about the teaching of their Culturally-Specific Environmental Ethics in Senior High Schools.

1.8 Research Questions

This study will be guided by the following research questions:

- 1) What are the Akan (Ghana) and the Zulu (South Africa) cultural groups' understanding, perceptions and practices for their Culturally-Specific Environmental Ethics and how are these ethics communicated to other members of the cultural group?
- 2) What are the views of the Akan (Ghana) and the Zulu (South Africa) cultural groups and Senior High School Biology/Life Science Teachers on how to teach their Culturally-Specific Environmental Ethics in Senior High Schools?
- 3) Why do the Akan (Ghana) and Zulu (South Africa) cultural groups and the Senior High School Biology/Life Science Teachers have particular views (prospects and challenges) about the teaching of their Culturally-Specific Environmental Ethics in Senior High Schools?

1.9 Significance of the Study

It is anticipated that this study will contribute to knowledge on the national and international debates and platforms on cultural EE. It will help to inform national policies on SHS B/LS curriculum development and practical classroom implementation. The wealth of knowledge it contributes regarding the prospects and challenges, is believed to serve as a guide for curriculum developers and educational policy makers in knowing which areas to consider when reviewing or reformulating the curriculum. The April 2015 International conference on IKS and Environmental Ethics held in Durban, South Africa, emphasised on the need to develop a framework for integrating ethics around human relations with the environment from diverse cultural worldviews and indigenous knowledge systems in the making of policies, education, research and life in general (DST-NRF Centre in IKS, 2015). Regarding AEE, its contribution in research is hoped to add knowledge to the academic debate for documentation, promotion of IKS, informing policies on the local actions for sustainable practices, universalisation of environmental ethics and integration in formal SHS B/LS classrooms.

1.10 Research Design and Methodological Considerations

This study used a multi-site ethnographic, naturalistic research approach situated within the interpretivist paradigm. The adoption of a multi-site ethnographic study approach was purposely selected to help generate qualitative data that would be used within the interpretive paradigm. This is because the focus of the researcher was to collect rich, detailed and in-depth qualitative data for description and exploration from several study sites. Twenty-eight participants were purposively sampled using snowballing techniques, to locate the participants who have a wealth of knowledge and the data generated from them were each formulated into narratives (Cohen, Manion, & Morrison, 2000; Olsen, 2011). The participants which were selected as representing the IK-holders of the Akan cultural group were the chiefs ('ahenfo'), traditional priest/priestesses ('akomfoo'), traditional healers ('adunisifoo'), elders (mpaninfoo), youth (mmabunu). The Zulu cultural group participants included: chiefs (amakhosi), diviner-spiritualists ('isangomas'), diviner-herbalists ('izinyangas'), elders (umdala), youth (intsha). The terminologies diviner-spiritualist and diviner-herbalist were adapted from Govender, Mudaly, and James (2013). The participants from the two cultural groups (Akans and Zulus) included the SHS Biology teachers among the Akans and SHS Life Sciences teachers among the Zulus.

The teacher participants were not described as IK-holders as they are not recognized as such within their local communities. Notwithstanding teachers selected for this study had wealth of IK of their cultural group's value and care for nature. Data was generated purely with an in-depth conversational interview and an observation of the natural environment. The data was both analysed inductively to bring out new themes and deductively analysed with the conceptual framework for AEE developed from ideas of Goduka (2000) and with that of Simpson (2002) on successful indigenous environmental education in schools (see sections 3.1 and 3.2 respectively). Ethical considerations were upheld by following protocols espoused for such researches like ethical clearance certificate, gatekeeper letters and the consent of participants sought before conducting interview sessions (Creswell, 2014). Rigour was achieved through interviewing different categories of participants (IK-holders and SHS teachers) from Ghana and South Africa using the same conversational interview questions (see appendix 29) and same conceptual frameworks for analysing the data generated (see Figures 3.2 and 3.2).

1.11 Terminologies

Nature: refers here to the general natural environment - land, earth, water-bodies, forest, wild animals, wild plants etc.

Environmental Ethics: General ethics involving the value and care for nature.

African Environmental Ethics (EE): the general value and care for nature that have cultural bearing in the African context.

Culturally-Specific: means unique or distinctly related to the particular culture.

Culturally-Specific Environmental Ethics (CSEE): referring to value and care for nature that is unique to particular cultural groups. Used in this research to represent the value and care for nature that is peculiar to the Akans (Ghana) and Zulus (South Africa).

Participants: Refers generally to people who were purposively selected for this study. Where the research sought for only nature related data, the participants were described as elders or IK-holders or custodians of the culture. In sections where school related data was sought, participants constituted both IK-holders or elders and SHS B/LS teachers.

Traditional priest/priestess (komfoo / akomfoo i.e. singular/plural form among the Akans): referred to spiritual traditional leaders among the Akan culture.

Herbalist(s): refers to IK-holder(s) who makes traditional or herbal medicine. Referred to among the Akans of Ghana as ‘dunsini’. Zulus of South Africa generally refer to them as ‘inyanga’.

Diviner-spiritualist (Sangoma): is an IK-holder, described as a diviner spiritualist among the Zulu communities (Govender *et al.*, 2015).

Diviner-herbalist (Inyanga): is an IK-holder, described as a diviner herbalist (Govender *et al.*, 2015).

The Elder(s): In this research the participants referred to as elder(s) or ‘the elder’ generally meant an elderly person (usually) above the age of 30 and who is not a chief, traditional priest(ess) or herbalist but has in-depth knowledge about their cultural group’s IK for example regarding their cultural value and care for nature. However, some research participants referred generally to all other IK-holders including themselves as elders. And in such cases the narration of participant(s) state clarifies the use of the word elder(s). Simpson (2002) for instance uses the term ‘Elder(s)’ to represent IK-holder(s) of the indigenous people.

The Youth: In this research the participants referred to as youth or ‘the youth’ generally meant a younger person below the age of 30 and who is not a chief, traditional priest(ess) or herbalist but has in-depth knowledge about their cultural group’s IK for example regarding their cultural value and care for nature.

1.12 Conclusion

This chapter established and justified the study while providing the contextual information, foregrounding the Culturally-Specific Environmental Ethics (CSEE) under study. It emphasised on the phenomenon of this study; established the rationale and purpose of the study and its teaching in schools. The research problem was presented and highlights the rationale for this research. Moreover, it emphasised the need to restore Environmental Ethics from cultural perspectives. The main research questions that guided the research are presented and a discussion of the research design and context of the study as well as the general methodological approach are provided. Generally, it explains the importance of the research and gives an overview of the chapters that follow.

1.13 Outline of Chapters

Chapter one generally introduced the study and highlighted keys aspects of the chapters **Chapter two** gives a detailed literature review, drawing on the body of scholarship around the themes related in this study. It also presents the conceptual and theoretical framework for the study. Furthermore, it provides literature on Environmental Ethics from global perspectives and narrows down to African Environmental Ethics. The chapter explores various environmental ethical theories from global and African perspectives. The African Environmental Ethics from the literature discussed in this chapter is located within the confines of indigenous nature conservation practices and perspectives (a part of Indigenous Knowledge Systems from the African context). The literature sources presented in this chapter are foregrounded from IKS as being culturally-specific and a social practice. The subsequent sections of this chapter explore general literature on curriculum development and the need as well as the prospect and challenges of integrating the African culturally-specific environmental ethics (nature conservation) in the formal SHS B/LS Curriculum.

Chapter three captures the two conceptual frameworks that were applied in this study, which include AEE and teaching Indigenous Environmental education. AEE theories served as the precursor by enhancing the comprehension of EE (Nature care and value) from the Indigenous African standpoint and helped in developing the conceptual framework for the study.

Chapter four expounds on the research design and methodological consideration for the study justified with relevant literature. The chapter includes a discussion of the naturalistic inquiry multi-site ethnographic research style and the interpretivist paradigmatic approach. Here, the detailed description of the choice of participants, their bio data and the instruments for data production are captured. The chapter captures the design of the study, procedures involved in selecting the participants and gathering data.

It further discusses how the research protocols and ethical issues were observed as well as, an elaboration of the limitations of this study. The latter section of this chapter presents the steps in the data analysis process and the different levels of analysis.

Chapters five, six and seven present the data generated and explore how the findings were analysed using the conceptual framework developed for the study. **Chapter five** generally presents the nature-related findings of the Akan cultural group of Ghana and **chapter six** similarly presents and discusses nature-related findings from the Zulu - cultural group participants.

In **chapter seven**, the general presentation and discussion of findings and analysis using the conceptual framework was based on the school-related findings from the Akans and the Zulus respectively. Section one focuses on the Akan cultural group, while section two discusses the findings from the Zulu cultural group. The narratives that were written for the participants are captured in the appendix for detailed information generated from the field.

Chapter eight presents the conclusion of the study. It reiterates the objectives of the study and proceed to state and provide conclusions for the research questions. The models that were developed as a contribution to knowledge from this study are also presented in this chapter and briefly discussed. Finally, suggestions for further research are provided in this section. The list of references and appendices follow these chapters.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The previous chapter provided a backdrop to this study, the focus, purpose and main research questions that guided the study on environmental ethics of nature from a cultural perspective and the implications for teaching such ethics in SHS B/LS curriculum. The motivation and rationale for the study were presented. In addition, the key issues related to the context of this research were discussed for example African Environmental Ethtics (AEE), Indigenous Knowledge Systems (IKS), Culturally-Specific Environmental Ethics (CSEE), teaching CSEE and the prospects and challenges of CSEE teaching. This chapter explores the relevant literature for this study and explains the key concepts related to the study. Furthermore, the chapter discusses the issues relevant to the study, while attempting to clarify and contextualise this intellectual discourse. The chapter reviews relevant literature and findings of various researches related to the various tenets of cultural Environmental Ethics, how they could be taught in the SHS B/LS classrooms, and the implications of such teaching using cases of cultural environmental ethics of the Akans and the Zulus. It generally discusses Environmental Ethics from African cultural perspectives and relates this to global natural environmental concerns.

2.2 Environmental Concerns

The loss of biodiversity with its attendant climate change has become a great concern to many nations. Many international conferences have been organized to share and find solutions to the problems and to provide recommendations for sustainable development. Conferences which were held in different parts of the world regarding sustainable use of the natural environment include the International Conference on Environmental Sustainability, Development, and Protection (ICESDP'17) in Barcelona, Spain, April 2017; International Conference on Indigenous Knowledge System and Environmental Ethics in Durban, South Africa, May 2015; International Conference on Biodiversity in Bali, Indonesia, December, 2017 etc. In many of these conferences, indigenous knowledge for environmental preservation, conservation and sustainable living are regarded to be playing a significant part in promoting sustainable development (Carneiro da Cunha *et al.*, 2012). Leading world environmental scientists have upheld conservation of natural resources as an ethical issue and have sounded a note of caution to the dangers of environmental crises

to human survival (Ehrlich, 2002; Minter & Miller, 2011; Nash, 1989; UCS, 1992). The International Union for Conservation of Nature (IUCN) have published various lists of threatened, endangered, or extinct animal and plant species of diverse numbers in terrestrial and aquatic environments, to revive natural environmental resources among the human population (Karaim, 2012; Rolston III, 2012). The Convention on Biological Diversity in year 2010 reported that the continents of America and Africa have suffered the largest net loss of forest resources, although deforestation is recorded to have slowed down in some countries in the tropics. Nevertheless, tropical forests have been reportedly lost in an escalating rate (Secretariat of the Convention on Biological Diversity, 2010).

Callicott (2001) has argued that environmental problems do not respect boundaries, be it physical, geographical, demographic, political, cultural, denominational inclination, religious or spiritual. This, therefore, calls for global or worldwide collections of different Environmental Ethics across many cultures to reach a universal ethic of the environment. Rai et al. (2010) among other researches have been working towards promotion of universal Environmental Ethics. However, Callicott (2001) and Rai *et al.* (2010) have indicated that the main challenge in formulating a global ethic of nature especially regarding wildlife (plants and animals) is centered on cultural diversities and the respect for diverse wildlife. Callicott (2001) suggests with optimism that most probably, for a global ethic of nature to become a reality, it would have to take a pluralistic dimension in order to fit into diverse principles and not just any one fundamental principle. Consequently, incorporating various philosophies of the diverse cultures and ensuring absolute utilisation of these philosophies to get a satisfactory ethic could be an option. In such an exercise, Callicott (2001) maintains that no specific culture's conceptual framework is to be given any special advantage over the others. This notwithstanding, extracting from an extensive number of cultures to form a multiplex-perspective ethic does not necessarily mean the correctness of each culture's peculiar attitude to its own environment must be adopted at all cost (Callicott, 2001; Freya, 1994 ; Rai et al., 2010).

Keane and Moyo (2010) and Odora Hoppers (2009a) indicate that colonialism, westernised education and Christianity have been the main source of the eroding indigenous environmental ethics.

Westernised education is noted to have furnished the people with potent technologies for overexploiting natural resources, whereas Christianity trampled on the traditional belief systems. Similar views are shared by a number of researchers (Awuah-Nyamekye, 2014; Boaten, 1998; Horsthemke, 2008; Kaya & Seleti, 2014; Le Grange, 2004; Odora Hoppers, 2009b; Oduro & Sarfo-Mensah, 2010; Semali & Kincheloe, 1999). Among the five major world religions: Hinduism, New Age, Buddhism, Islam, and Christianity, Christianity have been pointed out by Adamson (2013), Veldman, Szasz, and Haluza-DeLay (2014) to be the brains behind the eroding indigenous perceptions and practices for conservation of natural resources. Some studies share similar views and blame Islam as well for same reasons (Appiah-Opoku, 2007, 2011; Awuah-Nyamekye, 2014; Campbell, 2005; Oduro & Sarfo-Mensah, 2010; Sarfo-Mensah, 2002). Nevertheless, all these world religions have been identified to wield great potential in motivating concern and activism for battling much of the environmental crises confronting the world (Bergmann & Gerten, 2010; Gardner, 2003; Gerten & Bergmann, 2011; Leininger, 2012). Reasons for this include their ability to influence the worldviews of their followers regarding their natural environment; having multitudes of followers who respect and heed to the authority and directives of their leaders; wield remarkable institutional and economic advantages - their schools, social agencies, investors; and affiliations in many other countries reach myriads of people globally (Bergmann & Gerten, 2010; Gardner, 2003; Gerten & Bergmann, 2011).

Considering these environmental concerns raised, several scholarships within the field of natural resource conservation and environmental education have indicated the inestimable values of indigenous knowledges system as fundamental resource for sustainable living and development within the local and global communities (Awuah-Nyamekye, 2014; Berkes, 2002; Brandt & Kosko, 2009; Folke, 2004; Gadgil, Olsson, Berkes, & Folke, 2003; Khan, 1990, 1994; Kliskey, Alessa, & Barr, 2009; Masoga & Kaya, 2014; Shava, 2008; Van Damme & Neluvhalani, 2004). Singh, Singh, and Gupta (2003) recount that, the religious practices, folklores and worldviews of majority of indigenous societies perpetuate and keep a conservationist spirit to preserve their endowed natural resources. For instance, Singh et al. (2003) established that sacred groves of the Meetei people are a fundamental component of their cultural and ethical way of conserving nature through nature worship. These sacred groves have reigning deities (gods and goddesses) which are kept within shrines and temples in the sacred groves.

Narrowing down to the cultural groups (Akans and Zulus) this research is focused on, there are historical records that black South Africans (which includes the Zulus) for instance have reportedly preserved and conserved natural environmental resources in pre-colonial times using various indigenous or cultural worldviews (Khan, 1994). Nevertheless, Khan (1994) contends that black people's ecological knowledge and practices have been distorted and given no recognition. Besides, the IK held by these indigenous black South African have been modified by the former political forces, which negatively impacted the people's development of environmental attitudes. There have been similar driving forces regarding cultural mechanisms for environmental conservation in Ghana where the Akan cultural group for this study is located. For instance, according to some studies that focused on religion and cultural impacts on natural environment protection and tourism, it was evident that there is a wealth of diverse natural resources preserved in many local communities through cultural and religious practices, that also attract tourists (Awuah-Nyamekye et al., 2014; Mawere, 2011, 2013; Sarfo-Mensah et al., 2010). The cultural value and care for nature in this context (Ghana) is also faced with similar challenges of being on the verge of being eroded away for several reasons as discussed above - for example on issues modernity and technological advancement, Christianity, Islamic religion etc (Awuah-Nyamekye, 2014).

Presently, however, the indigenous knowledge for natural resource preservation and protection is becoming more popular as one of the fundamental tools for sustainable development in various fields. Consequently, the need for greater or further investment is necessary in such areas. Stakeholders however, need to aim for the transformation of the relationship existing between scientists, policy-makers and indigenous knowledge-holders and at the same time help to refine some fundamental perceptions, as well as consider indigenous knowledge and science itself (Carneiro da Cunha et al., 2012; Department of Education, 2011; Department of Science and Technology, 2014; DST-NRF Centre in IKS, 2015; United Nations Inter-Agency Support Group, 2014; United Nations Permanent Forum on Indigenous Issues, 2015). For instance, IKS is gaining growing recognition in South Africa (Department of Education, 2003a, 2011; Department of Science and Technology, 2014; DST-NRF Centre in IKS, 2015).

2.3 Environmental Ethics

Environment Ethics, according to Cochrane (2007) is about moral principles that people have regarding their relationship to the natural environment. The recognition of Environmental Ethics as a philosophical subject in the 1970s came into the limelight after the 1960s industrial and technological revolution with its attendant economic and population upsurge. Brennan and Lo (2016) confirms this assertion by Cochrane (2007). Rachel Carson's book, "Silent Spring" published in 1962 and Paul Ehrlich's, "Population Bomb" published in 1968 created public consciousness of the implication of chemical pollution on wildlife resources and negative impact population upsurge on natural resources (Cochrane, 2007). According to Free (1988), in 1920, Albert Schweitzer, the father of EE was known to have suggested the ethic of, "reverence for life" and considered environmental crisis as a cultural crisis after witnessing the destruction of tens of thousands of people and other wild animals during the first world war.

UNESCO-UNEP explain that, "an ethic may be thought of as an ideal of human behavior, and an environmental ethic as an ideal human behavior with respect to the environment both natural and built" (UNESCO-UNEP, 1991, p. 1). UNESCO-COMEST indicates that EE is comprehended as a research field and an academic discipline, which focuses on principles and values regulating human relations towards nature, either as a whole or in its particular forms, the prerequisites and consequences of these relations, and theoretical, normative and practical issues related to them (United Nations, 2009, p. 4). Environmental ethics is concerned with saving species, habitats, ecosystems, and the general biological richness or biodiversity (Cafaro & Primack, 2001; Wilson, 1992). Workineh (2005) view EE as a philosophical query into the natural world; a justification of some common assertions regarding the natural environment; and one that shows how people demonstrate responsibility in their relationship to the environment. The basic pursuit of EE is to throw a challenge to the moral duty of people when confronted with diverse environmental crisis like the alarming loss of biodiversity, climate change, pollution, over exploitation of natural resources etcetera. Yang (2006a) supports the assertion of EE as philosophy and moral obligation to natural environment that have five schools of thought, theories and worldviews: anthropocentrism, animal liberation or animal rights theory, ecocentrism, biocentrism etcetera. Anthropocentrism encapsulates the normative traditional ethical theories: teleologism, utilitarianism, and deontologism.

This school of thought highlights that humans have moral duty only towards each other and that any other duty or responsibility towards other species is an indirect responsibility. It has limitations on the grounds that it is short-sighted in issues regarding the next generations, since their foundation and reference to rights and duties are restricted to current generations (Yang, 2006a, 2006b). Regan (1966) and Singer (1975) extended the focus of duty of humans to include all animals and all species on the cosmos. The pleasure and pain that animals experience are considered morally significant, and that sentience is an essential condition which is enough for a creature to receive moral concerns. This warrants that, animals be treated as ends in themselves and never as mere channels to an end on grounds that animals have rights, which come before other peoples' interests, therefore they are deserving of respect. However, this school of thought has been lambasted for being individualistic and not advancing the benefit of communities through balance of the whole ecosystem (Yang, 2006a).

Biocentrism spearheads the view that all life forms are moral beings or entities to which humans should give moral concern – meaning that humans have a responsibility to every form of life. Each living organism has an inherent value and worth that justifies them to receive equal or same moral status and respect. Ecocentrism came into the limelight, when biocentrism was perceived as not being revolutionary enough - moral consideration for holistic entities like ecosystems, wilderness areas not recognized as being alive. Consequently, biocentrism was now broadened its horizon of what had earlier been defined as moral patient to encapsulate the nature in its entirety (Brennan & Lo, 2016; Cochrane, 2007; Ehrlich, 2002; Keller, 2010). Ecocentrism centers on the integrity and stability of the ecosystem and the value of species. It embodies three theories- the land ethic, deep ecology and nature value. In land ethics, Leopold (1996) briefly explains that a thing is right if it happens to maintain the integrity, stability and aesthetics of the biotic community and that it is wrong when it does the opposite. In deep ecology, the ethical principles it outlines is the principle of ecosphere egalitarianism which explains that all organisms in the ecosphere are equal in their intrinsic value and everything in the ecosphere have same or equal rights to live, flourish and attain unique individual forms of self-worth or self-realisation. Thus, to injure or destroy nature is to injure or destroy ourselves. Consequently, to defend and protect nature is self-defense or self-protection (Yang (2006a).

The theory of nature values, by Rolston III (2006), maintains that humans derive their duties to nature from the value in nature; hence describing nature to be a kind of subject that includes teleology, creativity, intelligence and the capacity to value. Moreover, the intrinsic, instrumental and systematic value that is specifically present in nature puts an onus on humans to care for the earth. Consequently, humans must be the Earth's moral supervisor. Eco-feminism attempts to terminate all forms of oppression including environmental oppression and pinpoints the interconnectedness between the domination of humans by race, gender and class on the one side and domination of the earth on the other. It employs the logic of gender to unveil interrelated dominations by giving recognition to the relevant connections among systems of dominations be it political, ethical connections, empirical, historical, feminism and any environmental policy (Yang, 2006a). Having journeyed through the several meanings of EE and the theories that have girded world EE, the following sections review some literature on EE from African cultural perspectives and the inclusion of African IKS in school curricula.

2.4 African Environmental Ethics

Various studies relating to African Environmental Ethics (AEE) posit issues of people, animals, and spiritual entities to be uniformly interconnected with their natural environment, maintaining that the African environment embraces a three-way or tripartite interrelationship between people, animals and spiritual entities (Awuah-Nyamekye, 2009, 2012b; Mawere & Awuah-Nyamekye, 2015; Ojomo, 2011; Workineh, 2005, 2013). Arhin (2008, p. 94) pinpoints "respect and sanctity of life" as almost a general cultural practice that pervades many ethnic groups and cultures in Africa; contending that there are abundant cultural values and practices in numerous African nations which deliberately and sometimes unconsciously end up in wildlife resource conservation in Africa. Mangena (2013) adds that the survival of the African indigenous people and their completeness is inextricably interwoven with animals through the use of totems and spiritualism as resources that could be employed to help assign moral status to animals. Mangena (2013) has criticised AEE advocates and researchers to have overlooked and not fully addressed the dilemma of, "moral status" in their research, as this happens to be a root cause of the environmental crisis in Africa and other parts of the world.

In the Western world, 'moral status' is still contentious as to whether; 'reason' or, 'sentience' should be the guiding principle to conferring moral status to non-human animals. And according to Mangena (2013), EE theorists who contend for; 'reason' as the basis for moral status are anthropocentric, homocentric or, 'reason'-based thinkers. The sentient theorist is one who argues that every being that has feeling of pain and pleasure should be accorded moral status. The reason -based theorists are known to overlook any form of barbaric treatment to non-human animals except, that kind of barbaric treatment has an evil repercussion on people or humans. Moreover, Mangena (2013) posits that practically no notice has been given to it in the emerging African environmental ethics recently spearheaded by a number of African academics such as Kaya (2014); Mawere and Awuah-Nyamekye (2015); Murove (2004); Ogungbemi (1997b); Prozesky (2009); Workineh (2005).

Prozesky (2009) identifies African ethics as; 'moral traditions' implanted within the fabric of the numerous and diverse cultures of the indigenous black African people which can be comprehended as the kind of beliefs the African people live for and practice. Prozesky adds that this kind of ethic has the traditional African religious beliefs mixed with their moral values in a holistic manner. Bujo (2009) affirms that in the reasoning of the traditional African, there is no line of demarcation between what is seen as sacred and that which is perceived as secular as it pervades the Western culture. This is because the traditional Africans consider themselves to be in an intimate relationship with the natural world. Therefore, to the traditional African, absolute consciousness of self is impracticable until there is a harmonious co-existence with natural resources like plants, animals, minerals, land and water-bodies. This thinking informs the African Environmental Ethics (AEE), the ethics of which several scholars have defined variously. Yang (2006a) indicated that this perspective of AEE stands in sharp contrast to the Western outlook where humans are viewed as the central, powerful beings, higher than nature, and therefore have no moral commitment to non-human beings. Prozesky (2009) maintains that AEE is an ethic that is concerned with the moral responsibility through the manner in which humans behave towards nature. Bujo (2009) considers AEE as what the African person believes to be an ecologically responsible behavior which includes respect for creation, recognition of sacredness of all life forms on the cosmos, and ecological rationality.

Murove (2009a) and Ramose (2009) posit the AEE as a particular kind of African ethics which are guided by a unique respect for nature based on the principle of Ubuntu. For instance, in the African continent where there are thousands of indigenous cultures, Murove (2004) contends that, the environmental crisis is an ethical issue that can be remedied through African indigenous cultural ethics. The African indigenous cultural ethics are the fundamentals for their EE, and the capacity to solve some of the current environmental problems. Murove (2004) defends that African ethics in general are supported by the, “Ukama’ and, “Ubuntu’ concepts which provide tenable models that have the capacity to support the current generation to live sustainably within their natural environment. The, “Ukama’ is asserted to embody all the facets of human existence that is social, spiritual, economic and ecological. Besides, the perpetuity of values expressed through various cultural practices and rituals is predicated on the fact that, “Ukama’ still exists between the living and their ancestry, making the people loyal and take responsibility for future generations. In the same vein, Murove (2004) argues that, “Ubuntu’ concept conveys a similar message as the, “Ukama’ concept, as it espouses human need for others without which the absolute potential of a person’s humanness cannot be consummated.

Furthermore, the need for harmonious coexistence with other humans would not be possible without relatedness with the natural environment, as humans cannot exist without the natural environment. Thus, Murove (2004) contends that the environmental crisis, whether local or global could be addressed through the above mentioned concepts (Ukama and Ubuntu) of Environmental conservation. In addition to Murove (2004) assertion of Ukama and Ubuntu concept having the capability to solve African environmental problems, Corsiglia and Snively (2001a) had earlier contended that, “traditional ecological knowledge (TEK)” is resilient enough to handle global environmental problems. The TEK is known to be “guided by traditional wisdom which embraces respect, ethics, controls, sharing, harmony, reciprocity, holism and spirituality, which when integrated into a local cultural perspective could result in long-term sustainable societies, the implication of which is to resolve global environmental problems”. Awuah-Nyamekye (2009) also contends that traditional religion and cultural practices of Africans could contribute immensely to finding lasting solutions to environmental crisis within the continent. Ogungbemi (1997a) describes AEE as the “ethics of nature-relatedness” (p. 208), whereas Tangwa (2004) explains AEE as ethics of “eco-bio-communitarianism” (p.392).

Ogungbemi (1997a) explains that such ethics of nature-relatedness inspires humans to make efforts to live in harmony with nature, to realise its worth, ensure its survival and sustainability, as well as perceive natural resources to have a spiritual nature. The kind of relatedness of humans to other aspects of nature and spiritual essence explains the absolute interdependence of the purpose of the respect given to natural environmental resources. Similarly, Tangwa (2004) posits that, in the AEE, the transcendental perspective necessitates acknowledging and embracing the interdependence and harmonious coexistence between the people, animals and spiritual entities. Prozesky (2009) asserts that the issue of AEE being holistic be addressed with circumspect in that, it has the potential to make people not recognise the diverse African cultures, several of which some researchers have identified to possess similar features. Consequently, AEE would not be expedient to generalise across the African continent because each individual culture has their unique ways of addressing environmental concerns, citing the example of a philosophy such as the ubuntu, which to Prozesky (2009) is a Southern African concept. Thus, generalising the ubuntu philosophy as the most common feature among diverse African cultures must be done circumspectly.

The uniqueness of EE to diverse cultural group is what Callicott (2001, p. 85) has described as “culture-specific”. This phrase has been used in the description of IKS given by Kaya (2015) and Kaya in SciDev.Net (2010). Kaya explains IK to be a social practice involving trials and errors through which many indigenous people have developed various theories to solve their life’s problem and provide their basic needs. In addition IK involves the skills and expertise that encapsulate all aspects of life, generated by communities over generations and the knowledge is not produced in the universities (Horsthemke, 2004; Kaya, 2014, 2015; SciDev.Net, 2010; Semali & Kincheloe, 1999). The meaning of IKS as being culturally-specific and a social practice was adopted for this research on environmental ethics as it explored indigenous cultural perspectives of Akans (Ghana) and Zulu (South Africa) on the care and value for nature (land, waterbodies, plants, animals).

The element of spirituality cannot be divorced from the African perspective on natural environment. For instance, Burnett (1994) study on the Bantus of the Kenyan highlands indicates that, the indigenous people perceive every forest to have an unusual spiritual connection with man, while some trees rather have an exceptional connection with god.

Consequently, ways have been devised by the indigenous people to reduce personal interactions with such forests except for societal interactions. Moreover, beliefs occupy some central place in AEE. For instance, Mokuku and Mokuku (2004) researched in Mohale mountainous areas in Lesotho to explore the part IK plays in the conservation of biological resources. They established that several species of plants, birds, reptiles, amphibians and insects have been conserved through the unconscious and deliberate efforts of the community, using their traditional beliefs. These traditional beliefs premised on respect for and belief of being physically and spiritually connected to such species prevents overexploitation of such species. Arguably, considering the assertion that AEE is strongly entrenched in spirituality and traditional beliefs making them seemingly too contrasting to the Westernised Environmental Ethics (WEE), Wiredu (1997) took a different standpoint. According to Wiredu (1997), there is no much difference between the AEE and WEE; as much as indigenous Africans are deeply engrossed with spirituality and are somewhat superstitious about everything, they are not too different from the Western world. This is because the Western world was and still has many spiritual beliefs and handles many other issues spiritually like the Africans. Thus, the Western world has no reason to be so alarmed by the many gods and spirits that are ubiquitous in African context for dealing with many issues (be it natural environment or others) and for giving clarity to their traditions.

Moreover, to buttress the claim, Wiredu (1997, p. 321) asserts that there are “many Whites in London who feel big for being witches just as they see many African traditions as witchcraft”; that superstition is not exclusively in Africa but in the modern Western world. Besides, logical reasoning is not confined to only the Western world but in Africa too. Kimmerle (2006b) study on animism from the sub-Saharan African context and perspective found that, the African belief in spirit happens to be the center of traditional African religion and that all things in nature can be infused with spiritual powers or become the abode of spirits. Nhemachena (2017) adds that animism embraces beliefs that tangible entities or bodies have invisible intangible entity or being which is spirit. Besides, animism is a religious belief that assign life or deific characteristics to natural tangible entities like trees, celestial bodies. The life ascribed to natural entities and phenomena are synthesized by spiritual forces and consequently, the belief that natural phenomena like thunder or tree possess souls. For instance, Kimmerle (2006b) attest asserts that trees (especially baobab) happen to be the most endeared abode of spirits and those habitats that are near waterfall.

Furthermore, Kimmerle (2006b) indicates that such perceptions and beliefs about natural entities and natural phenomena happen to be the central reason for the African respect and reverence they accord nature. The respect for nature has served as an invaluable tool for the conservation of natural ecological resources. Awuah-Nyamekye (2009), maintains that in Ghana, the Akan laws, customs, taboos etcetera have deific support and reinforcement in that they are believed to might have been imposed by gods and their ancestors. Workineh (2005), found out that the Oromos in Ethiopia are very skilled in using their indigenous epistemologies of nature cycles, onset and offset of seasonal rainfall, bird calls and bird migration, animal behaviours, patterns of the stars and solar systems, state of trees, innermost parts of nature to develop various epistemologies and techniques to handle day-to-day environmental issues, and that of the future. Workineh (2011) recounts that the Oromos have physical, spiritual and moral connections or relationship with the environment. They are pragmatist and anthropocentric in different situations. Akwadaapa (2008) argues that African cultures like the Akans, Dogons, Dagaras, the Zulus and others in the continent, have preserved their cultural heritage in a very unique way through their traditional and oral histories which according to Akwadaapa (2008), the Western World have just started to discover and are yet to comprehend. Besides, many of the An IK are known to be very resilient, which is why many of the cultural practices are still existent and relevant today (Konadu, 2006, 2010).

2.6.1 African Environmental Ethics: Perspectives of the Akans of Ghana

Akan cultural group's EE of nature according to Oduro and Sarfo-Mensah (2010), Eshun (2012) and Parrinder (1962), are sharpened by the perceptions they have of their ancestors and age-old traditions bequeathed to the cultural group. Thus, there is a strong interconnectedness of all members of the community to each other, their natural environment and ancestors. An indigenous Akan would claim that the land, the water-bodies, forests and other natural resources are inhabited by ancestral spirits who are not distant but are believed to be watching over their families on the land of the living. Furthermore, these ancestors are known to punish those who are bent on doing evil through diseases and curses, and at the same time reward those that do good things (Eshun, 2012; Oduro & Sarfo-Mensah, 2010; Parrinder, 1962). Eshun (2012) asserts that the Akans of Ghana have intricate relationship with spirit beings and that they generally protect their natural environment because of fear of the repercussions of contravening the strict sanctions that the spirits (ancestors) have placed on them not to destroy the environment.

Eshun (2012) notes that, when such perceptions are repeatedly overlooked by environmental policy makers in Ghana, they lead to gross environmental degradation and loss of rich natural resources. Similar assertion of respect for life of living things and fear of spirits have been made by several other researchers. The researchers have argued that the Akan Indigenous Environmental Ethics (IEE) is deeply rooted in their respect for life of humans and other biodiversity. The respect is believed to have been instilled by the Akans reverence and fear for their ancestors who they believe have made them overseers of the natural resources (Attuquayefio & Gyampoh, 2010; Ntiamoa-Baidu, 1995, 2008; Oduro & Sarfo-Mensah, 2007). For instance, Attuquayefio and Gyampoh (2010) found out in a study in Buaben-Fiema monkey sanctuary that the participants perceived caring for and conserving the monkeys had both cultural and spiritual relevance, and a sign of showing reverence to the ancestors and smaller gods. Boateng (1998) posit that the Akans and many other cultural groups in Africa have cultural, spiritual, and religious relationships with natural habitats and wildlife organisms which are protected with taboos. These wildlife resources are guarded by the absolute fear and apprehension created by the taboos because of the belief that they have spiritual backing, other physical penalties and sanctions when contravened. Besides, members of the cultural group who compromised any of the taboos were forced to pacify the spirit linked to the taboo by offering a sheep with bottles of schnapps (Oduro & Sarfo-Mensah, 2007; Sarfo-Mensah *et al.*, 2010).

2.6.2 African Environmental Ethics: Perspectives of the Zulus of South Africa

Kamwangamalu (2007) asserts that despite the cultural diversity in Africa, the African societies have a lot of resemblance regarding their value systems, beliefs, customs, socio-political practices and institutions. The “Ubuntu” system is described as one of the value systems that is common in majority of African societies and happens to be a kind of an understanding that has helped in the conservation of natural resources by many indigenous people of Southern Africa and beyond. This philosophy of Ubuntu was also addressed by Murove (2004) as the traditional African ethic that has guided many indigenous Africans, such as the Zulus based on their human relationship with their natural environment and other people both living, dead and about to be born, to conserve nature. Mawere (2012a) asserts that, the justification for ubuntu as an environmental ethic and for that matter perceived to possess the capability for biodiversity conservation that leads to sustainable development, is ingrained in its deep-seated respect for human life and other biodiversity.

Thus, the Zulu cultural group being part of the Bantu speaking people, their EE (i.e. the care for nature and principles and values that regulate their relationship with nature) is ingrained in the philosophy of Ubuntu. Murove (2004) and Murove (2009b) found out that in African ethics, the kind of relatedness and or interconnectedness is not confined to humans but to the natural environment which is signified and displayed in the utilisation and showcasing of totems as well as the continual human interdependence on other components of nature. Murove (2009a) and Ramose (2009) contend that the respect for and harmonious relationship with nature happens to be central to AEE.

McCracken (1986) reports that during the colonial governance regime, the black Africans in Zululand and Natal areas had perceptions that forests were sacred places, therefore, they buried their deceased chiefs in such forests. The forests were consequently protected by the Zulu cultural group. Besides, the Zulus kept some tree species like the red ivory solely for royal family utilisation and safeguarded forests with fear of spiritual entities or of wildlife animals or of diseases like malaria. Blackburn and Thomas (1904) reported that Zulus perceive crested birds to bring fortune for bumper harvest and smooth parturition for pregnant women; therefore, such birds are brought to communities and allowed to fly over homes and farms. There are perceptions that some snakes could bring calamities into homes and are therefore killed to carry away evil, while others like, “theozi” have spirits of Shaka Zulu and are not killed. Similarly, herons in large numbers are perceived to indicate low crop yield. Poison fangs and gall bladder of a python are perceived by the Zulus to be able to neutralise the poison of other snakes, whereas the fat of lions when consumed make people brave. Besides, some snakes which are not venomous like, “mabibini” are believed to convey souls of mothers and their children. Blackburn and Thomas (1904). There are beliefs of relatedness to water spirits by the Bantus-speaking people in Southern Africa (Bernard, 2003; Blackburn & Thomas, 1904).

2.5 African Environmental Ethics as an African Indigenous Knowledge System

Indigenous knowledge according to Nakashima and Nilsson (2006) refers to the intricate bodies of knowledge, skills, customs, and representation that are maintained, managed and developed by people who have long standing histories of interactions with their natural environment. These complex bodies of knowledge are known to include language, perceptions, conceptions, worldviews, attachment to certain places and spirituality.

Nakashima and Nilsson (2006) report some fundamental terminologies that are ascribed to this kind of knowledge to include local knowledge, indigenous knowledge, indigenous science, ethnoscience, traditional ecological knowledge, and folk science. Therefore, Nakashima and Nilsson (2006) have indicated that it has become virtually impracticable to assign a single term for this kind of knowledge because of its diverse spiritual, social, political and scientific context. Bicker, Pottier, and Sillitoe (2003) and Semali and Kincheloe (1999) indicate that because of the various terminologies given to denote indigenous knowledge, there are lots of controversy about the knowledge of indigenous people. Semali and Kincheloe (1999, p. 3) explain that, “IK reflects the dynamic way in which the residents of an area or community have come to understand themselves in relationship to their natural environment and how they organise that folk knowledge of flora and fauna, cultural beliefs, and history to enhance their lives”. Payle and Lebakeng (2006) perceive IK as a local or traditional knowledge that evolved from the people’s indigenous environment because of continual interaction with the natural environment. Onwu and Mosimege (2004) asserts that, IK comprises of every knowledge that indigenous people utilise for their day-to-day activities and have made them survive changing times and seasons since time immemorial, the current times and the future. Additionally, Odora Hoppers (2001) considers various systems and bodies of knowledge including technology, philosophy, social, economic, learning or educational, legal and governance systems as indigenous knowledge systems (IKS). Kaya (2015, p. 2) gives similar meaning to IKS and refers to IKS as bodies of knowledge, skills, teachings and beliefs produced locally by people in their specific cultural communities and environments to maintain and improve their livelihood”.

According to Nakashima and Nilsson (2006), IKS has assumed great relevance and significance globally, although increasing interest in diverse knowledge for exploring and comprehending the natural environment and managing is not novel but dates back to several decades. For instance, the UNESCO’s realisation of the importance of a diverse knowledge system for understanding the natural environment and managing biodiversity could be traced to about five decades ago i.e. the 1950s traditional water use practices in the arid zones (Nakashima & Nilsson, 2006). The 1970s witnessed the, “Man and the Biosphere’ (MAB) phenomena thought to have contributed immensely to traditional ecological knowledge (TEK).

Such assertion was based upon several fields of study on local and indigenous people and their actions towards the management of their natural environment (UNESCO, 2005). In the year 2002, at the World Summit on Sustainable Development (WSSD) held in Johannesburg South Africa, indigenous knowledge gained much credence for which its implementation plans in diverse areas like science and technology, biodiversity, education, climate change, health and poverty eradication were ratified. UNESCO and UNEP upheld indigenous knowledge to consolidate the various fields considering cultural diversity and biodiversity. For instance, corporate institutions were called upon to sync their practical experience with the existing indigenous conditions (UNESCO, 2005). Nakashima and Nilsson (2006), claimed that rural and indigenous people have their own worldview of the natural environment, how humans interact with their natural environment, and the way this interaction ought to be managed. Consequently, indigenous people hold their own knowledge, customs, traditions, and representations of the natural environment. And from the foregone discourse in this section, meanings given to IK and IKS from the authors cited above, explains IK or IKS to include indigenous people's unique interaction with their natural environment for their sustainable livelihood. Such interaction with natural environment obviously involves the indigenous (cultural) people's value and care for nature which is part of their EE and in this study's context, their AEE. Consequently, meanings of IK and IKS shared in the discourse above give credence to the fact that, the AEE is rooted in the AIKS.

2.6 African Environmental Ethics and Indigenous People

According to Mearns, Du Toit, and Mukuka (2006) indigenous people are described as possessors or holders of indigenous knowledge and that they are described as indigenous people in the context of having descended from populations known to have inhabited their current country at the time of conquest. And that regardless of their legal standing, they still practice some or all of their earlier social and cultural lifestyles from time immemorial. The World Bank describes indigenous people to be culturally specific societies and communities whose identities, culture, physical and spiritual well-being, general livelihood is complexly interwoven with the land they dwell on and the natural resources they survive on (The World Bank, 2017). Mankiller (2009) shares that, indigenous people have unique cultural identity which is inseparable from the natural environment in that their lives are part of the natural environment.

Mearns et al. (2006) and Ermine, Sinclair, and Jeffery (2004) use the term indigenous in connection to group of people believed to have descended from original populations that still keep and practice their age-old culture. Indigenous people throughout their existence have developed customs and cultures which are elaborately connected to nature. Some cardinal lifestyles have empowered indigenous people to continue to esteem and co-exist harmoniously with nature and particularly with their biodiversity. These fundamental lifestyles that have inspired them to conserve immense biodiversity of genes, species and ecosystems on which they depend for their livelihood are the value and belief systems they have developed for these other non-human forms of life (UNESCO-UNEP, 2002; UNESCO, 2009).

The World Bank indicates that the cultural survival and relevant knowledge systems of indigenous people contribute immensely to biodiversity and environmental health as well as the ecological stability (The World Bank, 2017). Besides, indigenous people's cultural, religious beliefs and accustomed spiritual values have been the main ethics against overexploitation of their natural resources to sustain themselves and their next generations. This explains the concept of sustainable exploitation of natural resources which is one of the three cardinal objectives of the convention on biological diversity. Thus, the concept of sustainable use of biodiversity is deeply-rooted and ingrained in the value systems of the cultures of the indigenous societies (UNESCO-UNEP, 2002). Enzinna and Farrell (2018, p. 2) cites a UN report that indigenous people are known to account for the greater part of the World's cultural diversity and that out of the approximately 6000 cultures in the World, between 4-5000 are indigenous. The World Bank report in year 2017 indicates that "approximately 370 million indigenous people were known to be living in more than 90 countries in the world and constitute 5 percent of global population" (The World Bank, 2017). Fien (2010) writing for UNESCO-UNEP, notes that regardless of the religious and cultural diversities across the globe, people share common beliefs with respect to the necessity of caring for one another and the natural environment. Beliefs like these are crucial for a sustainable future. The World's major conservation groups being, the International Union for Conservation of Nature (IUCN), World Wide Fund (WWF) and (United Nations Environmental Programme (UNEP) recognise an array of cross-cultural values that present some principles which regulate the relationship existing between people and nature.

The cultural values are described by the World's major conservation groups as conservation values which include respect for the interdependence of all things, conservation of biodiversity, living lightly on the earth and respecting interspecies equity. According to the World's major conservation groups, these conservation values are the fundamental environmental ethics for sustainable development in the African context (Fien, 2010). In this research, the term indigenous people or indigenous cultural groups is used in a generic sense to include cultural people who possess their peculiar indigenous knowledge (like the Akans of Ghana and the Zulus of South Africa) utilized within their local communities for their sustainable livelihood. The specific indigenous knowledge (local/traditional/cultural) knowledge referred to in this study include their understandings, beliefs, perceptions, practices regarding the natural environment (land, plants, animals, waterbodies), as their culturally specific Environmental Ethics. Thus, this study context is not based specifically on groups of people who identify themselves as indigenous people (like the Sans of South Africa, whose cultures and ways of life differ considerably from the dominant society (like the Zulus or the Akans), and whose cultures are under threat, in some cases to the point of extinction (ACHPR, 2006). And whose survival of their particular way of life depends on access and rights to their traditional lands and the natural resources. Moreover, they are regarded as less developed and less advanced than other more dominant sectors of society, often living in inaccessible regions or often geographically isolated, and suffer from various forms of marginalization, both politically and socially (ACHPR, 2006).

2.7 African Environmental Ethics and its Denigration

Many researchers in the field of AEE and related researches have lamented the grave disregard for AEE. The consequence of such denigration of AEE has mainly been the unfortunate loss of the natural resources especially – forests, wildlife resources, ecological habitats, and rich mineral resources in Africa. The researchers have recounted that the denigration of AEE has been effective mainly through colonialism, invasion of western religion, western educational system and western technological advancement (Anwar, 2011; Awuah-Nyamekye, 2014; Kaya & Seleti, 2014; Masoga & Kaya, 2011; Mathooko, 2005; Mawere, 2014; Odora Hoppers, 2002b, 2009b; Workineh, 2015). Meanwhile, the AEE has been identified to have kept the African people together and made them protect their natural resources and use them sustainably (Arhin, 2008; Hens, 2006; Kaya, 2014; Nel, 2005, 2006; Oduro & Sarfo-Mensah, 2007; Semali & Kincheloe, 1999; Workineh, 2005).

One of the key negative consequences of the disregard for AEE with regards to education sector is the fact that, many science education curricula that need to include it, have neglected it and resorted to only the WEE which is somewhat disengaging to the indigenous knowledge of the African learners. Msila (2009) posited that the westernised school science curriculum considers indigenous or traditional perspectives, thoughts and worldviews inferior to modern science. Consequently, this grossly disrespects Africans intellectual capacity. Kanu recounts the subjugation of indigenous knowledge and indigenous people through use and imposition of colonial education and school curricula (Kanu, 2006). Meanwhile, Siegel (2002) argued that there are other ways of knowing and ways by which a person can make sense of their natural world in which they live, and not only through western science. Anwar (2011) contends that the tyrant colonialists conspired to wipe out African existing indigenous knowledge and make Westernised beliefs, practices and epistemologies to predominate. Besides, the black Africans were enslaved with Western education by making those with formal education stigmatise their own cultural knowledge and at the same time spread disdainful comments about their own indigenous culture as being archaic. Moreover, Castagno and Brayboy (2008) supports Cobern and Loving (2001) and Hountondji (2002) assertion that the westernised science has no recognition for other bodies of knowledge or epistemologies like IK and their ontologies. Besides, Semali and Kincheloe (1999) and Odora Hoppers (2006) argued that the colonialist rule misconstrued the tenets of the AIKS practices.

Furthermore, Van Wyk and Higgs (2011a) contends that, the exclusion of indigenous knowledge from the formal school curriculum in Africa have caused a kind of a disconnect between what students/learners have as their previous knowledge from home and community to a completely new world of epistemology that has no bearing on what they are taught at school as they are based majorly on western perspectives. Learners, therefore, struggle to make connections between what they learn in school and what they know from home and interact with daily. Consequently, the learning of science by these indigenous African students/learners have become cumbersome, somewhat impracticable, incomprehensible and much more confusing to them leading to abstraction of subject matter on the side of the learners (Jagire, 2014; Nabudere, 2003; Odora Hoppers, 2002a; Semali & Kincheloe, 1999; Tema, 2002; Tobin, 1993).

The colonial education grossly denigrated local indigenous knowledge and brainwashed learners to accept that their indigenous knowledge is archaic and substandard. Consequently, all through colonialism in Africa, the school curriculum was formulated upon the white people's philosophies of science. Thus, making indigenous knowledge of the Africans appear inferior and a subservient common knowledge. Meanwhile, the pedagogies and other knowledge used in teaching is in every respect similar to Western curricula which completely strips off the African people's indigenous knowledge (Giroux, 1996; Shizha, 2005). Rollnick (1998) highlighted that even where the Eurocentric curricula was to be taught, when it came to the government schools in South Africa during apartheid, either the Maths and Science aspect of it was not taught or were taught by highly un-trained teachers in the high schools. Semali and Kincheloe (1999) asserts that, the misinterpretation and denigration of the AEE is so deep-seated that many of the indigenous African people are practically losing their identities and having wrong perceptions about themselves. The colonialist intentionally refused to acknowledge the part played by the Africans and their indigenous knowledge in innovative science and technology (O'Donoghue, 1999; O'Donoghue, Shava, Tidball, & Zazu, 2009; Semali & Kincheloe, 1999).

Bhebhe (2000) as cited in Muchenje and Goronga (2013b) asserts that colonisation intentionally decelerated the pace of advancement in scientific innovativeness of AIK by teaching natives to set aside and shrug off their previous wisdoms and innovativeness to the extent that well known Egyptians had to do away with the thought that they are the pioneers of civilisation in the world. Consequently, IKS was perceived as hegemonised knowledge which eventually hampered its progress and further innovativeness. Such disregard for African culture and IK was so deeply ingrained that the African communities somewhat accepted the western knowledge forms and the westernised technology as being effectual than their African IKS. Thus, both the educated and less educated in the African societies gave little or no attention to their African IKS, nor did they promote it. According to Hountondji (2002), post-colonialists, feminists, multiculturalists, and sociologists of scientific knowledge as well as those who refer to themselves as indigenous researchers assert that science is not universal, but locally and culturally produced. On the other hand, universalists argue that modern Western science is superior to indigenous perspectives in the natural world. Besides, it is through education in schools and in other higher educational institutions that IKS stands the chance of being revived.

Mosimege (2005) explored the position of IK and its implementation after colonial rule in the South African educational system and contended that despite the new educational era in South Africa, IK has not been accorded its significant position. Therefore, it is high time IK is repositioned to its legitimate place (Nel, 2005, 2006). Nonetheless, Muchenje and Goronga (2013a) lament that many African governments have not strongly championed the course of strengthening IKS and integrating it into the education curricula. This indicates that IKS is being marginalised.

Notwithstanding the several issues of denigration, Odora Hoppers (2001) claims that indigenous knowledge and indigenous knowledge systems (which includes AEE) has not been totally lost but has only been marginalised as most people still depend on, and practice IK in their communities. For instance, people continue to seek or consult traditional healers for their different health conditions; pregnant females consulting traditional birth attendants and many members of the community still relying on traditional long standing farming systems (Odora Hoppers, 2001). However, the advances of “imperialism and colonialism on the African continent” has affected the status of IKS negatively (Hountondji, 2002, p. 24). Colonisers came with their own knowledge and lifestyles on how to live which was economically related. They persuaded or wanted the communities to follow their systems and they did not want the communities to continue following their own thinking as this could possibly be a threat to the new knowledge that they wanted to introduce. For example, in the countries colonised by the French, palm-wine alcohol was forbidden and the ideas of this industry was repressed with the notion that palm trees were being destroyed just so that the European drinks like whisky would reign on the market (Hountondji, 2002; Odora Hoppers, 2001).

Prozesky (2009) contends that the African ethics has been resilient since historical times in spite of the tyrant non-African influences and the changing times. The key reason being that, the African ethics, being a set of age-long morals is magnanimously rooted in the culture of the people of the African continent. Similar views are shared by Akwadaapa (2008) that African cultures like the Akans, the Dogon, Dagara, Zulu and others in Africa, have preserved their cultural heritage in a peculiar way through traditional and oral histories.

The inner tenacity and resilience of the African ethics has inspired Prozesky (2009) to call on other persons who are non-Africans to relook and take time to learn, analyse and revere African ethics. Besides, there are conventional values among the diverse Africa's cultural groupings that have contributed to the tenacity and resilience of the Africa ethic, thus making it worth emulating according to Prozesky (2009). The foremost of these values are the prominence of the sense of communality among its citizenry and feeling of humanness for each other, which at most times are extended to the natural environment (Prozesky, 2009). This deep sense of communality among diverse African culture is what Murove (2004) contends to have been described as ubuntu in the Southern parts of Africa.

2.8 Cultural Specificity of African Environmental Ethics

The phrase Culturally-Specific Environmental Ethics (CSEE) adopted for this study basically refers to a specific or cultural group's peculiar cultural value and care for nature which are based on their indigenous knowledge on the natural environment. Thus, in this context, EE refers to the values and care for nature. The term "culturally-specific" - adopted from Callicott (2001, p. 85) and from the meaning of IK and IKS given by Kaya (2015, p. 1) that "IK is the long-standing traditions and practices of cultural specific local communities, which encompasses the skills, innovations, wisdom, teachings, experiences, beliefs, language and insights of the people, produced, and accumulated over years and applied to maintain or improve the livelihood". Whereas, IKS represents "the bodies of knowledge, skills, teachings and beliefs produced locally by people in their specific cultural communities and environments to maintain and improve their livelihood". Thus, this study focused on the IKS body of knowledge of the cultural people linked to the natural environment considered in this research as CSEE. The CSEE might obviously have similar connotation to what Workineh (2005) describes as indigenous environmental ethics which generally mean the value and care that is accorded nature or the natural environment by indigenous (cultural) people. Masoga (2004) indicates that IK is stockpiled or stored in culture in diverse ways and forms like the cultural customs and traditions, folklores, stores etcetera. According to Pai and Adler (1997), culture embodies the way of life of people in particular environment from generation to generation and IKS is infused into the culture of people. Muchenje and Goronga (2013a) expound that culture of the people may vary based on variations in natural and physical environment, which has direct influence on the IKS of the people, consequently making IKS of diverse societies different in a way. This makes it culture-specific.

Culture possesses some level of technological constituent and scientific innovation which are to be recognised and utilised for the benefit of all members of the society. The meaning of IK that Kaya (2010; 2015) gave as being culturally-specific and a social practice not produced in the university, but developed over a generation through trial and error, is in line with the meaning given by Melchias (2001), and Haverkort, Hooft, and Hiemstra (2003) that IK is culturally specific and are long standing traditions. In their submission, IK is generated, used and developed by people in a certain area based on their belief systems and worldviews. Moreover, IK may have other modified forms of knowledge adopted through various learning processes. Fien (2010), Stabinsky and Brush (1996) and Warren (1991) share similar views with Kaya (2015) that IK is, culture-specific, whereas formal knowledge is de-cultured.

Workineh (2005, p. 19) shares that indigenous environmental ethics in Africa exists, which refers to “ethical norms and values” (p. 19) of diverse indigenous cultural groups. Callicott (2001) earlier indicated that, the diverse indigenous cultural groups have their unique beliefs or worldviews about nature and the nature of reality (ontology), the epistemology, socio-cultural and environmental ethics as well as religious believes. Bartels (1967) as cited in Vitell, Nwachukwu, and Barnes (1993) opined that culture plays a crucial role in ethics and Kwasi (1995, p. 52) adds that the “human person is the product of a culture.” Therefore, to Arhin (2008), it is difficult to define culture due to the large numbers of ethnic groups especially in Africa. This, probably motivated the terminology ‘culture-specific’, in several descriptions and definitions of IK and IK related to indigenous people’s values and care for nature such as referred to Fien (2010), Kaya (2015), Callicott (2001), Stabinsky and Brush (1996) and Warren (1991).

2.9 African Environmental Ethics and its Knowledge Transmission

Several researchers have pinpointed that knowledge of AEE is expressed peculiarly in myths, fables, songs, proverbs, legends, folklore, stories, taboos, rituals, totems, folk tale, proverbs, songs, and sacred groves (African Mythology-myths and beliefs from Africa, 2015; Awuah-Nyamekye, 2014; Kaya, 2014; Masoga & Kaya, 2014; Ntiamo-Baidu, 2008; Prozesky, 2000; Workineh, 2005). Awuah-Nyamekye (2014) explored how Akans in Berekum of the Brong Ahafo region pass on their ecological knowledge to the youth and found that, they use proverbs, myths, folktales and rituals to teach their people nature conservation.

Studies by Goduka (2000), attest that indigenous African societies have employed various oral traditions to express their indigenous knowledge. Similarly, Corsiglia and Snively (2001a) report that indigenous cultures transmit knowledge and information on traditional ecology through oral means which could have spiritual, mythological connotation. However, several weaknesses in using oral traditions have been addressed, including the cultural context in the use of oral traditions.

2.10 The Call to Integrate AIKS in SHS Biology/Life Sciences Curriculum

In the preceding discussions, Culturally-Specific Environmental Ethics (CSEE), as an African Environmental Ethic (AEE) was located within the African Indigenous Knowledge System (AIKS). Several initiatives such as the New Economic Plan for Africa Development (NEPAD), the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Permanent Forum on Indigenous Issues (UNPFII or PFII) and the United Nations Development Programme (UNDP) have highlighted the importance of infusing IKS into Education (Gorjestani, 2001; Muchenje & Goronga, 2013a; UNESCO, 2005). These initiatives started many years ago, for instance in June 1997 in Toronto Canada, the earliest Global Knowledge Conference was held where government leaders and the civil society groups pressed the World Bank and other donor organisations to learn from local communities. The vice president of the World Bank's African Region at the time during the final comments at the conference, gave an unflinching support that knowledge collaboration would not be reached until the indigenous knowledge of people are upheld (Gorjestani, 2001).

Another global initiative that supports the IKS in education is the Local and Indigenous Knowledge Systems (LINKS) programme launched in 2002 as an interdisciplinary initiative of UNESCO (Nakashima & Nilsson, 2006). The LINKS programme endeavours to equip local and indigenous people by urging them to realise their distinctive knowledge, skills, understanding, practices and customs. The LINKS collaborates with field-based action that endeavours to create awareness and at the same time promote an enabling environment for dialogue building among indigenous knowledge holders, scientists and the public at large. Amongst the work done by the LINKS programme is an exploration of pathways that has the capacity to balance global knowledge with community-based or local and indigenous-based knowledge in both formal and non-formal educational systems (Nakashima & Nilsson, 2006; UNESCO, 2005).

A thought-provoking statement on the official page of the UNESCO-LINKS asserts that education programmes are platforms for human development; nonetheless they may undermine the transfer of indigenous knowledge. UNESCO justifies this assertion by explaining that formal education makes school learners spend a lot of time in their classroom environment learning passively instead of doing a hands-on-deck learning on the field (Nakashima & Nilsson, 2006; UNESCO, 2005). UNESCO's World Conference on Higher Education in 1998 called on higher education institutions to produce teachers who would relate knowledge of the nature of science to the worldview in their local communities (UNESCO-UNEP, 1991; UNESCO, 2005). Classroom teachers act as the possessors of knowledge and authority as the teachers take the place of parents and elders. Besides, in the school setting, national languages are held in high esteem, while relegating vernacular languages to the background (Nakashima & Nilsson, 2006).

In the spate of the African Renaissance, NEPAD urged policy makers in Africa to examine the importance of infusing IKS into their educational system (Odora Hoppers, 2002c). Policy makers in Africa are therefore called upon to examine the general significance of IKS and its inclusion in the educational curriculum considering the Eurocentric nature of the African curriculum, as there is need for a paradigm shift in this direction where IKS is recognised as a legitimate knowledge form (Odora Hoppers, 2002c). Besides, education has been singled out as the vehicle for translating IK into reality and as a way to make IKS a competitive knowledge form that exists alongside western forms of knowledge and technology (Muchenje & Goronga, 2013a). Kimmerer (2002) asserts that, a variety of intellectual modus operandi is needed to handle the multiplex environmental sustainability issues and that the integration of traditional/indigenous knowledge of environmental ethics would be very helpful in this regard. Moreover, a study conducted by Aikenhead and Ogawa (2007) on three different epistemologies or cultural approaches to living and comprehending nature (i.e. indigenous, neo-indigenous and Euro-American scientific approaches) indicates that formal educational programmes stands as one of the key approaches to preserving, revitalising and maintaining indigenous environmental ethics. Consequently, science educators are called upon to infuse or interphase their teaching with indigenous knowledge. Masoga and Kaya (2014) have argued that to bring back historical accomplishment of Africans within the African geographical context, Indigenous Knowledge Systems (IKS) ought to be part of the constitution of formal education.

Curriculum planners are urged by Van Wyk and Higgs (2011b) to help promote the effort to incorporate the rich local or indigenous knowledge into the formal school curriculum as a way to remedy the epistemological imbalances in the curriculum for the development of twenty-first century citizens who are culturally aware. One reason being that non-western learners battle with learning science in school in that most science is not found in the cultural context; although relevant pedagogies for science are usually cross-cultural. Moreover, learners' social, cultural and environmental situations and contexts are known to greatly affect learners' performance in school science which makes IK imperative for national educational policy (Dei, 2000b; Dei Ofori-Attah, 2006; Kanu, 2006). Presently, several parts of the world are recognising the essence of this IK in education - typical countries include Canada, India, especially India and in Australia, and currently emerging in Africa especially South Africa, Ethiopia, and Tanzania (Kesamang & Taiwo, 2002; Stears, Malcolm, & Kowlas, 2003; Taiwo & Tyolo, 2002). For instance, in the context of this study, South Africa has included IK in the education policy (Department of Education, 2011).

2.12.1 The Call to Integrate AIK in Science Curriculum: The Department of Education, South Africa

Le Grange (2007) has indicated that, IK has recently been included in the South African schooling curriculum, National Curriculum Statements, a curriculum which calls for a fresh look at the kind of science that is taught to South African school learners. Ogunniyi and Hewson (2008) report that, this new South African science curriculum statement calls on science teachers to integrate IKS in school science teaching. One key reason is that, because of the heightened realisation of the adverse effect of technological advancement on the natural environment compared to the numerous sustainable practices that had persisted in numerous indigenous communities, the IKS aspect has to be upheld (Ogunniyi & Hewson, 2008). The new curricula developed by non-Western developed and developing worlds is made to reflect elements of indigenous knowledge in science classrooms. The South African Department of Education and its call for the integration of indigenous knowledge into the teaching and learning of science indicate that the curriculum, the National Curriculum Statement (NCS) has placed great value on the learners' IK (Department of Education, 2003b).

The revised NCS to CAPS document has made room for IKS with further guidance to teachers that the IK they teach should be relevant to the social, cultural and environmental context of the learner. Several curriculum reforms have taken place in South Africa since the Curriculum 2005, which was geared towards a learner-centered education for developing learners that could fit and function responsibly in the democratic and multicultural society. Curriculum 2005 was grossly guided by the outcome-based education (OBE) which is learner-centered (Cross, Mungadi, & Rouhani, 2002; Jansen & Taylor, 2003). However, the vehement criticism of the OBE by various stakeholders like teachers, university lecturers, published papers on the difficulty of its implementations due to the then school and classroom situations especially less resources led to a total revision and modification of curriculum 2005 (Jansen & Taylor, 2003). This new curriculum in the year 2000 labelled the Revised National Curriculum Statement (RNCS) and National Curriculum Statement (NCS), had guidelines for implementation, lesser curriculum designs and outcomes which were critiqued as well.

The critique of the RNCS and NCS on some identified challenges of progressive implementation led to a review of these curricula in the year 2009. The amendment came into force in the year 2012 where the two NCS for grade R-9 and grade 10-12 were consolidated into one Curriculum and Assessment Policy Statement (CAPS) which is currently in force. However, in the CAPS, the Learning Outcomes is represented as broad subject specific aims (Department of Education, 2009; Du Plessis & Marais, 2015). The learning outcomes of the previous curricula of science which captured aspects of integrating indigenous knowledge in science teaching is still relevant in the CAPS document's broad subject specific aims, indicating how central IK is in the hearts of the curriculum developers. Learning Outcome 3 of Natural and Life Sciences and presently in Specific Aim 3 of the CAPS document section 2.5.3 captures the indigenous knowledge aspect. The Specific Aim 3, relates to "understanding the applications of Life Sciences in everyday life, as well as understanding the history of scientific discoveries and the relationship between indigenous knowledge and science" (Department of Education, 2011, p. 11).

The Specific Aim 3 of Life Sciences indicate that:

"...learners must be exposed to the history of science and indigenous knowledge systems from other times and other cultures..." (Department of Education, 2011, p. 16).

The CAPS document's Specific Aim 3 using the word, 'must' presupposes that it is obligatory and incumbent on the teachers of Life Sciences to do this as a necessity. Besides, the CAPS document details that,

“...because knowledge that will be acquired in respect of Specific Aim 3 always relates to specific subject content, the content provides the context for learning about various aspects of Science in society...be taught in an integrated way in order to both enhance the subject and to clarify the relationship between the subject and society i.e. indigenous knowledge systems that relate to a specific topic...” (Department of Education, 2011, pp. 11,16).

Besides, section 2.5.3.2 of specific aim 3 further indicates that:

“All knowledge grows out of a view of how the world works. One of the differences between modern science (and technology) and traditional, indigenous knowledge systems is that they have their origins in different world views. Learners should understand the different cultural contexts in which indigenous knowledge systems were developed. Examples of indigenous knowledge that are selected for study should, as far as possible, reflect different South African cultural groupings. They will also link directly to specific areas in the Life Sciences subject content” (Department of Education, 2011, p. 16).

Therefore, considering this submission of the CAPS document, section 2.5.3 specific aim 3 paragraphs 2 and 4, and section 2.5.3.2 directly quoted above, this particular research decided to explore an indigenous knowledge of the Zulu cultural group on EE and how it could be taught in the SHS. The content knowledge strand that this research found suitable to fit this aspect of the Zulu CSEE was related to Knowledge Strand 3 on Environmental Studies in the CAPS document which states that:

“Organisms interact with other organisms and with the environments in which they live. This section is structured in such a way that learners must explore the impact of people on their environments (global, international and local). Learners are encouraged to look for, and suggest, solutions to local environmental problems. The intention is that the behavior of the learners will be modified to become more sensitive to environmental issues” (Department of Education, 2011, p. 51).

As part of the SA Department of Education call for integrating IKS in Life Sciences curriculum, some studies conducted on Specific Aim 3 of NCS or CAPS Life Sciences documents include: Nnadozie (2009), Naidoo (2010), and Jacobs (2015):

Nnadozie (2009) considered how grade 10 Life Sciences teachers understand the integration of IK in Life Sciences and the extent to which they integrated IK in teaching conservation of biodiversity and natural resources using open-ended questionnaires and a classroom observation of two (2) teachers out of a total of nineteen (19) that were selected. Being guided by specific aim 3, the concept of teachers as cultural brokers was adopted for the research. The study found that, out of the 19 teachers who answered the questionnaires, 90% indicated they integrated IKS in their teaching. However, upon analysis, there was enough evidence that they were deficient in comprehending how to integrate IKS in the learning process. Thus, the teachers could not be labeled as good cultural brokers.

The study by Naidoo (2010) sought to establish how science teachers responded to the inclusion of IKS in their science classroom, starting with 23 science teachers who had graduated from a module in IKS from the university. Being guided by Learner outcome 3 of the NCS/RNCS document, 7 of the teachers who responded positively were interviewed as they preferred communicating telephonically, while 3 accepted face-to-face interviews. Their views, experiences and practices with respect to IKS in RNCS and NCS and professional development for IKS were established. A classroom implementation phase was done with the 3 teachers who accepted the face to face interviews and reflection as well. Naidoo (2010) found that the 3 teachers taught IKS of the different science topics using 3 different teaching strategies and approaches i.e. the incorporationist (how best IKS fits into science); the separatist (holding IKS side-by-side with scientific knowledge) and the integrationist (linking and making connections between IKS and science).

Naidoo, asserts that the “teaching strategies used by the teachers were influenced by their biographies, values, cultural backgrounds and personal worldview” (Naidoo, 2010, pp. 109-221).

Jacobs (2015) employed both quantitative and qualitative methodological approaches to investigate classroom implementation of IK in science working with teachers from Western Cape Province. The quantitative phase involved the use of nature of indigenous knowledge questionnaire (NOIKQ) for gathering in-depth data of SHS science teachers’ understanding of scientific and indigenous knowledge. The data included the difficulties the teachers encounter in implementing Learner Outcome 3 of Life Sciences and Natural Science curriculum of South Africa. The researcher found out from the data gathered from the questionnaire that, the teachers had received practically no training on how to integrate IK in science and had insufficient IK of science which made them less confidence to teach IK related science. Jacob (2015) also organized workshop for the teachers by categorising them into two groups (one group consisting of 5 teachers received training and the other group consisting of 6 teachers received no training in IK). The workshop and categorization was guided by a quasi-experimental design adopted from Corsiglia and Snively (2001a) on integrating IK in the science classroom in addition to classroom observation, and an interview to investigate the impact of the intervention. Jacobs (2015) found out that the teachers’ own worldviews and background affected their way of integrating the IKS as opposed to the teachers who received the intervention.

2.12.2 Integrating AIK in Science Curriculum: Ghana Ministry of Education, Ghana -West Africa.

The SHS Biology syllabus do not categorically pinpoint a specific aim or objective for teaching the indigenous knowledge of students as clearly stated in the South Africa Life Sciences CAPS document specific aim 3. With reference to the Ghana Education Service (GES) syllabus for SHS Biology and Social studies which usually covers topics on Environmental Studies (in the context of this research), there is no clear-cut information regarding whether SHS Biology teachers are to integrate indigenous knowledge into their teaching of science or not. Besides, perusing the different topics in the Biology syllabus, no clear details are given as to including indigenous knowledge aspects of the different topics during teaching neither does it clearly shows how the IK should be integrated.

Moreover, the word, ‘indigenous’ or ‘indigenous knowledge’ is not clearly captured in the Biology syllabus. The closest word with similar connotation to ‘indigenous’ in the Biology syllabus which probably has been represented by the word, ‘local’ are connected to the following topics: ‘local’ brewery production, ‘local’ foods and ‘local’ preservation methods of food. Both the general and specific objectives of GES Biology syllabus are silent on integrating indigenous knowledge in science classrooms. Meanwhile, Ghana Education Service (2012, p. 67) section 2 page 67 on Humans and their Environment, unit 1 which is captioned, ‘Natural Resource’ has its specific objective 2.1.3 that states that:

“**Specific Objectives:** The student will be able to: explain the need for conserving natural resources. **Content:** Importance of Natural Resources – Methods of conserving Natural Resource: **Note** cultural practices like sacred groves, specific days for fishing, farming and hunting also contribute to conserving Natural Resources”

This strip of information on cultural practices (sacred groves) in the SHS Biology syllabus specific objective 2.1.3 as method of conservation natural resources is indicative that the syllabus recognizes cultural or indigenous environmental ethics. Such cultural practices are examples of indigenous (cultural) ways of caring for nature as identified by some IK researchers within the country in the likes of Amisah, Awuah-Nyamekye, Sarfo-Mensah, and Owusu-Bi (2013); Ntiamoa-Baidu (2008) and Oduro and Sarfo-Mensah (2007). However, the curriculum developers did not clearly show how the teaching of such cultural environmental ethics could be done by the teachers and the implication of such teaching.

Notwithstanding, Ameyaw and Amankwah (2014) embarked on a research to examine whether employing indigenous knowledge could impact or influence the teaching and learning of science in Senior High Schools in Ghana. In the study, the understanding of indigenous knowledge and views of the participants (teachers and students) were sought using questionnaires. The data gathered from the questionnaires were supplemented with observations and prepared lesson notes. Ameyaw and Amankwah (2014) found that, science taught in Ghana is disconnected from indigenous knowledge and that integrating indigenous knowledge in the teaching would not be difficult for the teachers to do. Besides integrating indigenous knowledge stands to boost interest and comprehension of students and make them appreciate their culture and natural environment.

Ameyaw and Amankwah (2014) concluded that indigenous knowledge and science are inextricably interwoven and therefore science teachers should take cognisance of that and be motivated to incorporate IK in their daily teaching and learning to enhance their students' understanding of science. Consequently, Ameyaw and Amankwah (2014) have given recommendations to the Ghana's ministry of education to organise indigenous science discoveries in exhibition shows, recruit teachers from local communities who could better handle indigenous knowledge aspects and send them to different schools, as well as organise workshops to train other teachers.

CHAPTER 3

CONCEPTUAL FRAMEWORK

3.1 Introduction

This chapter presents the conceptual frameworks used in this study. The first section presents the model for African Environmental Ethics and discusses it as the lens for exploring the Akans' and Zulus' Culturally-Specific Environmental Ethics. The second section presents the model which was adapted as the lens for teaching culturally-specific environmental ethics in senior high schools in Ghana and South Africa, respectively.

3.2 Conceptual Framework for African Environmental Ethics

The framework for understanding perception, practices and communication of AEE from cultural perspectives was developed from the ideas of Goduka (2000). It is to be noted however, that configuration of the Figure 3.1. was personally developed by the researcher but the themes and subthemes captured in each quadrant of the model are ideas from Goduka (2000). Thus, details of the themes and or subthemes were further discussed with worldviews from various theorists on AEE like, Kunnie and Goduka (2006), Murove (2009a), Nsamenang (2006), Ogungbemi (1997a), Prozesky (2009); Ramose (2009), Tangwa (2004).

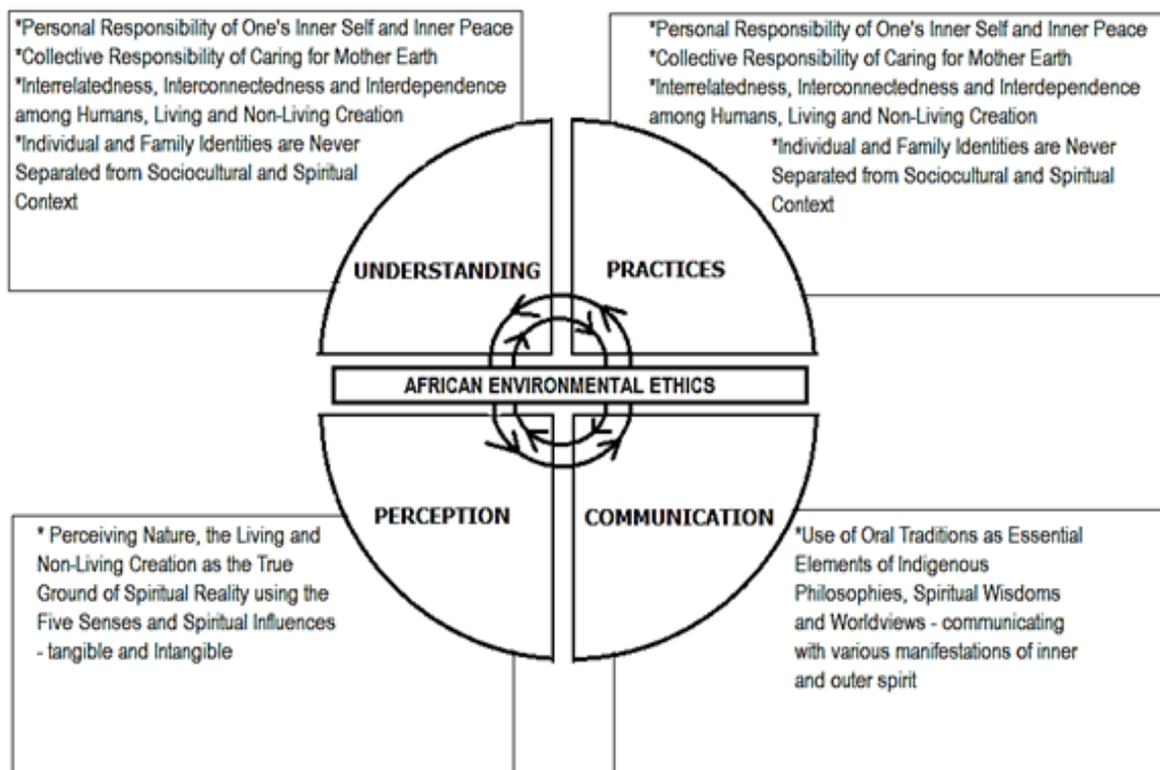


Figure 3.1: Conceptual Model on African Environmental Ethics (Developed from the Ideas of Goduka, 2000).

3.2.1 Description of Conceptual Model on AEE

The researcher realised that the ideas and concepts of the African Environmental Ethics appears to be cyclical as there is no clear line of demarcation between the various concepts in that each of the concepts inform the other. The perceptions of the African Environmental Ethics is based majorly on African spiritualities, on invisible intangible aspects. The choice of conceptual framework is that of Goduka (2000) to be explained in the following sections:

3.2.1.1 Understanding and Practices of Environmental Ethics

Goduka (2000) in giving meaning to the concepts contends that:

Personal Responsibility

In the principle of personal responsibility, an individual understands that he/she is accountable for his/her inner self and therefore makes effort to identify means to link up with his/her inner peace; this informs his or her practices for Environmental Ethics. For the individual to develop a wholesome, worthwhile relationship, live in tranquility and thoroughly comprehend the responsibility to the environment, he or she must first and foremost know how to live life from a sound ardent inner self.

The individual in such an endeavor learns to work on his/her flaws through reflective thoughts regarding the relationship with inner self and the environment.

Collective Responsibility for caring for Mother Earth

In the principle of collective responsibility, the indigenous people are made aware by their elders of the wealth of riches embedded in “Mother Earth” which the “Creator”, the “Greater Spirit” (Goduka, 1999, p. 68) and their ancestors have made available to them to enable them to live sustainably. Therefore, indigenous people acknowledge their collective responsibility to care for Mother Earth. There is also the realisation by the indigenous people that “the people belong to the land” (p. 68) and for this reason the land is not their possession neither do they control the land, instead they dwell in peace with nature. More so, they cannot live apart from the land and all its living and non-living components.

Interrelatedness, interconnectedness and interdependence among living and non-living creation

The principle of interrelatedness, interconnectedness and interdependence indicates the relationship among living and non-living. “Nothing exists in isolation; everything is related to every other being or thing” (p. 68-69). This is premised on the understanding that all life forms are interconnected with each other, such that when one is suffering and traumatised the other individual’s life is also suffering. The presence of the spirits and their state of pleasure or displeasure is linked to the benefits and losses that people experience. Likewise, physical objects cannot be separated from their use and the material that they are made up of. Murove (2009c), opines that African environmental ethics (EE) springs from the understanding of the cosmos as an interconnected whole and relatedness in such case is not confined to humans but to the natural environment signified in the use of totems and interdependence. Ogungbemi (1997a) sees African environmental ethics to be, “ethics of nature-relatedness” (p. 208), an ethic that inspires human beings to make conscious effort to live in harmony with nature, realising its worth and ensuring its survival and consequently human survival. Surprisingly, unlike other African environmental ethics writers, Ogungbemi (1997a) contends that, natural resources are not perceived to have a spiritual nature. Tangwa (2004) perceives African EE as “eco-bio-communitarianism” (p. 392) that encompasses the transcendental perspectives which necessitates acknowledging and embracing the interdependence and harmonious coexistence between people, animals and spiritual entities.

Awuah-Nyamekye (2014, p. 52) contends that gods, spirits, ancestors, spiritual and political leaders, lands, forests, rivers and animals are interrelated and interconnected in African EE, as spirituality is valued and recognised. To Workineh (2015, p. 387), the African EE embraces the “interconnectedness and interdependence of all beings and the more-than-human world”. Workineh (2015, p. 387) contends that “being” in this case must not be a moral agent, reasonable, intelligent or able to speak language; but inadvertently, it is the unity and oneness of the different beings that serves as the fundamentals of “ethical obligation of human beings toward nature”.

Individual and family Identities are never separated from sociocultural and spiritual contexts

In this principle of individual and family identities, indigenous African people understand that a person’s identity originates from the “interdependence” (p.71) on each other and with the natural and man-made environment. This is a notion of self that is tangible and intangible, singly and collectively explained, and at the same time supernatural and natural. The general understanding of this being is that, ‘I am because you are’ and that, ‘you are because I am’ which signifies the common South African philosophy of ubuntu.

Besides, the principle of individual and family identities of indigenous people, are rooted in socio-cultural and metaphysical interrelatedness within the community’s social practice and in their natural world.

3.2.1.2 Perception on African Environmental Ethics

Nsamenang (2006) indicates that indigenous perceptions emphasise the encounter with objects, spirits, and feelings, the interactions with self and the outer, and in social dynamics with people.

Nature, living and non-living creation as the true ground of spiritual reality

The important thing here is that the “spirit permeates the lives of everything” (p. 73), the living and the non-living. Humans here are connected by the various indigenous traditions at the level of spiritual ecology. The connections with “prayer, dreaming, ritual dance, sport, work, oral tradition, play and art” Goduka, (2000 p. 73) is important in realising the achievement of a complete journey. Millar, Kendie, Apusigah, and Haverkort (2006) contend that spirituality is the basis of the knowledge enshrined in the African environmental ethics, which makes it distinct from other knowledge systems or sciences.

Goduka (2000) describes knowledge in African environmental ethics as being spiritually-centered wisdoms. She notes that Africa's indigenous people perceive the cosmos or universe multiplex of spiritual and material nature in which all living components are interconnected and interdependent. Nevertheless, Goduka (2000) asserts that this spiritually-centered wisdoms is to be perceived as a platform that lends impetus for birthing a present day education system that is holistic, appropriate and sensitive contextually, culturally, spiritually, socially, economically and politically. Emeagwali (2003) contends that the African way of knowing has spiritual dimensions as well as an intimately interconnected socio-cultural perspective which happens to be communitarian in its practices. Wijzen (2009) argues that Africans recount presence of unseen (intangible) mystical powers that are perceived and believed to affect humans positively (receive blessing) or negatively (receive curses). These are considered vital forces or spiritual power. Wijzen (2009) adds that, the natural (tangible) and spirit (intangible) world are interconnected in such a way that any hurt of the natural (tangible) are perceived to affect the spiritual (intangible) world. Wijzen (2009, p. 16) supports the idea of Mbigi (2000) that, 'ancestral spirits' be used as, 'social capital' even for management of organisations in Africa as even the communalism among Africans have spiritual connotation. Awuah-Nyameke (2009) contends that ancestors in Africa are custodians of family lands and they must be consulted before leasing out such lands.

3.2.1.3 Communication of African Environmental Ethics

Oral traditions are contended to take superiority and dominance over written or literal traditions in indigenous African societies. Oral traditions have served as the main avenue for transmitting indigenous philosophies, spiritual wisdoms, worldviews, interpretation of the phenomena and existence of the universe usually to the younger generation (Goduka, 2000; Kunnie & Goduka, 2006). Histories, legendary customs and culture of Africans are contended to be perfectly transmitted through oral traditions like folktales and stories which serve as an educational tool for explaining social realities. Idioms and proverbs are cultural education tools that express salient thought-provoking statements to illuminate different facets of indigenous people's cultural, spiritual, educational and other value systems that keep their societies together. The proverbs are also seen to be the language of the wise for handling all aspects of indigenous people's social life (Goduka, 2000; Kunnie & Goduka, 2006).

3.2.1.4 Conceptual framework of Indigenous Environmental Education

The conceptual framework which was employed to explore and analyse how CSEE could be taught in SHS B/LS curriculum was developed from the ideas of Simpson (2002) which are elements of effective Post-Secondary Indigenous Environmental Education (See Figure 3.2 and the discussions that follow).

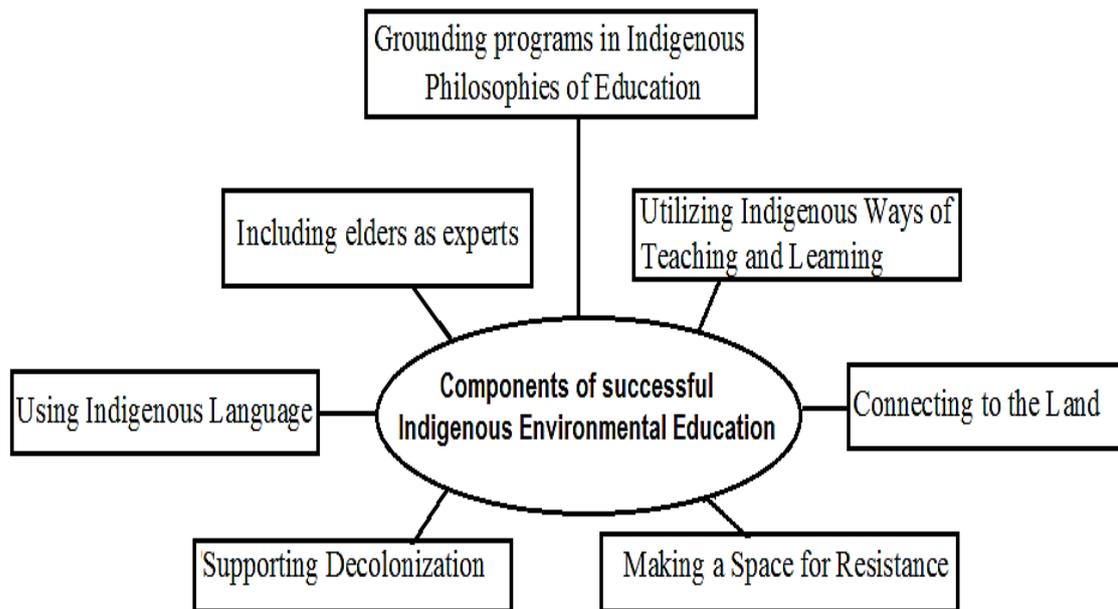


Figure 3.2: Conceptual Model developed from Simpson (2002)'s Elements of Successful Indigenous Environmental Education in Post-Secondary. Adapted for exploring and analysis of how to teach CSEE in SHS B/LS curriculum.

Simpson (2002) in giving meaning to the concepts contends that:

Including Elders as Experts

The “elders are keepers of tradition, guardians of culture, the wise people and the teachers” (p. 17) and are seen to protect the knowledge that embraces the uniqueness of the cultural group. Therefore, the Elders must be involved, considered, “valuable gifts” not as, “guest speakers”, and given the necessary assistance to enable them to offer the necessary guidance for the teachers and the students/learners in such teaching (p. 17).

Grounding Programs in Indigenous Philosophies of Education

Programmes and models formulated to teach indigenous environmental education must be rooted in indigenous philosophies which embrace the use of indigenous teaching and learning strategies and rooted in, ‘indigenous pedagogies.’

The teaching must be done in a holistic manner where students/learners' "emotional, intellectual, physical and spiritual" facets of life are addressed, and practical skills taught to them to address life problems (p. 18).

Utilising Indigenous Ways of Teaching and Learning

Utilisation of indigenous ways of teaching and learning which embrace use of "ceremonies, dreams, visions and visioning, fasting, storytelling, learning-by-doing, observation, reflecting, and creating" would enable students or learners to study in a "culturally inherent manner" (p. 18). Furthermore, they should inculcate into their cognition and sub-consciousness the concept of indigenous environmental education or the concept of indigenous knowledge in general as "process-oriented learning" and not just content ruled curriculum. The major aim is that students/learners are to be given the opportunity to be fully involved in spirit, soul and body in the classroom (p. 18).

Language

To complement these strategies of teaching and learning there must be an adoption of the indigenous language of the people to enhance the connection between the indigenous people, their land and their indigenous knowledge. It would serve as an indispensable tool for communicating among the local indigenous people especially with the Elders and fortifies the indigenous knowledge of the people and their culture. Further, students have to be offered the chance to "connect to their land in an emotional, spiritual, physical and intellectual" manner by having the teaching or education in the field for some longer sessions, and to enhance the interaction with the environment and members of the community (p. 19).

Connecting to the Land

'Being out on the land' is the most convenient environment that would make the Elders feel at home, to effectively apply their indigenous ways of teaching and learning. But relevant resources and good relationship must be created to promote such teaching. The land is the origin of the indigenous knowledge and therefore crucial for students to be able to "connect to the land in an emotional, spiritual, physical, and intellectual way" (p. 16)

Making Space for Resistance

Teachers and their students/learners must be stirred up to ponder over how their ancestors stood against all facets of colonialist rule to invigorate the teaching and learning process with in-depth acknowledgement of the labor and toil of their ancestors and people to safeguard their knowledge, culture and local lands. This would help students and their educators to realise that the onus lies on them to make efforts to acquire relevant know-hows after graduation which would enable them to effectually resist these colonialist mentalities withstood by their predecessors (p. 19).

Supporting Decolonisation

Decolonisation would be effective, and the processes would be made easier when students consciously revive the cultural knowledge which is premised on their indigenous values, that is the, 'culturally inherent ways'. The exercise would include reviving their indigenous singing, drumming, dancing, storytelling, humorous sayings and entertainments, theatre performances, counselling support from elders and other relevant ceremonies themed to conscientise them on decolonisation and taking back their culture. The decolonising process should also be a personal process and provide students with wisdom, strategies and the ability that would make it easier to bring the change in the environment (Simpson, 2002).

3.3 Chapter summary

This chapter was a discourse on the conceptual framework for this study and its corresponding discussion. Section 3.1 of the chapter explored the conceptual framework for African environmental ethics and the model that was developed from Goduka (2000), while section 3.2 discussed the conceptual framework developed from Simpson's (2002) components of successful indigenous environmental education programmes in post-secondary school.

The next chapter elaborates further and discusses the research design and methodological consideration of this research by providing detailed accounts of the various methodological approaches and processes which were employed to design the study, select participants, develop instruments for generation of data, as well as the processes adopted to analyse the data.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

The previous chapters discussed the introduction, review of literature and conceptual framework that guided this research on the Akan and Zulu cultural people's EE and implications of teaching it in B/LS curriculum. In this chapter, the research purpose, research approach, the research design and methodology are explained and justified. Furthermore, the way data was collected and analysed as well as the limitations and ethical considerations are discussed.

4.2 Design of the Study

This section states and justifies the research design and maps out the research methodology chosen, supported with relevant literature.

4.2.1 The Research Paradigm

The research conducted here is qualitative in nature and explored Environmental Ethics from the cultural perspectives of the Akans (Ghana) and Zulus (South Africa), and the implications (prospects and challenges) of teaching such culture specific environmental ethics in SHS Biology or Life Sciences curriculum. This qualitative study was located within the interpretivist paradigm based on the ontology that there are multiple realities (Quaye, 2007). The interpretivist paradigm chosen for this research was hoped to be suitable and efficacious in fulfilling the research purpose (Creswell, 2014; Phothongsunan, 2015; Thanh & Thanh, 2015). Since the data required for this research was about the perceptions, understandings, practices, communication, the way to teach cultural environmental ethics, and the prospect and challenges for such teaching in SHS curriculum, the qualitative research design was deemed most suitable for this study.

The research paradigm represents the way of seeing the world. A paradigm has to do with the general approach to the research that frames the entire study. It could be "qualitative, quantitative, positivist, post-positivist, interpretivist (naturalistic)" (Bertram & Christiansen, 2014, p. 22). The paradigm chosen must be supported with relevant literature and references (Badenhorst, 2008). Ritchie, Lewis, McNaughton Nicholls, and Ormston (2014) assert that a paradigm is a school of thought pertaining to particular worldviews.

Bertram and Christiansen (2014) indicate that the interpretivist does not focus on foretelling what people will do, but to get deeper understanding of how those people make meaning of their world and specific practices. Thus, the objective of the interpretivist is to comprehend the meaning which directs people's conduct in that they believe in multiple realities and multiple interpretations. Besides, the interpretive research process is also seen to be mainly inductive on the premise that the interpretation is entrenched in the data, although it is acknowledged that observations are full of theories as they are conveyed by ideas, thoughts and assumptions. These interpretations are based on theoretical frameworks (Frey, Botan, & Kreps, 2000). Moreover, the research process influences the reality such that there is no clear-cut difference between facts and values. Objectivity is not practicable therefore most of the researchers in interpretivism accept to be subjective by personally getting involved in the research. Meanwhile, others take an unbiased or impersonal stance; for this reason, they endeavor to be unequivocal about assumptions made. Therefore, researchers fashion meaning and interpretations founded on that of the research participants (Holloway & Wheeler, 2010; Lincoln & Denzin, 2003; Silverman, 2011). These are the basic reasons why the qualitative interpretivist paradigm was chosen.

Other paradigms like the positivist or post-positivist and critical paradigms were found not to be the most suitable for this research (Bertram & Christiansen, 2014; Blaikie, 2007; Creswell, 2014; Willis, Jost, & Nilakanta, 2007). For instance, post positivists are known to describe, control and predict, but overlook perceptions of the people. Besides, Bertram and Christiansen (2013) and Denzin and Lincoln (2013) explain that in interpretivist research, there is a sort of conversation between two or more people which involves the researcher. That is, there is dialogue and thorough explorations. Such research is also about people who are social beings. Considering these explanations, this interpretivist paradigm was deemed most appropriate for this research. In addition to this discourse on interpretivist paradigm, authors like Bertram and Christiansen (2014) and Badenhorst (2007) point out that interpretivism steers into a greater emphasis of naturalistic research.

4.2.2 Naturalistic Research Approach

Naturalistic research has to do with researches that focus on how people behave in their real-life experiences in their natural settings or within a naturally occurring context where the researcher tends to not be intrusive (Check & Schutt, 2011; Cohen, Manion, & Morrison, 2011; Frey *et al.*, 2000).

The goal of the naturalistic researcher is generating statements that are context-specific regarding the manifold created realities of every research participant. The assumptions are the naturalism, phenomenology and interpretive nature. Naturalism encompasses belief that specific occurrences or phenomena must be studied in context, whereas in phenomenology the belief is focused on investigating with no presumptions, prejudiced ideas and presuppositions (researcher having an assumption that people share the researcher's own norms, values and ideologies).

The interpretive nature of naturalistic research is enshrined in the belief, notwithstanding the conscious effort made by the researcher to look at things from the perspectives of the people being studied, that the researcher's own perception cannot be avoided completely (Check & Schutt, 2011; Cohen *et al.*, 2011; Frey *et al.*, 2000). It employs an assemblage of interpretive strategies that aims at describing, translation and interpretation that agrees with the sense made from the explored natural phenomenon or event. The naturalistic researcher employs nonrandom purposive sampling by usually employing the services of an informant who is considered to have a deeper understanding, is well-versed or enlightened in the culture of the people. During the research process in naturalistic research, there could be an emergent design to change procedure. Data collection techniques in naturalistic research are mainly direct observation and in-depth interviews (Creswell, 2009, 2014; Frey *et al.*, 2000). In the current research, the observations were geared towards the natural environment, articles or artifacts and other places participants wanted to show the researcher. The reactions of participants were observed in terms of facial expressions during the conversational interview and when they showed the researcher places and talked to ascertain the passions with which they made certain comments. The observations of some of the natural environment was video recorded where participants felt it appropriate. However, those videos were used to explain and buttress what participants said regarding their natural environment especially in terms of degradation.

4.2.3 Ethnography

Ethnography employs direct observation and prolonged fieldwork to generate an in-depth spoken and or written account of a people and their culture in their naturally occurring setting. Interviews could be used to get such information (Check & Schutt, 2011; Cohen *et al.*, 2011; Frey *et al.*, 2000).

Ethnographic study ensures accuracy of data and therefore employs research methods and data collection techniques that are rigorous enough to avoid bias, stresses and elaborates on the worldviews of the people. Moreover, ethnography employs inductive and deductive procedures to develop social and culturally valid theories that are effective and adaptable in the local and external context (LeCompte & Schensul, 2010). This method was chosen because it enabled the researcher to have an in-depth understanding of how the two cultural groups (the Akans and the Zulus) interact with their natural environment and explore their indigenous worldviews or perceptions that guide the interaction.

According to LeCompte and Schensul (2010), ethnography takes the standpoint that human behaviour and the ways through which they perceive and understand their world is locally specific. Therefore, in this study, the researcher sought to explore the indigenous lives of the Akans and that of the Zulu cultural groups by interacting with people in their local communities. Having lived long enough with these cultural groups, born, bred, living and working among them, the researcher was able to make observations of various cultural practices of the people and capture certain worldviews and or perceptions they hold. The study was described as multi-site ethnographic study as several study sites were used for this research.

Moreover, as added by Neuman (2000), ethnographers do not perceive people as neutral mediums or vehicles through which social forces function, but that through daily interaction with one another and their environment, people create, define and give meaning to their social world. LeCompte and Schensul (2010) assert that ethnography embraces a systematic approach to studying about the social and cultural life of communities, institutions and other settings that is scientific and investigative, and the researcher happens to be the principal data collection tool. Besides, ethnography elaborates on the worldviews of the people under research and makes use of inductive and deductive procedures to develop social and culturally valid theories that are effective and adaptable in the local and external context. Thus, for this research, the adoption of a multi-site ethnographic study approach was purposely to generate rich, detailed and in-depth qualitative data that would be used within the interpretive paradigm. Generally, the research focused on several study site and consequently described as a multi-site ethnographic study.

Singh *et al.* (2003) suggested that, to investigate the nature related beliefs, worldviews and practices of cultural groups a researcher could employ participatory appraisal, interviews and discussions with local people particularly the elderly, members of local clubs, women groups, priests or priestesses, cultivators, fishermen, and custodians of sacred groves. Similarly, several other researches in related fields in Africa collected data from local indigenous people (Awuah-Nyamekye, 2014; Kaya & Seleti, 2013; Mawere, 2012c).

4.2.4 The Akan Cultural Group and the Zulu Cultural Group

The Akan cultural is the largest cultural group in Ghana, geographically, population wise and with respect to how widely their language is spoken in Ghana (Ghana Statistical Service, 2012). With regards to the Zulus of South Africa, the Census 2011 Statistical release for South Africa indicates the Zulu cultural group who represent approximately 28.1% of the diverse ethnic grouping and race in South Africa, happen to be the largest ethnic group in South Africa (Statistics South Africa, 2012). The following statistics show the percentage total population of Akans in Ghana: Asante (14.8%), Fante (9.9%), Brong (4.6%), Akyem (3.4%), Akuapem (2.9%), Kwahu (1.9%), Ahanta (1.5%), Agona (1.4%), Wassa (1.4%), Nzema (1.2%), Sefwi (1.2%), Ahafo (1.1%), Assin (0.8%), Akwamu (0.6%), Aowin (0.6%), Denkyira (0.5%), Chokosi (0.4%) and Evalue (0.1%). The Akan in general represent 47.5% (an estimated over eleven million people) of Ghana's population. Akans are also found in the South-Eastern parts of the La Cote d'Ivoire. Geographically, they cover almost the entire middle and southern parts and are represented in six out of the ten administrative regions of Ghana i.e. Ashanti, Brong-Ahafo, Central, Eastern, Volta (small portion of this region) and Western according to the 2010 population and Housing census of Ghana conducted by the (Ghana Statistical Service, 2012). The largest concentration of Zulu people is in South Africa, and specifically in the KwaZulu-Natal province where their population range between 10-11 million. Smaller clusters of the Zulus population are present are in Zimbabwe, Botswana, Lesotho, and Swaziland (Statistics South Africa, 2012). Akans generally speak and write the Twi (Asante and Akuapim) and the Fante languages though there are other dialects like Bonno. Akans usually understand other Akan dialect (Awuah-Nyamekye, 2012a; 2012c, p. 77; Beeko, 2005; Ghana Statistical Service, 2012). The Zulu cultural group speak the 'isiZulu' language (a Bantu language) is the most widely spoken representing approximately 22.7% of South Africa's citizenry and happens to be one of the official languages in South Africa (Statistics South Africa, 2012).

4.2.5 Accessing the Cultural Groups

After observing all university ethics school protocols and community research gatekeeper protocols, the researcher began contacting the research participants. Because of the category of persons, the researcher contacted probable participants who were mostly persons in some sort of traditional leadership; access was a little challenging because of the large numbers of members who were consulted for various reasons. Therefore, the researcher could only contact and meet them on appointment especially, the chiefs, traditional priest/priestesses (akomfoo); herbalists (adunsifoo); chief (nduna); diviner-spiritualist (sangoma); diviner-herbalist (inyanga); and the elders (mpanimfoo and umdalas). Surprisingly, the expressions on the face of the participants was cheerful and during the interview, they were given enough time to talk and exhaust the responses before interjecting with other questions. The study in Ghana was located within the Ashanti region of the country. The participants were selected in the following areas Ejisu, Asaman, Agona, Paakoso, Gyakye, Asantemanso, Owabi and Bonwire within the Ashanti region where the Akan cultural practices are still relevant (Ntiamoa-Baidu, 2008). The choice of the areas was also guided by one prolific writer of the Asante-Akan history and culture, Opanin Nana Osei Kwadwo.

The study in South Africa among the Zulu participants was located in the Zululand District. The participants were selected from some communities in the Zululand district, Nongoma, Ulundi and uPhongolo. Three of the participants who had lived their entire life in the Zululand district but had at the time of research relocated to Nkandla in the King Cetshwayo District were still accessed as other participants within the Zululand district had recommended them. The choice of some of the Zulu participants, the localities and access were guided by literature, the Center for Indigenous Knowledge System offices in UKZN and other participants in a snowball manner. The choice of Zululand, among other things, was also motivated by Adeyemi (2012) who reports that, regarding European colonialism (which brought about apartheid), Zululand was the most greatly affected in South Africa in terms of severity and gravity of the loss of its commemoration and observance of their indigenous and cultural values. Moreover, according to a KZN online report, the Zululand District municipality is a rural district, that has several wildlife game reserves, agricultural, forestry and fishing activity and happens to have substantial amount of its areas being under the governance of traditional authority.

4.2.6 Participant Selection

Participant selection started after all the protocols and ethical clearance was obtained. Meanwhile, because participants with a wealth of knowledge on the phenomenon researched were sought, the CSEE of Akans and the Zulu, the researcher first consulted with the NRF Centre in IKS hub in UKZN, Westville Campus for relevant information regarding categories of persons with a wealth of relevant information among the Zulu cultural group (South Africa). In Ghana, the Akan participants were selected in consultation with the department of arts and culture and from literature source, especially from prolific writers of Akan history and culture. Thus, the research participants were selected purely on purposive sampling techniques. Cohen *et al.* (2000) indicate that purposive sampling gives the opportunity to select the available participant for the research based on the knowledge or experiences that the informants have on who holds the relevant information being sought. This method of selecting participants was chosen since there was no intention of generalizing the results beyond the cultural groups that were studied. The purposive participant selection was also done to make it easy to draw out common themes from the participants. The choice regarding the selection of participants was guided by Cohen, Manion, and Morrison (2007) and Denscombe (2014).

Moreover, to enhance this purposive participant selection in the quest to gather as much relevant data as possible, the snowball participant selection technique was adopted by asking the existing selected participants to share contacts of other persons who they knew to have relevant information regarding the information being sought (Cohen *et al.*, 2007; Denscombe, 2014; Olsen, 2011). Generally, since the research was purely qualitative, a small number of participants were selected. Besides, the number of items that each participant was supposed to provide detailed information on was too exhaustive to take on a large number of participants. For instance, each participant was supposed to answer questions related to understanding, perceptions, practices, communication, how to teach cultural environmental ethics in senior high schools, prospects and challenges for such teaching. Generally, 21 participants were selected from Ghana among the Akan cultural group and 21 participants from the Zulu cultural group which consisted of 3 participants in each of the 7 categories of participants yielding a total of 42 participants.

However, due to the large volumes of transcripts and data saturation and for ease of handling the data only two of the transcripts of each of the 7 categories of participants was selected and used for the data analyses thus reduced the number of participants to 28, with each cultural group having 14 participants. The different categories of participants varied widely and two of each category was selected to answer similar questions. The same principle and categories of persons or comparative persons were selected from the two countries (Akans in Ghana and Zulus in South Africa). Thus, overall, 10 IK-holders and 4 SHS Life-Sciences teachers were selected from each of the two cultural groups making a total of 28 participants. The IK-holders from the Akan (Ghana) cultural group consisted of 2 chiefs (ahenfo), 2 traditional priest/priestesses (akomfoo), 2 herbalists (adunisifoo), 2 elders (mpaninfoo) and 2 youth (mmabunu). The teachers were 4 SHS biology teachers making a total of 14 participants. Similarly, among the Zulu cultural group, 2 chiefs (ndunas), 2 diviner-spiritualists (sangoma), 2 diviner-herbalists (inyanga), 2 elders (umdala) and 2 youth in addition to 4 Senior High School Life Sciences teachers were selected making a total of 14 participants in South Africa.

These persons are generally described as knowledge-holders or elders of their culture. Singh *et al.* (2003) indicate that local participants believed to be abreast with relevant knowledge about culture and their local knowledge on the natural environment could be engaged in interviews to gather required information. These final 28 persons (20 IK-holders and 8 teachers), equal proportions of which were selected from Ghana and South Africa, were still considered large enough to provide data for the study and small enough to handle due to the qualitative interpretive nature of the data collected (Cohen *et al.*, 2000; Denzin, 2008). It is worth noting that the phrases, ‘diviner-spiritualist’ and, ‘diviner-herbalist’ which refer to sangoma and inyanga in the Zulu culture respectively, were borrowed from Govender *et al.* (2013) who also considers these personages as IK-holders of the Zulu culture.

4.2.7 Biography of Participants

This section gives a very brief biography of some of the participants. Their names are omitted as well as their area for anonymity and research ethical reasons.

4.2.8.1 The Akan Participants

Akan Elder (Panin)

This is a cocoa farmer at the age of 80 from the Ejisu district of Ashanti Region who grows large acres of cocoa for supply to the Cocoa Buying Companies like Olam in Ghana. He lived in Asaman Akrofooso, the originators of all the Asaman areas in Ghana. At the time of visit, there were community durbars and a community centre was being built. He is recognised as an elder in the town, so when there is any gathering in terms of high-ranking IK-holders of the land, he is part of the meeting. He has a wealth of information regarding the community's taboos, issues of the forests, stories of elderly men and happens to be one of the oldest men in the town, but still has energy to move around actively. He indicated that, he could have a chief of the town if he wanted to. The other elder over 70 years, was born in Wiemoase but lives in Agona. He is a farmer with a large plantation. He has written 9 books on different issues - history, traditions, culture among the Akans, some of which are used as text books in both Senior High School and Teacher training colleges.

As at year 1985 his book was used for A-Level studies. He is a teacher by profession. At the royal palace of the Otumfuo, the Asantehene was called upon to help the organisation and setup of the Manhyia Museum because of the books he had written about the depths of Akan-Asante. In addition, he is known to have a wealth of history of Ashanti and even the King testifies of him. He has made a Compact Disc containing the lectures regarding this knowledge. He is regarded to have written 28 histories of Asante chieftaincies, even among Nkoranzafoo and the histories of their origin till today; this is because most of the Amanhene (sub-chiefs) do not even know their histories according to this elder. People see him as an encyclopedia of traditions and histories of Ashantis and often receive calls from the USA and other places just to brief people on some of the histories. He indicated that wherever he goes, he does what will be valuable to the people and natural environment. Besides, he used to organise people to farm and raise income for some social clubs. He indicated that he is more into the social work and makes the people do more of the communal labor.

The Herbalist (Odunisini)

A herbalist about the age of 55 years lives in Besease and Yaw Nkrumah Township in the Ejisu - Juaben Municipality and has a wealth of historical knowledge about Ekumfi asakyere of Obunumankoma odapapagyan. As at the time of visit, there was no major news in the limelight. Other roles in the community are known as a prophet and divine healer who heals both spiritual and physical sickness and is seen as a good person. The herbalist has no reserved land and plantation of his own for the herbal medicine, therefore goes to the bush to pluck leaves to make medicine. The herbalist is seen as abusuapanin (clan head) and happens to help settle disputes and have the power to stool a chief in his hometown.

The Traditional Priestess (okomfoo)

This is a renowned traditional priestess about 30 years. As at the time of visit, there were chieftaincy disputes, therefore there was no chief in the town. The town has strong contentions within and surrounding towns. The traditional priestess indicates that no one lives successfully with money rituals (sika aduro) and the town people are known to curse people often. Her specific role is spiritual consultations for the community, performance of traditional rites, reversing curses and settling of spiritual disputes among contentious families. The traditional priestess also uses herbs to treat the sick in the community through spiritual incantation and bathing in the river. In addition, she keeps the nearby rivers and forest vegetation undisturbed as she has concerns about the rate of destructive attitude of people on nature.

The Chief (Ohene)

A chief about 50 years of age is highly respected for his young masculine stature, with rich traditional regalia and wisdom to govern the whole town. At the time of visit the chief was building a community center for the people. He is very accommodating and welcomes kids. As royalty, he intervenes in disputes among members of the township. He has large plantation and forest reserves where he and a selected few go to perform a couple of rituals. It should be noted that there is just a very little difference in terms of language or words used to describe participants, but their roles are practically similar in many respects in both countries. The Akan Chief (ohene) in Ghana has similar roles as a Zulu Chief (Induna) in South Africa in many respects. Similarly, an Akan traditional priest or priestess (akomfoo) in Ghana has roles akin to that of a Zulu diviner-spiritualist (sangoma) in South Africa.

Also, an Akan herbalist (odunsini) has similar roles to that of a Zulu diviner-herbalist (inyanga). The elder and youth were based on choice by the researcher. The case here being that an elder is any person at least above 40 years who participated in this research; the youth were any participants who were 22 years or below. With regards to the teachers, Biology teacher is used for Ghana and Life Sciences teacher is used for South Africa as the two countries use these terms, biology or life sciences interchangeably.

The youth (babunu)

This is a young man by the age 22 who finished tertiary institution but has lived in the village and has been taken through many cultural traditions. The exposure of the youth to both the rural and urban lifestyle happened to have given him a wealth of information and experiences regarding the Akan culture.

The Akan SHS Biology Teachers

A teacher over 35 years of age who has taught biology for over 10 years with students always excelling in their external exams. The teacher was born in an Akan village and has been exposed to various Akan traditions. The other teachers had similar exposures and were well versed in the local language and traditions of the Akan culture and sort of enthusiastic about the culture irrespective of their exposure to westernised education. These teachers were environmentally conservation conscious and two of them were spearheading their school's environmental education related programmes for their schools and for local communities' outreaches.

4.2.8.2 Zulu Participants

The Elder (umdala)

This is an elderly woman over 62 years of age who had lived in the northern KZN areas for several years but is from Zululand. At the time of visit, the researcher was informed of the investing of some money to formalise the brewing of Marula in the town and factory being built. This is to affirm their IKS and that there was a recent festival in the area that attracted travelling people which happened to be from a royal family member and retired principal of a school. This elder has a wealth of knowledge about indigenous knowledge of the local community and has links to traditional leaders. In addition, she has a great passion for natural resources.

The Zulu Chief (Nduna)

The nduna is one of the renowned in the community and his home or palace had many people at the different times that he was visited. He was in his late 30s and command so much power from the way he talked. The whole household had Zulu traditional artifacts of various forms with a large compound.

The Diviner-herbalist (inyanga)

This is an elderly man over 45 years of age who has lived in the Manguzi, Kosibay areas for some years but lived the rest of his life in Zululand areas. He is well known in the area to produce potent herbal medicine and has a wealth of knowledge about spirits, ancestors, trees, water bodies and few animals. He is regarded in the community to help with various ailment and other spiritual issues.

The Diviner-spiritualist (sangoma)

This is a woman in her mid-30s born in one of the villages in Zululand areas and has been practicing the sangoma performances and practices since her youth. The spirit of the ancestors started making her fall sick when she was very young and later through spiritual consultation it was confirmed that she had to become a sangoma or may not do well in life. She obliged and was properly initiated in some sacred rivers and trained by an elderly sangoma. She is consulted by many people in the community to solve their spiritual problems and she helps to pacify the ancestors and save culprits from the anger of the ancestors and other people. She heals the people in all aspects and helps others get pure and clean dreams. At the time of visit there was a small community meeting for some traditional leadership and donation of philanthropic goods to some members of the village.

The Zulu Youth (Intsha)

The youth was 19 years of age and had lived and grown up in an area where a lot of the Zulu cultural practices had been happening; has schooled as well but travels to the city often and was already studying at a tertiary institution. The youth has lived with some family members some of who were inyangas and sangoma and have witnessed and experienced a lot of the practices of the people. Besides, the passion for the Zulu culture to become predominant in the schools was evident from a lot of the things that the youth spoke about. At the time of visit, no specific community function was going on, but people were performing their normal day-to-day activities.

The Zulu SHS Life Sciences Teacher(s) Uthisha

The life sciences teachers had an age range from 25 – 45 years and have a great passion for their teaching job. All of the teachers were in different schools in the Zululand areas and had a wealth of knowledge about the Zulu cultural practices and indicated their desire to see the schools give their Zulu cultural practices and or indigenous knowledge the deserving place in the schools and science classrooms.

According to the teachers, their learners have been having excellent passes in their matric because they usually try to teach with local examples to make life easier for the learners.

4.3 Data Generation Process

This section is a discussion of the procedures used to generate data for this research.

4.3.1 Conducting the Conversational Interviews

Generally, the method for generation of the data for this research was planned and patterned in accordance with the main or critical research questions guided by the interview questions (See Appendix 29). An in-depth conversational interview was used to explore the cultural understandings, perceptions, practices, communication of cultural environmental ethics among the Akans (Ghana) and the Zulus (South Africa), as well as the implication of teaching such CSEE in SHS Biology or Life Sciences curriculum. This mode of data generation was employed guided by Govender *et al.* (2013), Docherty and Sandelowski (1999), and Burgess-Limerick and Burgess-Limerick (1998).

Kaya and Seleti (2014, p. 33) indicate that “an interview is a good and useful data collection instrument for discovering what a person thinks in terms of attitudes and IKS beliefs”. For this reason, this research which was located within the African IKS, decided to adopt the interviewing techniques as an appropriate tool. Furthermore, Denzin (2008) and Knowles and Cole (2008) maintain that an interview is used immensely by the interpretivist researchers in their quest to explore and describe a people’s perceptions, worldviews and understandings that might be peculiar to them. Therefore, as this research used the interpretivist paradigm, and sought to explore the perceptions of the Akan and Zulu cultural EE, the researcher thought it wise to employ the use of (conversational) interview to generate data. According to Burgess-Limerick and Burgess-Limerick (1998) interviews are known to create the opportunity to engage respondents in a discussion of their understanding on certain issues and to ask probing and clarifying questions.

Moreover, the participants are believed to become very communicative especially when they are interviewed in their native language (Denzin, 2008; Kincheloe & Steinberg, 2008). For this reason, the participants for this study were engaged in a conversational interview using their local or first language and within their own local context giving them relaxed atmosphere to be very communicative as the research needed in-depth cultural knowledge from the participants.

4.3.2 Observation of Participants' Natural Environment

The conversational interview was somewhat supplemented with observation of the natural environment in places where participants decided to show especially in relation to environmentally degraded areas because of gradual loss of the cultural values regarding the natural environment. This was used to explain the seriousness of participants' assertions especially with regards to the present day intensive denigration of their cultural values and care, and the attendant consequences of such blatant neglect, something that had for centuries helped preserve the natural environment. Creswell (2009) indicates that, it is very relevant to supply the reasoning behind the choice of any specific methodological design and the essence. Pictures were taken of such places but upon consideration and for public readership and the negative implication of such as it has ethical implications, the pictures were omitted. Cohen *et al.* (2011) asserts that observation is also a relevant tool for generating data from different types of setting including physical environment. Although, this was secondary information, the researcher was not really concerned about it because the focus was on how the teaching of the cultural environmental ethics could occur and the implication. Denzin (2008) highlighted that observation is believed to help the researcher gather trustworthy data by taking a critical view of the environment. Furthermore, field notes were written majorly in an unstructured observation manner, that is, without using any specific checklist.

4.3.3 Use of Data Generation Tools

The table 4.1 summarises the basic strategy that was used in generating data for the study and the participants involved.

Table 4.1: Data Generation Process

Key / Critical Research Questions	Tools for data generation and participants involved	Method of data Generation: how why they were used
<p>RQ1. What are the Akan (Ghana) and the Zulu (South Africa) cultural groups' understandings, perceptions and practices for <i>their</i> Culturally-Specific Environmental Ethics and how are these ethics communicated to other members of the cultural group?</p>	<p>Conversational Interview; Observation of the natural environment</p>	<p>The conversational interview which were guided by (conversational interview questions 1-4-see appendix 29) was used to explore each of the participants (except the teacher) cultural understandings, perceptions, practices and communication for their CSEE.</p> <p>Voices were recorded where permitted and field notes taken from observation of environment. The participants could exhaust a question before another was posed and sometimes about 3 questions were asked together and participants were allowed to talk in a relaxed manner to bring out deep thoughts. Conducted in local language only.</p>
<p>RQ2. What are the views of the Akan (Ghana) and the Zulu (South Africa) cultural groups and Senior High School Biology/Life Sciences Teachers on how to teach their Culturally-Specific Environmental Ethics in Senior High Schools?</p>	<p>Conversational Interview only</p>	<p>Similar to procedure for RQ1, except that participants included both IK-holders and teachers were interviewed using conversational interview question 5 (see appendix 29 for details).</p> <p>Interviews were conducted in the local language as was done in RQ1 above except that some teachers preferred to speak English</p>

<p>RQ3. Why do the Akan (Ghana) and Zulu (South Africa) cultural groups and the Senior High School Biology/Life Sciences Teachers have the views (prospects and challenges) about the teaching of their Culturally-Specific Environmental Ethics in Senior High Schools?</p>	<p>Conversational Interview only</p>	<p>Similar to procedure for RQ2, except that participants included both IK-holders and teachers were interviewed using conversational interview question 6a and 6b (see appendix 29 for details).</p> <p>Interviews were conducted in the local language as was done in RQ1 and RQ2 above except that some teachers preferred to speak English where allowed</p>
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Research Question represented as “RQ” in the table above

The responses from all the interview questions formed the data that was analysed. Before the analysis, the data was transcribed, and narratives were formulated for the different categories of participants (chief, elders, herbalist etc.) using their responses. However, as a way to reduce the bulk of the transcribed data when formulating the narratives of the participants, the responses by participants of similar categories, for instance, that of the chiefs was merged with that of the herbalist and so on.

4.4 Analysis of Findings

In this section, the researcher addresses how the raw data generated from the fieldwork were transcribed, how the themes were identified after the transcription and the writing of the narratives are addressed. A table is presented that summarizes the details of the number of narratives, and participants’ direct responses to the conversational interview questions (CIQs) in appendix 29.

4.4.1 Transcription of Conversational Interviews

All the conversational interviews that were tape recorded were transcribed before proceeding to the data analysis. All the interviews were conducted in local language (Akan Twi language and isiZulu) except with a few teachers, in English language as they preferred it. With regards to the Twi language (Ghana), there was no struggle with the language as this happens to be the author’s mother-tongue of which he can read, write and speak fluently.

Therefore, at the initial stage all the transcripts from the Akan (Ghana) participants were in the local Twi language and thereafter were translated into English for international readership. A special font was purchased and installed into Microsoft Office Word before the Akan text could be typed. Thus, any computer or online resource without this Twi language software practically makes it non-readable or meaningless. Consequently, it did not sound wise to publish in that language. With regards to the isiZulu language, because the researcher could only work with an interpreter as he tried to learn a few beginner words, he was practically unable to write it. Besides, during fieldwork with the Zulu participants, the researcher was accompanied with an interpreter, who translated all the questions asked into the local isiZulu language and then after explaining what the participants had said. This way, the researcher was able to make meaning out of what was said and even be able to ask further questions. For ease of write up, the transcription was purely in English language. In the same vein, for international readership and for such limitations, the author decided to leave the responses in the English language and to help with the discussion of findings. To avoid biases therefore, the researcher kept the write up in English for both languages (Twi and isiZulu). All the interviews were transcribed verbatim

4.4.2 Identification of Themes

Much as transcription of the recorded conversational interview seem to be just normal process of changing uttered words into written words, data analysis has begun as according to Bamberg (2012) and that the very time the researcher launches into listening to the tape-recorded interview to swim in the data, analysis is already underway. The transcripts that had every detailed information provided by participants were read copiously and severally until patterns and regularities and commonalities in responses were detected and generally put into categories and colour-coded (Lohman & Woolf, 2010). The general categories were done with regards to participants' responses that were linked to the social, cultural, economic, political, religious, technological, biophysical aspects (Vithal & Jansen, 2012). Afterwards I proceeded to identify themes by sorting and recategorizing the initial general categories into a more in-depth and specific categories upon further scrutiny of the transcripts, but this level of specific categorization displayed the responses of the participants that were similar and had higher frequencies (Lohman & Woolf, 2010).

Further, on the transcripts were read repetitively to identify the responses of participants that were of the divergent, untypical and or dissenting in nature and finally, the themes that were identified were discussed, revised, and supported with relevant literature (Lohman & Woolf, 2010).

Themes were generally identified through scrutinizing the transcripts for: words and phrases that the participants repeatedly mentioned (d'Andrade, 1995); finding in cultural or indigenous or local terminologies expressed in usual ways or specialized vocabulary; critically reading and reflecting on how each sentence differed from the ones before or after it or would have differed when said different context Strauss and Corbin (2000); searching diligently for phrases and quotes that comes after connecting words and phrases for example “because”, “nevertheless”, “as in”, “like” as statements after such connecting words have been indicated to throw more light on a phenomena or issues discussed (Denzin & Lincoln, 2009; Werner & Schoepfle, 1987). Moreover, to enhance the identification of themes, after the different colour-coding, the text that were not previously linked to themes that had been identified, were re-scrutinised to search for any new themes from those text that had not been colour-coded (Miles & Huberman, 1994).

In using the conceptual framework, in the analysis, both the inductive and deductive methods were used although RQ1 and RQ2 were analysed deductively based on the conceptual framework from Goduka (2000) and Simpson (2002). However, RQ3 where the why question was mostly answered was analysed purely based on inductive reasoning since the research was situated within the interpretivist paradigm (Maree, 2007; Maree & Van der Westhuizen, 2009). Since a few other themes and subthemes that came out of nature related data generated from RQ1 and school-related data generated from RQ2 had not been captured by the respective conceptual framework, it warranted the need to further analyse the data for RQ1 and RQ2 using inductive reasoning. The data generated from the conversational interviews of all the participants were analysed using the thematic coding which was premised on the inductive approach (Maree & Van der Westhuizen, 2009; Rule & John, 2011; Vithal & Jansen, 2012): firstly, the recorded conversational interviews were transcribed, and the transcripts coded and re-read many times for deeper comprehension. The emerging themes surfaced after several categorisations based on the commonalities and frequency of the responses.

All the analysed data, using both deductive and inductive or purely inductive were discussed within the conceptual framework as captured in chapters 5, 6 and 7, and were further supported with references from other findings in literature as presented in chapter 8.

The procedures followed to arrive at the themes and subthemes that fit the conceptual framework using the deductive and inductive approaches, were informed by Bertram and Christiansen (2014), Trochim (2006), Attride-Stirling (2001), and Miles and Huberman (1994). Generally, all the data was collected and analysed within the boundaries of the conceptual framework developed from Goduka (2000) and Simpson (2002). The researcher organized the data into categories related to the conceptual framework, which included: understanding, perception, practices, communication, how to teach CSEE, and prospects and challenges. Also patterns existing amongst the categories were identified. The coding and categorisation was employed as a form of data reduction. Thereafter, the organised and compressed data was displayed in form of verbatim quotes and short narratives from the conversational interviews, observations, in such processes conclusions would be drawn and verified (Miles & Huberman, 1994). Generally, the transcripts were organised based on the responses of the participants to the interview questions (see appendix 29) and in relation to the main research questions (see section 1.8) that framed this study.

4.4.2 Writing the Narratives of the Participants

According to Miles and Huberman (1994) voluminous qualitative data has to be reduced for ease of further analysis. Therefore, to reduce the volumes of transcribed data which had already reached the point of saturation (Saumure & Given, 2008). Consequently, the responses of the different categories of participants were condensed to form one narrative (see appendices 1-28). The writing of the narrative was generally guided by Bamberg (2012). In this research a single narrative was formulated for the different participants categories (chiefs) using the cream of information from their various responses. The narratives were constructed in a manner that similar statements from persons of the same category (chiefs) were written as one statement and where there were differences, these were recorded as such. This was justified by the fact of reaching data saturation (Bamberg, 2012). The reduction of data is supported by Blanche, Blanche, Durrheim, and Painter (2006), and Henning, Van Rensburg, and Smit (2004).

These narratives or stories of the participants were used for further narrative analysis based on the story itself or the narrative does the job of analysis and theorising (Bamberg, 2012; Smith & Sparkes, 2008).

RQ1 (see section 1.8) was explored using the first four conversational interview questions (CIQs) in appendix 29. The first four aspects of the CSEE (i.e. understandings, perceptions, practices and communication) are represented in this research as nature-related CSEE aspects (see chapters 5 & 6 of this thesis). RQ2 (see section 1.8) was explored with CIQ 5 (how to teach CSEE) whereas RQ3 was explored using CIQ 6a (prospects) and 6b (challenges). The last three aspects of the CSEE (i.e. how to teach CSEE, prospect and challenges of CSEE teaching) are represented in this research as school-related CSEE aspect (see chapter 7). Each of the 10 IK-holder participants in Ghana and the 10 IK-holders in South Africa were engaged with CIQs 1 to 6 which involved both nature-related and school related aspects of CSEE. The total number of CSEE aspects explored was 7 (i.e. understanding, perception, practices, communication, how to teach, prospects and challenges).

Consequently, from the conversational interviews of the 20 IK-holders (10 from each country) and their responses to the 7 CSEE aspects, a total of 140 transcripts generated which were used to write the narratives. The four Biology teachers in Ghana and the four Life Sciences teachers in South Africa were engaged in the conversational with CIQs 5, 6a and 6b which were based on how to teach CSEE, prospects and challenges of teaching CSEE respectively. Due to the large number of transcripts (140) generated for the IK-holders which had reached a point of data saturation single narratives were written for the different categories (chiefs) of IK-holders. In reporting in this thesis, the narratives were constructed in such a way that similar statements from persons of the same category (chiefs) were written as one statement and where there were differences, these were recorded as such. Justifications for this is based on reaching the point of saturated data (Saumure & Given, 2008).

Table 4.2 Details of Narratives Created

CSEE Aspect Explored and corresponding Conversational Interview Questions (CIQ) in Appendix 29	Akan Participants' Categories (Ghana) /pages of participants' responses to CIQ on CSEE aspect explored and corresponding appendices of narratives	Zulu Participants Categories (South Africa) /pages of participants' responses to CIQ on CSEE aspect explored and corresponding appendices of narratives	Number of narratives created
Understanding (CIQ 1) <i>Ques.1. What is/are you and your cultural group understandings with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?</i>	2-Chiefs (Ahenfo) – pp. 88 – 100 section 5.2 & appendix 1a	2-Chiefs (Ndunas) – pp. 116 - 124 section 6.2 & appendix 6a	1 X 2
	2-Elders (Mpaninfoo) - pp. 88 – 100 section 5.2 & appendix 2a	2-Elders (Umdala) – pp. 116 - 124 section 6.2 & appendix 7a	1 X 2
	2-Traditional Priest/ess (Akomfoo); - pp. 88 – 100 section 5.2 & appendix 3a	2-Diviner-Spiritualists (Sangomas/Izangoma) – pp. 116 - 124 section 6.2 & appendix 8a	1 X 2
	2-Herbalists (Adunsifoo) - pp. 88 – 100 section 5.2 & appendix 4a	2-Diviner-Herbalists (Inyangas/Izinyanga) – pp. 116 - 124 section 6.2 & appendix 9a	1 X 2
	2-Youth (Ababunu) – pp. 88 – 100 section 5.2 & appendix 5a	2-Youth (Intsha) – pp. 116 - 124 section 6.2 & appendix 10a	1 X 2
Perception (CIQ 2) <i>Ques.2. What is/are you and your cultural group perceptions with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?</i>	2-Chiefs (Ahenfo) – pp. 100 – 109 section 5.3 & appendix 1b	2-Chiefs (Ndunas); pp. 124 – 133 section 6.3 & appendix 6b	1 X 2
	2-Elders (mpaninfoo) – pp. 100 – 109 section 5.3 & appendix 2b	2-Elders (Umdala) – pp. 124 – 133 section 6.3 & appendix 7b	
	2-Traditional Priest/ess (Akomfoo)- pp. 100 – 109 section 5.3 & appendix 3b	2-Diviner-Spiritualists (Sangomas/Izangoma) - pp. 124 – 133 section 6.3 & appendix 8b	1 X 2

	2-Herbalists (Adunsifoo) – pp. 100 – 109 section 5.3 & appendix 4b	2-Diviner-Herbalists (Inyangas/Izinyanga) – pp. 124 – 133 section 6.3 & appendix 9b	1 X 2
	2-Youth (Ababunu) - pp. 100 – 109 section 5.3 & appendix 5b	2-Youth (Intsha) – pp. 124 – 133 section 6.3 & appendix 10b	1 X 2
Practices (CIQ 3) <i>Ques.3. What is/are you and your cultural group practices with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?</i>	2-Chiefs (Ahenfo) – pp. 88 – 100 section 5.2 & appendix 1c	2-Chiefs (Ndunas) – pp. 116 – 124 section 6.2 & appendix 6c	1 X 2
	2-Elders (Mpaninfoo) – pp. 88 – 100 section 5.2 & appendix 2c	2-Elders (Umdalas) – pp. 116 – 124 section 6.2 & appendix 7c	1 X 2
	2-Traditional Priest/ess (Akomfoo) – pp. 88 – 100 section 5.2 & appendix 3c	2-Diviner-Spiritualist (Sangomas/Izangoma) – pp. 116 – 124 section 6.2 & appendix 8c	1 X 2
	2-Herbalists (Adunsifoo) – pp. 88 – 100 section 5.2 & appendix 4c	2-Diviner-Herbalist (Inyangas/Izinyanga)- pp. 116 – 124 section 6.2 & appendix 9c	1 X 2
	2-Youth (Ababunu) – pp. 88 – 100 section 5.2 & appendix 5c	2-Youth (Intsha) – pp. 116 – 124 section 6.2 & appendix 10c	1 X 2
Communication (CIQ 4) <i>Ques. 4. How do you and your cultural group communicate (make others aware) your understandings, perceptions and practices for your value and care for nature</i>	2-Chiefs (Ahenfo) – pp. 109 – 115 section 5.4 & appendix 1d	2-Chiefs (Ndunas) – pp. 133 – 136 section 6.4 & appendix 6d	1 X 2
	2-Elders (Mpaninfoo) – pp. 109 – 115 section 5.4 & appendix 2d	2-Elders (Umdalas) – pp. 133 – 136 section 6.4 & appendix 7d	1 X 2
	2-Traditional Priest/ess (Akomfoo) – pp. 109 – 115 section 5.4 & appendix 3d	2-Diviner-Spiritualist (Sangomas/Izangoma) – pp. 133 – 136 section 6.4 & appendix 8d	1 X 2

<i>(the earth, plants, animals, water-bodies) to other members of your cultural group?</i>	2-Herbalists (Adunsifoo) – pp. 109 – 115 section 5.4 & appendix 4d	2-Diviner-Herbalist (Inyangas/Izinyanga) – pp. 133 – 136 section 6.4 & appendix 9d	1 X 2
	2-Youth (Ababunu) – pp. 109 – 115 section 5.4 & appendix 5d	2-Youth (Intsha) – pp. 133 – 136 section 6.4 & appendix 10d	1 X 2
How to Teach CSEE (CIQ 5) <i>Ques.5. How do you think you and your cultural group’s understandings, perceptions and practices for the value and care for nature (the earth, plants, animals, water-bodies) and the way you communicate them, should/could be taught at school/secondary school?</i>	2-Chiefs (Ahenfo) – pp. 137 – 156 section 7.1.1 & appendix 11a	2-Chiefs (Ndunas) - pp. 183-198 section 7.2.1 & appendix 20a	1 X 2
	2-Elders (Mpaninfoo) – pp. 137 – 156 section 7.1.1 & appendix 12a	2-Elders (Umdalas) - pp. 183-198 section 7.2.1 & appendix 21a	1 X 2
	2-Traditional Priest/ess (Akomfoo) – pp. 137 – 156 section 7.1.1 & appendix 13a	2-Diviner-Spiritualist (Sangomas/Izangoma) – pp. 183-198 section 7.2.1 & appendix 22a	1 X 2
	2-Herbalists (Adunsifoo) – pp. 137 – 156 section 7.1.1 & appendix 14a	2-Diviner-Herbalist (Inyangas/Izinyanga) – pp. 183-198 section 7.2.1 & appendix 23a	1 X 2
	2-Youth (Ababunu) – pp. 137 – 156 section 7.1.1 & appendix 15a	2-Youth (Intsha) - pp. 183-198 section 7.2.1 & appendix 24a	1 X 2
	4-Biology Teachers (Akyerekyerefoo) – pp. 137 – 156 section 7.1.1 & appendix 16a, 17a, 18a, & 19a for Teachers 1, 2, 3 & 4 respectively	4-Life Sciences Teachers (Utisha) – pp. 183-198 section 7.2.1 & appendix 25a, 26a, 27a & 28b for Teachers (Utisha) 1, 2, 3 & 4 respectively	4 X 2
	2-Chiefs (Ahenfo) – pp. 156 -169 section 7.1.2 & appendix 11b	2-Chiefs (Ndunas) – pp. 198 - 212 section 7.2.2 & appendix 20b	1 X 2

<p>Projects (CIQ 6a)</p> <p><i>Ques.6a. Why do you have such views (benefits /advantage /prospects) regarding how you think you and your cultural group's understandings, perceptions and practices and the way they are communicated to others could / should be taught at school ?</i></p>	<p>2-Elders (Mpaninfoo) – pp. 156 -169 section 7.1.2 & appendix 12b</p>	<p>2-Elders (Umdalas) – pp. 198 - 212 section 7.2.2 & appendix 21b</p>	1 X 2
	<p>2-Traditional Priest/ess (Akomfoo) – pp. 156 -169 section 7.1.2 & appendix 13b</p>	<p>2-Diviner-Spiritualist (Sangomas/Izangoma) – pp. 198 - 212 section 7.2.2 & appendix 22b</p>	1 X 2
	<p>2-Herbalists (Adunsifoo) – pp. 156 -169 section 7.1.2 & appendix 14b</p>	<p>2-Diviner-Herbalist (Inyangas/Izinyanga) - pp. 198 - 212 section 7.2.2 & appendix 23b</p>	1 X 2
	<p>2-Youth (Ababunu) – pp. 156 -169 section 7.1.2 & appendix 15b</p>	<p>2-Youth (Intsha) – pp. 198 - 212 section 7.2.2 & appendix 24b</p>	1 X 2
	<p>4-Biology Teachers (Akyerekyerefoo) – pp. 156 -169 section 7.1.2 & appendix 16b, 17b, 18b, & 19b for Teachers 1, 2, 3 & 4 respectively</p>	<p>4-Life Sciences Teachers (Utisha) – pp. 198 - 212 section 7.2.2 & appendix 25b, 26b, 27b, & 28b for Teachers (Utisha) 1, 2, 3 & 4 respectively</p>	4 X 2
<p>Challenges (CIQ 6b)</p> <p><i>Ques.6b. Why do you have such views (challenges /disadvantages) regarding how you think you and your cultural group's understandings, perceptions and practices</i></p>	<p>2-Chiefs (Ahenfo) – pp. 169 – 181 section 7.1.3 & appendix 11c</p>	<p>2-Chiefs (Ndunas) - pp. 212 -223 section 7.2.3 & appendix 20c</p>	1 X 2
	<p>2-Elders (Mpaninfoo) – pp. 169 – 181 section 7.1.3 & appendix 12c</p>	<p>2-Elders (Umdalas) – pp. 212 -223 section 7.2.3 & appendix 21c</p>	1 X 2
	<p>2-Traditional Priest/ess (Akomfoo) – pp. 169 – 181 section 7.1.3 & appendix 13c</p>	<p>2-Diviner-Spiritualist (Sangomas/Izangoma) - pp. 212 -223 section 7.2.3 & appendix 22c</p>	1 X 2
	<p>2-Herbalists (Adunsifoo) – pp. 169 – 181 section 7.1.3 & appendix 14c</p>	<p>2-Diviner-Herbalist (Inyangas/Izinyanga) – pp. 212 -223 section 7.2.3 & appendix 23c</p>	1 X 2

<i>and the way they are communicated to others could / should be taught at school ?</i>	2-Youth (Ababunu) – pp. 169 – 181 section 7.1.3 & appendix 15c	2-Youth (Intsha) – pp. 212 -223 section 7.2.3 & appendix 24c	1 X 2
	4-Biology Teachers (Akyerekerefoo) – pp. 169 – 181 section 7.1.3 & appendix 16c, 17c, 18c, & 19c for Teachers 1, 2, 3 & 4 respectively	4-Life Sciences Teachers (Utisha) – pp. 212 -223 section 7.2.3 & appendix 25c, 26c, 27c, & 28c for Teachers (Utisha) 1, 2, 3 & 4 respectively	4 X 2
Total Narratives			94

4.5 Trustworthiness

This section presents various measures which were adopted to ensure trustworthiness in research approaches, methodological considerations, findings and analysis. Studies by Rule and John (2011) posit that, regardless of the various challenges associated with qualitative methods in terms of validity, reliability, generalisability and reflexivity, these challenges can be taken care of with trustworthiness. The term trustworthiness is believed to have been coined by Guba (1981a). Considering the various suggestions offered in literature by some authors (Creswell (2014); Rule and John (2011); Shenton (2004); Guba (1981a) for ensuring trustworthiness, this research utilised the multiple sources of data collection and triangulation. This was done by using the same data collection instrument in form of conversational interview questions (see appendix 29) to engage in a conversational interview with different categories of research participants (chiefs, traditional priest, sangomas, herbalist or inyangas, elders, youth, SHS biology or Life Sciences teachers) from two different cultural groups in two different countries, Ghana and South Africa. This was supplemented with observations of the natural environment. As argued by Auerbach and Silverstein (2003, pp. 77-78), there is not a single research that could be impervious to some level of “subjectivity, interpretation and context”, as the idea of “reliability and validity” have to be substituted with defensible intellectual, philosophical and theoretical reasoning. Researches which are situated within the interpretive paradigm are known to be faced with issues of truthfulness and credibility of the interpretation offered. Some key reasons given are that humans by nature make every effort to interpret or give meaning to their lived experience.

Furthermore, upon these claims, interpretations of the interpretivist researcher are mainly founded on beliefs and traditions which bring in inter-subjectivity (Auerbach & Silverstein, 2003; Hiley, Bohman, & Shusterman, 1991; Rouse, 1987). Guba and Lincoln (1985) consequently suggested trustworthiness and other researchers have suggested authenticity criteria. Schwandt, Lincoln, and Guba (2007a) have indicated that trustworthiness is analogous to the scientific conventional internal and external validities, reliability or dependability and objectivity.

4.5.1 Measures for Trustworthiness

Trustworthiness as a rigor is indicated to embrace the following groupings: credibility (an analog to internal validity), transferability (an analog to external validity), dependability (an analog to reliability), and confirmability. These four groupings for trustworthiness are known to be probably resolved with some strategies:

4.5.1.1 Credibility

For credibility, prolonged engagement, persistent observation, triangulation (cross-checking) of data, peer debriefing, negative case analysis and member checks have been suggested (an analog to objectivity) (Guba, 1981b; Lincoln & Guba, 1986; Schwandt, Lincoln, & Guba, 2007b; Shenton, 2004). According to Guba and Lincoln (1985) guaranteeing credibility is very vital in ascertaining trustworthiness. Some suggestions offered by Guba and Lincoln (1985) include prolonged engagement to assess possible sources of distortions (salience) in the field through having lengthy and very intensive interactions with the respondents or the phenomena. Persistent observation is done where aspects found to be very salient are given a deep and an in-depth pursuance. Triangulation, a data cross-check is done by employing diverse sources of methodology or different researchers. Peer debriefing brings honesty from research as it is done by making a totally disinterested professional peer help in the development of a working hypothesis to test new designs to purge the emotions of the researcher. In addition, a negative case analysis is done by having an active search for negative situations and making changes until other negative instances are done away with.

Lastly, a member check is done by conducting informal information testing of respondents' reactions toward the researchers' new findings and formal testing of representative stakeholders (Guba, 1981b; Lincoln, 1995; Miles & Huberman, 1994; Shenton, 2004; Silverman, 2000).

In this particular research, the credibility aspect of, ‘trustworthiness’ is captured by following the guidelines and suggestions proposed by Guba (1981b), Guba and Lincoln (1985); but to a large extent, the guidelines of Shenton (2004, p. 73), Williams (2011) and a few other researchers who are acknowledged. This research employed very common research designs like ethnography, interpretivist paradigm, and naturalistic research using conversation interview questions and observation of natural environment as key data generation instruments.

Several qualitative researchers on IKS and related fields have utilised these research methods successfully and have defended their suitability (Guba, 1981b); Murove (2004). Creating a pre-acquaintance with the culture of participants prior to initial data collection through extended interactions and checking relevant documents was suggested. To apply this, the researcher took time to read several histories written about the cultural groups; he was also familiar with the participants’ perceptions and practices since he was born and bred in one of the cultures. Kaya (2015) posits that IKS is much interesting when it comes from one’s own experience. Guba (1981b) suggested, ‘prolonged engagement’ with the participants or organisation under study, by being present with them for considerable lengths of time, not to the extent of inconveniencing the participants, but to build trust with them. The current research ensured this by having longer and extensive conversational interviews with participants in their comfortable niches.

Triangulation of data sources to enhance credibility was done through using the same conversational interview questions to explore the responses of different categories of participants who consisted of chiefs, herbalist, traditional priest, sangoma, inyanga, elders, youth, and teachers from two different countries, presenting all their different voices in the findings section. Besides, the findings of this research were supplemented and supported with a wide range of other literature sources from different cultural groups in different countries and from previous researches conducted among the cultural groups researched on.

For Guba’s peer debriefing aspect of enhancing credibility, where uninterested peers ask probing questions about the research work, the researcher resorted to the critique of other PhD students in other fields of study and a few friends who had graduated with their PhDs, apart from the regular constructive criticism of the supervisor.

These academics and colleagues somewhat brought out the errors and gaps in the study as the researcher shared research ideas and findings. Post graduate cohorts and workshops were also found to be helpful in this regard.

Negative case analysis for enhancing credibility has been recommended by Silverman (2000), Miles and Huberman (1994) and Guba (1985). In this research, the themes and subthemes that did not align with the conceptual framework (see sections 5.2.2.3; 5.3.1.5; 6.2.1.1; 6.2.2.2; 6.3.1.3; 7.1.1.5 – 7.1.1.7; 7.2.1.6 - 7.2.1.7) were inductively analysed to bring out those that were not captured in the conceptual framework; although were still considered relevant in adding to knowledge and were duly discussed. This was evident through thorough rechecking of transcribed data and was done to apply the negative case analysis. With respect to progressive subjectivity checks, this research used general reflections and discussions of the findings and other seemingly, 'new' themes. The different techniques for collecting data and how they were analysed were duly referenced.

With regards to recommendation for member checks, recorded messages were replayed to crosscheck some of the information given and where there was no clarity, the researcher contacted participants again either telephonically (participants gave permission to be contacted for clarity) or through personal visits. However, for those that did not consent to the recording of their interviews, the key information gathered by the researcher and the research assistants were compared for similarities and differences. All the transcripts were given to the research assistants from South Africa and Ghana to read as well in order to judge the credibility of the data generated and transcribed, especially regarding the Zulu participants as the researcher did not know the meaning of most words. The most interesting and quite surprising thing is that, many of the perceptions regarding the natural environment were not so different from that of the other culture despite being in different countries. This helped to check the credibility of most of the information gathered from the field.

Other checks that were employed to enhance credibility by taking cues from Shenton (2004, pp. 64-69) were examinations of previous research findings. This research therefore used findings of related studies to discuss and support findings at various levels of data analysis. To ensure honesty in informants or participants, the current study ensured that participants fully agreed to participate in the research at their own volition with the freedom to withdraw at will.

The suggestion for 'iterative questioning' for credibility, was applied through probing participants for relevant information pertaining to the scope of the study. With regards to considering, 'background, qualifications and experience of the investigator', the researcher believes that his credentials and experience substantiate his research endeavours and ability to make credible links between the findings and literature, since he has been a teacher for several years, has studied up to a PhD level, as well as researched within the science field and indigenous knowledge systems.

4.5.1.2 Transferability

In using Guba's (1981b) "thick description of the phenomenon being studied", a recommendation suggested by Denscombe (2014) to enhance transferability, the researcher endeavoured to capture all the various aspects of environmental ethics from indigenous and diverse perspectives of the different cultures by reviewing relevant literature (see chapter 2). Therefore, it assisted in examining whether findings were, 'logical' or unfounded statements. The thick descriptions in the findings involved creating the narratives of the different categories of participants (see appendices 1-28). The findings from the two different cultures (Akans of Ghana and Zulus of South Africa) that overlapped seemed to somewhat indicate that this study could be applicable to other contexts. This research can be evaluated by reading generated data, the analysis of the findings and discussions.

4.5.1.3 Dependability and Confirmability

In an attempt to enhance the dependability and confirmability of this research, the use of supporting literature and research findings in similar researches were employed to bring out the gaps that the current research attempted to fill. Generally, regarding dependability, procedures taken as well as probable reduction of errors in the research process were clarified during the formulation of concepts and frameworks, the selection of participants; the way data was generated and data findings interpreted and discussed. To ensure this consistency, the research supervisor and other constructive critiques helped to refine the research.

The following references were instrumental in getting the detailed guidelines to enhance the trustworthiness of this research study as discussed above: Creswell (2014), Cutcliffe and McKenna (1999), Guba & Lincoln, 1982, Hiley *et al.* (1991), Lincoln (1989), Merriam (2009), Rule and John (2011), Williams (2011).

4.5.2 Ethical Issues

Ethical issues are very essential when it comes to qualitative research as the human participants should be valued, respected and protected with regards to dignity and privacy. Therefore, all ethical requirements related to the current study such as verbal and written informed consent, assurance and guaranteeing anonymity were followed. Issues of beneficence as well as non-maleficence were made known to each participant of this study before starting the data collection. Participants were informed that the research participation was voluntary, and that they were at liberty to withdraw at any point they desired to. None of the participants withdrew from the research and other participants even consented to their names appearing in the research findings – many of the participants wanted to be identified with their real names. The researcher, however, did not include the exact names of the participants who wanted to be identified as such for ethical reasons that might be unknown to such participants. The participants were given the informed consent form (see appendix 30) to sign before they were engaged in the conversational interviews. The participants' confidentiality was ensured by encrypting their biodata (Cohen *et al.*, 2011; Rule & John, 2011). Every effort was made not to interrupt participants' normal daily and official activities. Thus, appointments were made at their conveniences; for many of the participants, the researcher arranged meetings at their own premises during their leisure time. Pictures of degraded environment were taken and participants' homes were not included, but these helped in enhancing the discussion (Cohen *et al.*, 2000; Denzin, 2008).

4.5.3 Limitations of the Study

This research saw the need to address certain limitations based on the assertion on enhancing the dependability and quality of research (Creswell, 2014; Rule & John, 2011; Vithal & Jansen, 2012). In this research, the major limitation was the inability of the researcher to engage in direct and personal conversational interviews with the Zulu participants even though the author could read and make meaning of a few sentences.

The services of an isiZulu-speaking person, a postgraduate student and a researcher in related IKS, who is a native of the Zululand area, was solicited in order to collect data. The assistant having grown up in the area, schooled and working within the district and beyond, who knew how to exchange courtesies, made it possible to approach and get consent from certain participants who were traditional leaders in their communities.

This was done in order for the participants to give audience to the researcher, engaging in conversational interviews. The limitation regarding speaking of the isiZulu language was resolved with the help of the research assistant with whom the researcher explained and discussed the research purpose, objectives, research questions and conversational interview questions. The research assistant served as a translator since the participants were encouraged to speak in their own isiZulu language to express themselves freely and give detailed information. Besides, this research was a study in IKS and required that the people's indigenous language be upheld.

Another limitation was getting the list of all animals and plants which have been successfully conserved through the Zulu cultural people's EE. Some of the plants whose names were given, were not shown nor drawn; therefore, the researcher could not name them according to the botanical names. Hence, the names used in this are those given by the participants i.e. indigenous names. Moreover, the author was limited in presenting findings in the local language as he would not be able to make meaning of the isiZulu language and discuss it. Therefore, the raw data generated was translated to English during the process of engaging in conversational interview. The data in English could therefore be presented and discussed with the conceptual framework and other literature sources. Although, the researcher could read and write the Akan people's Twi language, the challenge was that there is no common software captured in Microsoft Word to type the language as it has special fonts that have symbols and alphabets that are not on the standard computer keyboard. Thus, any computer without the relevant software cannot read on their personal computer. Besides, since the author was working with the Zulu cultural group and was limited in writing and reading the language, there would have been an imbalance focusing on one cultural group and neglecting the other. In addition, for international readership, these two languages would have also posed as a challenge.

4.6 Conclusion

This chapter discussed the general processes that were used to frame this research, how the researcher engaged in data generation and analysis. It further discussed various measures that were used to ensure trustworthiness of this research and justified with literature and actions taken to ensure these. The limitations in data generation and analysis were also discussed.

CHAPTER 5

FINDINGS AND DISCUSSION OF AKAN CULTURALLY-SPECIFIC ENVIRONMENTAL ETHICS

5.1 Akan's Nature-Related Data: Voices of Akan Indigenous Knowledge Holders

This section presents the second level analysis of the findings deduced and inducted from the descriptive phase which is in the form of storied portrait and narratives (see appendices 1 to 28). The description of how the narratives were constructed is presented in section 4.4.2. For the findings presented in the current and following chapters as second level analysis from the evaluative phase with regards to the Akan and Zulu cultural groups, a deductive approach was used to analyse and discuss the data based on the conceptual framework from Goduka (2000). The deductive analysis was done by carefully examining the responses of participants in the narratives (see appendices 1-28) and fishing out statements and quotes that corresponded in meaning to the conceptual framework developed from Goduka, (2000). The conceptual model helped in the broad categorisation of key concepts which defined this research; that is the *understandings, perceptions, practices and communication*.

The conceptual framework assisted in streamlining the bulk of information gathered from the fieldwork of the research (Bertram & Christiansen, 2014; McMillan & Schumacher, 1993). Since this research was exploratory in nature, an inductive approach for analyzing the findings were employed to complement the main deductive approach and enhance the discussion. According to Bertram and Christiansen (2014), researchers frequently employ the two approaches (inductive and deductive approaches) in their data analysis. The first level analysis (the descriptive phase) captured as the narratives, are presented in the appendix.

The emerging themes surfaced after several categorisations based on the commonalities and frequency of the responses. Themes which emerged were assessed and reviewed through literature informed by Bertram and Christiansen (2014), Attride-Stirling (2001) and Miles and Huberman (1994). The purpose was to bring information gathered into perspective such that, some meaning could be derived from the already saturated data.

Bertram and Christiansen (2014) and Miles and Huberman (1994) have indicated that, cutting down numerous pages of textual data, makes it less difficult to handle and helps to, “make sense’ of the data. According to the above-mentioned authors, data reduction is continuous throughout the research process. This is based on the assertion that data reduction had already begun from the time a conceptual framework was developed for the research.

5.2 The Akans’ Understanding and CSEE Practices

Details of the meanings of understanding and CSEE Practices are explained in the conceptual framework section in chapter 3. In exploring the Akan participants’ CSEE understandings and practices, the participants were asked to respond to conversational interview questions (CIQ) 1 and 3 respectively in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

5.2.1 Akans’ Personal Responsibility for Inner Self and Inner Peace

This sub-theme is explained extensively in chapter 3 (conceptual framework). From the analysis of the transcripts and narratives of the Akan participants, their cultural group’s inner self and inner peace is predicated on heeding to the words of their elders and that of their ancestors which informs their practice to value and care for nature.

5.2.1.1 Heeding Words of the Elders

The Akan participants are very particular about what words are spoken by their elders and how they consider, respond, understand and heed such words within their inner-self. This gives them the inner-peace that informs their practice for environmental ethics. The following are some of their expressions regarding this:

The Chief said, “...we were very respectful unlike what we see today, we never questioned our parents or any elder...even entering the chief palace or pointing our finger there we didn’t dare we were afraid...when we were told not to go the river on Wednesday or go to farm everybody just obeyed but now the democracy and the politics is making the children see life differently...We were afraid of the instructions about all these lands, forests, animals they tell us not to eat...”

The **Elder** said, “we used to live long, you can see me...I am 80 years this year and during our time it could take like 10 years and nobody has been reported dead in this community because we obeyed our elders. We did not question their orders, we just heeded it without shaking our heads...now the current generation don't even mind us, that is why now they die very early...”.

The **traditional priest** narrated, “...now children even don't take us for anything. Our words to them is like useless until something bad has happened to them but it was not like that in the years gone by I was afraid very much of my parents and the elderly people around...maybe that is why they have blessed my family with this gift that makes a lot people come for consultation...I never dared crossed a river or stepped into any without removing my slippers and asking it for permission because our elders told us to and I did take it very seriously...I don't even joke with leaves of plant because they are for healing...”.

The **Herbalist** said, “...my father who taught me how to identify plants and trees that has high medicinal value was really strict on his instructions because he used to tell me that it is a work you are doing to take care of a human being...my dad kept telling me to respect the elderly and ensured I did that...he scolded me when I did otherwise...he emphasized the value of plants, forest and water-bodies and in fact all the other elements of creation and the instructions given to protect them must be heeded...”.

The **Youth** said, “...if you want to live long you have to obey the instructions of the elderly people...my parents always advised me and told me stories of people who through disobedience of the elderly people have brought a lot of evil upon themselves...as for me I am afraid of what our elders say oo!...I do not go to the river if they say we should not go there because I have heard some people fallen unconscious and later die when they went there...”.

The participants shared a similar view and it could be seen that obeying elderly people's words or instruction is paramount and highly esteemed to avoid any unpleasant consequences and rather be an avenue for blessing and prosperity.

The other notable idea expressed by the herbalist presupposes that the elders' instruction makes the people careful, to maintain accuracy and precision. In addition, the disregard for the elderly people's words and instructions have contributed to the current environmental pollution and degradation in the country.

5.2.2 Akans' Collective Responsibility of Caring for Mother Earth

Under this section of collective responsibility of caring for mother earth, the different key aspects have been captured as sub-sub headings for clarity. Thus, as indicated earlier under this theme, the key areas include Earth as a mother providing for the needs of people for survival and sustainability; land not belonging to the people, but the people belonging to the land in preservation for future generations; and elders providing information on the wealth of mother earth.

5.2.2.1 Earth as Provider

The understanding that the earth as a mother provides all the needs of the inhabitants for their survival and sustainability, directly informs the CSEE Practices of the Akans. For instance:

*The **chief** stated, "if the water is not there or it is spoilt what will we do if any of our people is tired and thirsty coming back from the farm...the leaves that have fallen into the rivers have put medicine in the river so when you even drink it, you will not fall sick easily. We have to protect the water-bodies because they are very essential to our lives..."*

*The **Elder** said, "...I know that the air we breathe is from the trees so when the wind is blowing the fresh air comes from it...the land is more than even important because the people, the animals, the houses, the rivers and all the water-bodies, our forests and our farms they are all on the land...all these are so important to our lives and we should therefore use them wisely...you know even the leaves of trees around the rivers, if they drop into the rivers and streams they change the colour, something it looks a little brownish all these show the medicine they put in the river so when you drink the water you don't fall sick easily..."*

The traditional priest mentioned that, “everything we need to make us alive and live healthy are all in nature – in the plants and animals we get our food, we get water to quench our thirst from the rivers and streams, there is gold and other minerals in the lands that can give us the money we need...we must not destroy these components of nature...”.

The herbalist said, “...our life is dependent on trees and waters and if there is no tree or plant or any of these none of us would survive...our food we get from trees, our medicine we get from trees...when even tree leaves fall into rivers it makes it have medicine inside them and when you drink them you become really strong...we cannot afford to be cutting them anyhow No! Never!...every tree is important...that is why even in my farm I don't fell down the trees that are near the river so that the river will not dry... I must protect them and leave some land for my children too...”.

The Youth also mentioned that, “...from the things I have been told by my parents and the many things I am studying in school about the importance of vegetation cover, the water-bodies and the wild animals, I am more than convinced that no plant or animal should be harmed by anybody but it is not everybody who understand like I may know...”.

Participants are conscious of mother earth's provisions for health and daily needs and therefore see the need to value and care for the earth's resources. A notable reasoning is the understanding of plant leaves infusing or dissolving their medicinal or active ingredients in water-bodies for the health of the community; for this reason, they also see the need to not clear trees around water-bodies.

5.2.2.2 Land Do Not Belong to People

Another aspect of collective responsibility of caring for mother earth is also based on the understanding that the people belong to the land and not vice versa. This makes the people have a sense of collective responsibility in practicing environmental ethics where they, for instance, preserve the land for the future generation. Understandings of the IK-holders regarding the above mentioned is captured in the following excerpts:

The **chief** said, “...if we respect our ancestors we will take care of what they bequeathed to us (the lands, forests, water-bodies) and also follow their instructions. Just like how I was privileged to inherit my uncles throne and all the lands and the wealth on it belongs to this royal family, I also have to ensure that before I leave the throne the people of this community will still be having lands to farm on and places where they can build for the future of children...”.

The **Elder** mentioned, “...if our chief keeps selling the land at the rate he is doing now, there will be no land for our children and that will be a very big problem for us to solve. We cannot leave the children behind without giving them anything especially land. It is not fair because our own elders and forefathers left us vast lands and that is why we have a place to build and farm now...the land is for our ancestors and future children...because of my children and other people’s children I cannot spoil things like that...?”

The **traditional priest** said, “...we will have a lot to answer our ancestors if we keep destroying things like the lands and all the things on land and not protect them for the future generations and keep selling them anyhow...For me I am doing my part, I go to the river where I have created my small oracle that I go to do my rituals for the river, I sweep around, remove things that block the flow...I do not know why some people are not afraid even to farm near the river and some even dare use water pumps to siphon some of the river water...no wonder they have sicknesses in their homes that they do not know it came from...”.

The **herbalist** said, “...when we were growing up our fathers made us understand that land is for our ancestors and that we are only taking care of it for our children’s children future, so you only farm on it and eat on it and cannot sell it unless you ask the ancestors and pour libation to them...you know, in the olden times the chiefs did not even sell land, they only gave it as gift for a family to farm on it and build small structures on them for shelter and comfort...and all the plants on land too are very important because we get our medicine and food from plant...”.

The Youth said, "...when it comes to caring about the earth, lands, water-bodies, wild animals, forest, plants and things in nature I have an understanding that we have to protect all these because our life depends on them and that of the generations to come, I also learned some in school too...for instance I was told that land does not belong to anybody but even the chief is not supposed to care for it but has power to give to some people or sell some but it still belong to ancestors...".

The future of the younger generations is paramount to the participants and their cultural group such that they indicated their concern of some government officials secretly sending certain people to log trees in the forests doing 'galamsey' (illegal small-scale gold mining in Ghana) that destroy the water-bodies.

5.2.2.3 Replacing Harvested Resources

The collective responsibility of caring for mother Earth extends to the IK-holders of the culture realising the wealth of things provided by mother earth for their survival and sustainable living and knowing that the land and its resources do not belong to them. Efforts are made as much as possible not to exploit nature or take more than is needed. Even when something is taken or harvested in a sustainable manner, there is immediate replacement, and for cases related to plant or forest resources they are immediately replaced or replanted. This collective understanding of caring for mother earth based on the practice of immediately replacing harvested resources, happens to be the premise upon which an environmental ethics of caring for mother earth is practiced by the IK-holders of the culture.

The following statements indicate a collective responsibility of the people that informs practice for environmental ethics which is an immediate replacement of harvested resources:

The Chief stated that, "...the people in some of the communities who are not wise, will always take and not replace forgetting that we are jeopardizing the future of our children...everything we take from the earth we must replace it...if our fathers did not always think of the future people do lots of senseless things destroying their forest by setting fire in just because they are chasing a rat but because of politics people don't even bother when called to royal palace to come and answer questions of misdeed but not in my town...".

*The **Elder** lamented that, “...these days we do not know what is wrong with the chain saw operators...they have no conscience and just log the trees without planting new ones, nor even think of what happens to the younger trees and end up destroying all other trees but this has only been possible because they are politically supported so we can't even talk...”.*

*The **Traditional priest** commented that, “...as for us , we believe that if we fail to replace what we harvested immediately for example all the root crops, then we don't want to harvest anymore and we are starving mother Earth and our own family because we are not thinking of tomorrow...in fact everything you harvest you have to replace it as soon as possible...when I go to harvest plants for medicine it is not everything I bring home...some of the plants we grow them and other are done by some animals...”.*

*The **Herbalist** said that “...we don't have to remove the whole bark of tree at a go, so it could grow back nicely...besides when we remove the whole (circumference) bark it is an abomination and the medicine will not work properly...we don't also have to cut all the roots of one plant, we only take portions at a time so they will remain to grow for future use...”.*

*The **Youth** narrated, “...I know that my parents and many parents and elders when you follow them to the farm they tell us that when for instance we harvest something like cassava, yam, cocoyam and many other we are told to either cut the stem or root or bud and replant them immediately and this is a common practice among our cultural group...”.*

The participants consider the future of the natural resources central to them and their cultural group, consequently, what they even take from their farms are consciously replaced.

5.2.2.4 Hunting in Season

The collective responsibility to care for mother earth's resources as an environmental ethic for sustainable living directed by the elders, who after revealing the wealth of mother earth to their people, also ensure that even in the hunting of wild animals, it has to occur only in certain seasons.

This is also an understanding that informs collective responsibility to practice environmental ethics of caring for mother earth. In addition, in certain cases bare hands were used for group hunting.

*The **chief** said, “...in our town we do not have much restrictions on what wildlife animal you eat or not to eat, it is up to you but you cannot hunt in the forest that we say nobody should enter...that one if you do, you will be brought before the elders in the palace and you will be fined a large sum of money and at the same time pacify the gods with a white sheep...and at the same time when it is getting to Christmas time we do not allow anybody to go for hunting...years ago we could hunt without the gun when the whole community could enter the forest and run after certain animals but not the ones that are like tigers but those like the antelopes...”..*

*The **Elder** said, “...there were times that they report that we are not supposed to kill this animal or that e.g. grasscutter, there was a period set that we were told not to kill them until that period is over. We didn't even have to pick up our guns. There were times we went for group hunting where all the men in the community line up in a warlike manner then some young men will make loud noise behind us and as the animals come out, we hunt them”.*

*The **traditional priest** indicated that, “...some wild animals are very dangerous to hunt, and you dare not hunt them with a gun because mostly when you shoot they can either vanish or turn into a family member or someone in the community and you would be arrested for killing human being when you know you were shooting an animal...but usually there are several times of the year that people are not allowed to hunt wild animals or even pick their guns to the forest...”.*

*The **herbalist** said, “...if you really want to know whether some plants have great potential to heal and to know whether they can be consumed without falling down dead, the simplest way is to check which wild animals eat it and usually get the content of their stomach...you don't hunt certain wild animals anyhow because sometimes they are the ones that direct you to a very effective medicine...besides there are several seasons you are not allowed or even supposed to hunt wild animals as they may be breeding...”.*

A youth said, "...There are times we are told not to kill or hunt for any bush meat or else we would be sent to the chief's palace...but I have heard a lot about hunting and I hunt myself, though I have never used the gun to go for hunting like real hunters who do this and use the night light but I usually use except trap and catapult...the traps are set in the bush and concealed with strong metallic wires that when entered or step on the animals is trapped till how long, some die before we come back...my dad showed me how to set the traps..."

The participants share a common idea of ensuring that there is sustainable harvesting of natural resources. For instance, wildlife species are hunted only at specific times of the year through an injunction from the traditional leaders. They were conscious of the ecological implication of causing imbalance of the ecosystem to sustain livelihood. A notable aspect was the considerably less cruel hunting with whole community young men while chanting warlike songs and catching animals alive. This is a kind of training for young people in the wilderness.

5.2.3 Akans' Interrelatedness, Interconnectedness and Interdependence with the Living and Non-Living Creation

Under this theme, the key areas are oneness and interconnectedness of people with all living and non-living creation without isolation and living in beneficial interdependence 'reciprocity' with all other creation. The Akan cultural group participants understand interconnectedness to be the connection members of the cultural group have to some living and non-living creation. The interconnection is also buttressed with collective understanding of having a spiritual connection and relationship with nature. These are captured in the excerpts below.

The chief said, "...everybody in this community is forbidden to kill their own, 'akraboa' (totem)...for instance this family is Oyoko clan and our, 'akraboa' (totem) is hawk and most of the kumasi towns and places like Asaaman, Nsuta, Dwaben, Mampondeng, Bekwae etcetera are likely to have majority of Oyoko clans... So for us, like this nobody will ever hunt a hawk or throw stones at them because we see them very special and you can see that the chief staff here has a symbol of hawk on it..."

In fact all the other clans like Agona (Parrot), Bretuo (Leopard), Asakyiri (Vulture), Asona (Crow), Asenie (Bat), Aduana (Dog), Ekuona (Buffalo) all do the same for their, 'akraboa' (totem) in terms of respect for it and chief linguist staff...however, if the person doesn't know it is acceptable but if they intentionally do it, then the repercussions would come on them”.

*In relation to water-bodies, the **chief** said, “Settling by the riverside was our forefathers' priority because they saw water as life. Our elders didn't only see the river as their source of life but in reality the rivers are gods that protect our towns and villages and therefore we revere them and anyone who treats the river any how without any form of reverence is brought to the chief's palace and he or she has to buy a sheep for us to go and pacify the river. Also, you don't just cross the river without asking for its permission first and you have to put some of your farm produce into the river whenever you are crossing it to come home...”.*

*The **elder** stated that, “...when I came to meet our elders and grandparent we were told that our grandparents always settled by river banks and named the towns after the water-body many times because they saw it (water body) as a god that needed to be revered and consulted in times of need...they were so respected that for many of the water-bodies even periodically they were sending food of royals i.e. ripe mashed plantain with eggs and palm nut oil and groundnut paste and onion leaves...we perform rituals to pacify the water-body if we offend him or her...the clan I belong to is Bretuo clan and our akraboa (totem) is leopard and my wife's own is Asona and their own is crow...we take care of these wild animals by ensuring that they are not harmed or used by anybody as it is an insult to us because we have a lot of thing in common with these animals as they help our great great grandparents...”.*

*The **traditional priest** commented that, “...we have our own akraboa for the Agona clan I come from which is parrot...nobody kills parrot in my clan and we respect them very well...our chiefs have their symbols all over their palaces...other clans also do same for their own...and I said earlier, I do make sure that the riverbank is very neat...you saw how the place was when you went there...I send gift to the river very often for the helping to make thing work very well for me and my husband living here...”.*

I believe some of the rivers are gods and there are other spirits inside that is why they can curse you with. I also know that there may be power in water-bodies that is why even Christians baptize inside them...”.

*The **herbalist** also said, “...plants and trees that are near rivers and streams are really healthy ones because the rivers and stream protect them with their spirit...they are always fresh and can all the time be used to make medicines...in fact the trees also help the rivers or stream to become cools...every stream and river or any water-body near places where I harvest my herbal product, I do the necessary rituals because I know it is because of the river that the tree and plants are very healthy and because the water-body is a god and has other spirits around it I show them respect by talking to them and giving them sacrifices before taking anything around them...the land around is also very rich for farming...”.*

*The **youth** commented that, “...we are aware that rivers are very powerful bodies that is why our forefather always wanted to settle by it and people call upon it as a judge to make the truth become a reality...and also when people who offend them and when the Akan person say he/she will call a river to curse you and people start shivering...”.*

The participants indicated their direct interconnectedness with most aspects of nature especially with water-bodies and a few wildlife animals referred to as, ‘akraboa’ (literary meaning, ‘soul animal’ otherwise known in literature as totemic animals) of the Akans cultural groups. The interconnectedness with the rivers is mainly revealed in their calling upon the rivers as, ‘gods’ to judge in their day to day life matters in the community till date. The Akan people’s interconnectedness to water-bodies and their totems give them direct beneficence in that water-bodies are treated with special reverence and preserve the totems.

5.2.4 Akans’ Individual and Family Identities are Never Separated from Sociocultural and Spiritual Contexts

Under this theme, the key aspect is the continual communal sense of the people and their cultural and spiritual values or the, ‘we’ understanding without separation from the other, nature, spiritual and cultural values and beliefs. The following quotes that have the ‘we’ references are just one example of the spirit of communal thinking:

*The **Chief** stated that, “...the people in some of the communities who are not wise, will always take and not replace forgetting that **we** are jeopardizing the future of our children...everything **we** take from the earth **we** must replace it”.*

*The **Elder** lamented that, “...these days **we** do not know what is wrong with the chain saw operators...because they are politically supported so **we** can't even talk...”.*

*The **Traditional priest** commented that, “...as for us, **we** believe that if we fail to replace what **we** harvested immediately for example all the root crops..., then **we** don't want to harvest anymore, and we are starving mother Earth and our own family because **we** are not thinking of tomorrow...”.*

*The **Herbalist** said that, “...**we** don't have to remove the whole bark of tree at a go, so it could grow back nicely...besides when **we** remove the whole bark it is an abomination and the medicine will not work properly...**we** don't also have to cut all the roots of one plant, **we** only take portions at a time so they will remain to grow for future use...”.*

*The **Youth** narrated that, “...I know that my parents and many parents and elders when you follow them to the farm they tell us that when for instance **we** harvest something like cassava, yam, cocoyam and many other **we** are told to either cut the stem or root or bud and replant them immediately and this is a common practice among our cultural group...”.*

The Akan participants understand and conduct their day to day activities with a certain communal mentality. Thus, even in upholding cultural values all members of the community are somewhat brought on board. From the evidence on thinking and understanding, it could be seen that the Akan people naturally think communally even in terms of directives and instruction, as well as regarding what happens to other members of the community. For instance, when there is work to be done all hands are on deck and practically every family in the neighborhood are considered family too irrespective of the distance in the relationships.

5.2.5 Summary of Akans' Understandings and CSEE Practices

The preceding sections have expounded on the different voices of the Akan participants (the IK-holders of the culture or elders) regarding the Akan understanding and practices for their CSEE guided by the conceptual framework developed from Goduka, (2000). The themes under the understanding and practices were then presented and discussed.

5.3 Akans' Perceptions for CSEE

In exploring the Akan participants' CSEE perceptions, the participants were asked to respond to conversational interview question (CIQ) 2 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

Perception here embraces certain special spiritual and physical ability where the cultural group employs their spiritual senses and their physical five senses of sight, hearing, touch, taste and smell to become aware of their natural environment and the components of it. The knowledge about the components of the natural environment gained through their spiritual and physical senses informs their particular environmental ethics for nature.

The theme from the conceptual framework under perception that is captured to guide the selection of quotes is, '*Perceiving Nature, the Living and Non-living Creation as the True Ground of Spiritual Reality using the five senses and spiritual influences*', as well as its key subtheme, '*spirit permeating the lives of everything in nature whether living or non-living*' are presented in the discussions that follow. This sub-theme has several arms because of the different categories of living and non-living.

5.3.1 Akans' Perception of Nature, the Living and Non-living Creation as the True Ground of Spiritual Reality

Under this theme, the key aspects include *the spirit permeating the lives of everything in nature whether living or non-living*; natural forms and forces in nature being a reflection of spirits inherent in them; life and nature of spirits as twin forces that continue to move in perpetual cycles like the seen and unseen cycles in nature (life cycles, natural cycles); universe as spiritual whole and therefore sacred; and words and language from human breath quality of spirit.

5.3.1.1 Natural Forms and Forces as Reflections of Inherent Spirits

In perceiving nature (living and non-living creation) as the true ground of spiritual reality by the cultural group, a key area revealed is in the cultural group's perception of natural forms and forces of nature to be the replica of same inherent spirits in all creation. This is captured in the following statements by the participants:

*The **Chief** stated that, "...As the creator God the almighty is the one who made all of us and created the lands, forests, animals and plants to accompany us, these also have the same spirit of God in them as in us too so must respect them and know that we will account for them one day...they may look different in physical way just like how even we humans look different and we have females and males and tall and short, hairy and no hairs and so on but it is the same spirit in all of us because spirit can be anything in the physical, it can even become like a stone or tree or animal or anything in the physical...so we should all know this and stop spoiling them..."*

*The **traditional priest** said, "...truly there are spirits in water-bodies and the water-bodies themselves are gods...the same power almighty God put into humans is not different from the ones in other things He has created...a spirit can appear in any form or shape it like, it can even look like an animal or even water-body it doesn't matter how it looks on the outside...it is the same spirit as it is in us... even the land is a spirit and a god too that is why we pour libation on it...We cannot treat them anyhow..."*

*The **herbalist** voiced out that, "...plants and forests actually have spirits in them and that is why not any person can just go a pick leaves and put them together to form medicines...even when it is time to take portions of them you follow procedures that show your respect for them if not the medicine cannot be effective...Do you know that plants can even help to heal us because of the spirit that is them? Remember, that the spirit in plant is similar to the one in us...what you can see on the outside like a tree, a land, animal, a rock can all be spirit that have turned into that..."*

*The **Elder** said, “... if animals and plants can grow like myself then truly we have some things in common. I can die, and animal too can dies...they can be born like me...surely if humans have spirit in it then these ones also have spirit and they are not different from the spirit in people...that is why some people can even talk to trees and even fire or wind or rain because they can hear as they have same spirit like in us...”.*

*The **youth** also said “...I actually have respect for creation because I believe from what I was taught that God created all thing and he breathed into it and His spirit was moving over the earth so almost everything have some spirit in it...only that some may have bigger spirit than the others...”.*

Participants showed that in their perception all the natural things reflect the kind of spirit inhabiting them which is based on having a common creator. Such perceptions are representative of religious and spiritual perspectives as some instances recounted by participants are not obvious to the physical eyes nor perceived with five senses but have been significant to contribute to their value and care for nature.

5.3.1.2 Spirit Permeating Life of Sacred Groves

The perception that the spirit inhabits the life of everything in nature whether living or non-living and in this instance, the reserved ecological area or ancestral forest (*‘nsaman mpom or nananom mpow’*) is referred to in literature as a sacred grove. This is one strong perception the IK-holders of the Akan culture hold as an environmental ethic of nature. Because of what is usually said about such places, common knowledge in the ensuing communities, plus the many restrictions of entry except for a selected few members of the community, rarely tamper with the resources in such places. The following are the responses from the participants:

*The **chief** said, “...we have places that are only meant for our elders...that forest area you crossed before coming to this town is a special place where we can go and perform various rituals and purification for the people of the town...we came to meet our grandparents do it and we were told never to cut the trees there nor farm there...”.*

there are streams in there and it is just like the normal forest with all that is in them only that if you go there without permission and purification the spirits will deal with you and you can easily get missing in there or be taken by fairies ...”.

*“The **traditional priest** indicated that, “...there are places which have very thick forests that the chiefs and elders of this town have reserved, and we are not permitted to enter because they bury people from the royal family there. There are a lot of dangerous spirits there and when you enter and take anything from there the gods and spirits there will deal with you unless the chief gives you permission and even that one they have to do some rituals for you before you can go and even get a leaf or bark of tree for making medicine. We don’t also hunt for animals in those places...”.*

*The **herbalist** said that, “...the forefathers were very wise and so people have to be obedient to their instructions and should also know that it is not every person who can walk into a bush or forest to pluck any leave or cut anything and use as medicine if that person has not been initiated or called for that...they should have eyes and the spirits of the fathers should know him/her...there are places I can enter and you cannot unless you receive a spiritual bath and some of the forest areas that have been reserved in our villages and towns you can’t just enter and come back without any proper ritual and survive in peace...”.*

*The **elder** said, “...if not that we need to do something very important that I will enter that forest and get to that river inside, I never enter by my own accord because I know the spirit of our fathers would not spare me...the children learn the footsteps of the elders so I am careful how I live so I can also advise them... I only don’t go to such places because of what the elders have said not really because of anything in particular...”.*

*The **youth** said, “I am very afraid when it comes to certain things even though I go to church...I have been told we do not eat fish from the stream/river in that thick forest...I have seen some mad people in this town that people say they ate from the stream/river...I can’t tell whether it is true or not and they also say we should not cut any tree or use catapult to hunt any bird or squirrel in that area...I want to be safe besides I don’t need anything from there...”.*

There is a very strong spiritual perception of the presence of ancestral spirits and other spirits in certain places, especially the reserved forests and places seen as sacred groves (nsamanpow). These places however, are some kind of habitat of spiritual forces as the people have to do rituals before they make entry. Doing otherwise bring negative repercussions on them and their family members.

5.3.1.3 Spirit Permeating the Lives of Water-bodies

The perception that the spirit permeates the lives of everything in nature was also related to water-bodies by the participants:

*The **chief** said that, “...You cannot cross this river if you have stolen items on or have shed blood...we know that in this community by what our elders who first settled here told us, that the two of the rivers in this town are very kind and that they are females or mother...the other one is a male water-body, very wicked that you dare not offend it or allow anyone who to call your name and curse you with him...”.*

*The **elder** said, “...If you are carrying stolen goods from another town and you reach the river in our town, you will have to drop them behind or else you will drown if you attempt to cross the river...the male water-body if you make a mistake and go in into it (the water-body) on the day, they said we should not go into it, some catastrophic will happen to you...as for that river, it has no mercy oh...as for that one they fear but when you mention police or court or even beating them they don't fear...”.*

*The **traditional priest** said, “...If you need a child and you go and stand by the river and ask it for children you would soon become pregnant...and you cannot cross this river if you have shed blood...water-bodies are spiritually powerful...it is the reason why even Christians baptize in it so they can even get power because there is also power in water-bodies as well...people see the physical manifestation or bodily form of the water-body at certain times...there are three types of water-bodies with regards to their temperament as, “...nsu fitaa’ (white water), “nsu kokoo’ (red water-body) and, “nsu brafoo’ (very temperamental water-body),, “Nsu braafoo’ are water-bodies perceived to be very wicked...”.*

*The **herbalist** said, “...individual would suddenly start panicking and would consult any revered person in the community and even go to the chief to report the incident for the matter to be settled if the person called one of the Akan community water-bodies or a combination of these to curse the individual even if they are sure they have not committed the crime he/she has been accused of...I believe there are spirits in water-bodies that is why when you want to curse somebody who has offended you within a short time their stomach become bigger and they have to go beg the river and confess their wrongs...”.*

The **youth** said very little on the perception about water-bodies but just mentioned that in their village he is told that, *“some of the rivers are good and some are very wicked and some can even make a car get an accident when it is crossing on a bridge made over it and fails to blow a horn or signal that it wants to cross...”.*

The participants generally perceived water-bodies to be some smaller gods or deities and that they have a gender, which is based on various emotions they express, and the judgment they bring on persons who become social misfits, especially as participants mention their names to curse, resulting in instant repercussions. These happen to be some spiritual perceptions that make participants’ cultural groups value and care for the water-bodies.

5.3.1.4 Spirit Permeating the Lives of Wild Animals

The perception that the spirit permeates the lives of everything in nature and in this case the lives of wild animals was also recounted by the participants. The following responses reflect an exploration of some of these perceptions:

*The **chief** said, “...our fathers were purely idol worshippers and many of them hid their gods in the forest during the time of war and some got missing but you should know that majority of the Akan houses have gods there...however we do not know whether people stole them or some animals carried them elsewhere...some of the gods actually are believed to been swallowed by some wild animals that is why they are violent or sometimes that hunters could retrieve some strange elements from their intestines that are usually some of these gods...”.*

...in situations where some of these wild animals reproduced, similar powers were transmitted to the offspring and some of those parent animals that did not survive and died and eventually decomposed into the soil where absorbed by the plants that grew nearby and were also infused with the same power... ”.

*The **elder** said, “...most of the wild animals have spiritual powers and you cannot just kill them without having any power backing you...but the most dangerous thing is that some of the smaller gods live inside some of the wild animals and if you kill them, they can hunt you in your dreams so much you will get tired and fall sick or die...There are some plants and trees also like that are very powerful especially those that grow in places where there are god, even some of them our great grandparents’ gods that they went to hide in the deep forest during the wars...some animals become more dangerous even when you kill them they will keep haunting you in your dreams...even like the one I told you, I went to cut and I fell sick seriously that I nearly died.. ”.*

*The **traditional priest** said, “...even me the smaller god I am working with now, I got it from the gut of a wild animal that a hunter identified and showed it to me... You know when I was telling you earlier, our fore fathers when there used to be a lot of wars that our warriors had to go into the deep dark forest to go and fortify themselves so that when you shoot them the bullets would fall to the ground, most of them hid their god in the forest and many of the gods sometimes were dug out by some animals and others swallowed them... ”.*

*The **herbalist** said that, “...when you get certain wild animal body parts especially from animals that hunters usually discover very strange, strange object inside their stomach which are mostly powerful smaller gods...and when body parts of such wild animals are mixed with medicinal plants it produces very potent and powerful medicine that is able to heal not only physical sicknesses but also especially if the disease is a spiritual one...it even heals it instantly...some powerful plant are the plant that grow in places that had certain smaller gods buried or dead and decomposed carcasses of animals that swallowed these gods into their stomach and intestines...if you have eyes you will see them and usually plants that cure strange diseases and spiritual diseases have these powers in them... ”.*

*The **youth** said, “...I do hear people say in our community and in our village that some wild animals in the forests are very dangerous because dangerous powers are in them and it takes people who have eyes to see them... my uncle told me one time that in the olden time when the Akan people were going to war, they would go into deep forests for spiritual bathing and usually when the war starts many hide their smaller god in the forest which sometimes animals pick up and swallow and this makes those animals very powerful...”.*

Participants perceive many wild animals' behaviour as having a spiritual power, hence the reason to avoid killing them for no good reason. Wild animals like antelope, bush goat, bongo antelope, buffalo, baboons, and pangolin are the few wild animals which participants consider to be inhabiting spiritual powers.

5.3.1.5 Spirits Permeating the Lives of Tree plants in Forests

The permeating of spirits in living things is also indicated in participants' responses on their perceptions regarding the tree plants in deep forests. This is part of the perception that nature, living and non-living creation are true grounds of spiritual reality. The following are some of the statements made by the Akan cultural group participants regarding such perceptions:

*The **chief** stated that, “...our elders do most rituals in the deep forests that is why it has been reserved...our ancestors live in such places and if you are permitted to enter you do not have to go there because you will see what you are supposed to see and it may affect you spiritually because it will be a disobedience to go to places where elders of the community have told you not to go...yes most of the time when the traditional priest and herbalist who do some rituals are allowed to enter because they would not destroy anything there...they may only take a few leaves here and there to make medicine to help some of the community members...the lands are for the entire community even though we are the IK-holders and we will make account of it to the ancestors”.*

*The **elder** said, “...most of the trees are also seen to have some very powerful spirits residing in them and usually huge tree trees in the deep dark forest with some very unique characteristics may have these spiritual factors...”.*

for instance. I remember, when I first encountered this popular tree the, 'ahomakyem'...but the, 'Odi' seed that I showed to you it's a real potent medicine...once I remember when I accidentally, went to weed somewhere and cut this, 'odii', the way I suddenly fell sick when I came home, Infact I nearly died and I think I was spared because I was ignorant of that species that is why even my life was spared..”.

*The **traditional priest** said, “...the spirit of our ancestors are in the deep darkest forest (kwaeberentuo mu) and that is where we usually bury some of the chiefs even though it is not in every forest but most of those forest that you will hear that it is very scary and dangerous to enter, it is truly dangerous and when you walk through you will meet a lot things – strange animals and strange human beings and spirits...and if someone is very sick that even doctors have given up on and we go get just a small branch of tree with fresh leaves and even drop on the person, the person would rise up...at time if you want to pluck some plant for medicine, the plant would just suddenly frown and others tell you they are tired because they travelled the previous night... Some of the trees when you get close to it, it frowns its face at you and some jeeringly wink the eye telling you to leave it... trees talk, I can hear their voice...”.*

*The **herbalist** recounted that, “...many rituals have to be done before you can enter certain forests to pluck medicine and during such times you really have to be attentive to the spirits as these plants and trees speak when you get to them...some tell you they can't help others smile and welcome you to pluck leaves and cut some twigs and remove some bark...but truly if we get medicine from such forest they are very powerful and quick in action...we always have to get permission from the chief of our town in order to enter the forest...it is God who created everything but on the earth here it is the chief and palace people that own them...once when we were in the forest cutting parts of the tree, the tree spoke and said, “they don't cut me! And out of shock and fright we ran the house but it followed us to the house we saw it at night...”.*

The **Youth stated**, “...I have heard it that some trees are powerful like the, ‘homakyem’ that they said blood comes from it when you cut it...they said it is very scary but I have never seen any of it and I wouldn’t want to see it because I don’t need it...”.

The participants believe that their forests are inhabited by spiritual forces. However, as one of the participants recounts, such forests have the power of healing terminal diseases; on the other hand, they are respected for fear of evil spiritual encounters. What looked quite phenomenal was the demonstration of animate characteristics by certain plants and trees, which is the reason some of the participants perceive them to be inherent of spiritual powers.

5.3.2 Summary of Akans’ Perceptions for CSEE

The participants have underscored various aspects of the natural environment which they perceive to be infused and pervaded with spirits. The perceptions of such spiritual aspects of nature have been possible probably because all their human senses are aided by some spiritual senses or as Goduka (2000) puts it, spiritual influence.

5.4 Akans’ Communication of CSEE

In exploring the Akan participants’ CSEE communication, the participants were asked to respond to conversational interview question (CIQ) 4 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

On the transmission of knowledge of cultural environmental ethics by the cultural group, the major theme captured by the conceptual framework developed from (Goduka, 2000, pp. 75-76) was the “use of oral traditions as essential elements of indigenous philosophies, spiritual wisdoms and worldview: communicating with various manifestations of inner and outer spirits which are consciously formed”. Under this theme, the key aspect that was selected was all the various ways in which indigenous people orally transmit knowledge on their culturally-specific environmental ethics of nature.

5.4.1 Akans' Use of Oral Traditions, as essential elements of indigenous philosophies, spiritual wisdom and worldview

The oral traditions are intended to express the wisdoms and experiences, histories, spiritual and cultural values of the people using manifestations of inner and outer spirits. They served as the indispensable tools for communicating the indigenous philosophies and the spiritual wisdoms of the people, as well as their worldviews (Mundy & Compton, 1991). Under this theme, the key communication tools include outward expression of the spirit within or without in stories, folktales, proverbs, idioms, symbols, emblems, names of people and places etcetera, to express wisdom and experiences, histories, give instruction, and express spiritual and cultural values. These aspects of communication serve as an avenue through which the cultural people become conscious of their cultural environmental ethics and help teach their younger generations. The different means of transmitting IK has been categorised by Mundy and Compton (1991) into six different forms which include folk media, indigenous organisations and social gatherings, deliberate instruction, records, unstructured channels and direct observation. This grouping was used to help organise the themes developed from Goduka (2000).

5.4.1.1 Oral traditions that embraces folk media

Participants' responses indicated that they and their cultural groups had different oral traditions - storytelling, fairytales, myths, rituals, festivals, durbars, dances, communal labor, proverbs and traditional songs to communicate knowledge of their natural environment or to make their community members aware of their environmental ethics of nature. The following responses were taken into consideration:

The chief said, "...when we hold durbars and festivals we teach them and every month too there is a meeting for the whole community and we do teach about lots of things happening in the community a greater part of which is connected to nature and address people's concerns and work together...we only tell stories to toddlers but for adults we tell them proverbs because they can think and would not take those, 'kwaku ananse stories'..."

An **elder** said, “...I tell the children what I was also taught, and I ensure they follow us when we meet at the chief palace where the elders gather and share their minds and the youth could also ask questions that bothers their mind...”.

The **traditional priestesses** said, “...if we do rituals, all the people that come there learn something...telling stories are becoming outmoded because the children watch TV and learn some stories in school, but which adult will be hearing stories now except they hear things that sounds scary, fearful and much dangerous they rarely take what you say serious...”.

A **herbalist** said, “...I usually tell my children some of the histories about how certain things happened in our family from my great grandparents that made me also become a herbalist...I tell them how certain plants came to be called their names and powers that are in certain plants and animals and in deep forest because of my job and they learn a lot from my conversation...they are all true all the same...”.

From the responses of participants, all forms of communication that are somewhat entertaining are still prudent measures taken to drive home, an in-depth consciousness about caring for the natural environment.

5.4.1.2 Oral Traditions that are Deliberate Instructions

Some oral traditions are also given as deliberate instructions for the members of the community to adhere to their CSEE. This is captured in the following quotes:

The **chief** said, “...evil or bad days’ which varied from community to community in which day(s) they are not supposed to either go into the river to fetch water, go the farm, or harvest even food stuff behind their own backyard or pick firewood from the forest...”.

The **elder** mentioned that, “...there is non-hunting seasons when they are not allowed to even pick their guns or enter the forest in addition to various wild animals they are forbidden to hunt either because they are perceived to bring evil on them or the community or they happen to be the totem of one the eight clans of the Akan...”.

*The **traditional priestess** indicated that, “...people are not forbidden from hunting other clans’ totems. They may only refrain from hunting them for their own respect for their neighbors who have that animal as totem...”.*

*The **Herbalist** said that, “...it is an abomination to remove the whole bark of a tree but to take portions at a time if not evil will befall you and the medicine will not work again the next instances you come to another...”.*

*The **youth** indicated that, “...we heed the instruction for the community because the elders like cursing young people who are disobedient to their instructions...honestly, the days they say we do not go here or there, I don’t do otherwise...I rather play draft with my friends and chat with my girlfriend...”.*

From the responses of participants, obeying instructions from elders or traditional leadership regarding environmental ethics are still relevant. Where some members of the community flout such instructions and directives, there are negative spiritual, physical and financial implications.

5.4.1.3 Oral traditions embedded with Frightening Unexplained Sayings

Although oral traditions generally express the wisdoms, experiences, histories, instructions, cultural values and spiritual values of the cultural group for environmental ethics, some participants indicated that some sayings from their elders regarding their interactions with the natural environment get them frightened. These are captured in the following responses from participants:

*The **chief** said, “...but I was trained to not ask any silly question from the elderly because it is said that if you want an excuse to disregard authority you keep asking, ‘why not’...Yes it is true that it is not everything that our elders explained to us, sometimes some of the scariest statements... but as a young person growing up, I was wise enough not to meddle in the affairs of elders so I just accepted what they kept saying to us...”.*

*The **elder** expressed that, “...our elders never tell the reason behind some of these injunctions not to do this or that and even if they do they do not tell us the detail, but they just attach dangerous gods to certain places and certain wild life resources.*

This has kept most of the community members in fear, even me I fear many times to do certain things because truly when you disobey you see lots of evil consequences, if not on you, you would see it in your family and for that reason... ”.

*The **traditional priest** said, “...if you don’t have fear as a person you will not live long they say...I am not saying when you see something and you get frightened, I mean having some kind of reverential fear for instructions and especially caution...I remember once when we went into a deep forest at time the one who gave me more powers to do my work was taking me through some initiations...we were cutting some tree when someone came out of the tree and shouted they don’t cut me...I urinated on myself out of shock and myself and my mentor ran bare footed out of the forest...in the night the tree followed me and I could hear the strong wind...really scary...I do not understand why things are like that and that is why I said there is something in this world...so maybe that is why our elders didn’t go deep to tell us everything but would only say do this, don’t touch this or that...those who obey are always safe... ”.*

*The **herbalist** said, “...if you are not bold you cannot do my type of job...things you see in the world physically like that are not all physical like that oh...if you don’t have eyes, you take things for granted and that is why things happen to people (with no eyes) unawares and sometimes someone dies suddenly or get attacked with some strange sickness...you don’t just touch go the forest and just touch anything (trees, water-bodies, animals) anyhow like that oh...there are lots of spiritual forces in creation that is why they can hear you when talking to them...we came to meet some of things and we also followed, it is not everything you will understand because it not everything our elders explained to us... ”.*

*The **youth** said, “our elders and the traditional leaders are always putting fear in us about places – some land somewhere, some water-bodies - rivers, lakes, streams, and some forests and wild animals...almost everything in nature...those at home they don’t say such fearful things about but the wild things all the time they tell us scary things and keep saying don’t do this, don’t do that but they never explain why they say them and that is the sad part... ”.*

Participants came to a kind of consensus about the elders not explaining, “everything’ in detail leaving them to just obey without further questioning. The experiences of scary and frightening episodes are the reasons why participants desired to know but the negative spiritual implications prevent further questioning. However, through these, frightening unexplained statements, participants have been able use their efforts to deliberately care for nature as a cultural environmental ethic.

5.4.1.4 Oral Traditions embracing Direct Observation

Responses of participants regarding the means of transmitting their CSEE to other members in the community go beyond just orally making certain statements or giving instruction: This is evident in the following responses given:

*The **chiefs** said, “...every one of us learnt by observation...it is said that the back born learns the footsteps of the first born...”.*

*The **elders** said, “...what you the child see an elder do you automatically learn and follow us the adults...”.*

*The **traditional priest** said, “...this job I do, I was sent to stay with someone and learn and do as she does, I just copy...”.*

*The **herbalist** said, “...when I see my father pick the leaves, I keep in my head because sometimes he doesn’t even say anything and when he is mixing thing at home he would call me to come and see what he’s doing and many times he would hardly say anything...”.*

*The **youth** said, “...as I observe what the elders do I learn and teach my kid brothers to look at me and learn from me...”.*

The unspoken instructions and wisdom to follow and copy good behavior towards the environment is somewhat an abstract means of communicating IK about the care for nature as revealed in the responses of participants. And the elderly intentionally perform certain actions in relation to the natural environment for the young people to take heed.

5.4.2 Summary of Akans' Communication of CSEE

The participants mentioned various means by which their knowledge of CSEE is transmitted to other members of the Akan cultural group: storytelling, fairytales, myths, rituals, festivals, durbars, dances, communal labor, proverbs, traditional songs, direct or deliberate instructions about various components of nature, frightening and scary unexplained sayings about various components of nature and direct observation. The purpose of these oral traditions is to make their people aware of their histories, their spiritual and cultural knowledge, values and wisdom that make their people value and care for nature, hence preserving it for future generations. Participants emphasised that stories are usually used to trigger the interest of children, while proverbs are used to make adults use their wisdom and discretion regarding their natural environment.

CHAPTER 6

FINDINGS AND DISCUSSION OF ZULUS' CULTURALLY - SPECIFIC ENVIRONMENTAL ETHICS

6.1 The Zulus' Nature-Related Data: Voices of Indigenous Knowledge Holders

The nature related data generated from the responses of the Zulu IK-holders who participated in this study and the conceptual framework developed from Goduka (2000) were used to help in the organisation, presentation, analysis and discussion of the findings in this chapter.

6.2 Zulus' Understanding and Practices for CSEE

In exploring the Zulu participants' CSEE understandings and practices, the participants were asked to respond to conversational interview questions (CIQ) 1 and 3 respectively in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

In presenting the findings and discussion of the Zulu cultural groups understanding and CSEE Practices, the same guidelines from the conceptual framework applied under the Akan cultural group were employed. Thus, under the understanding and practices for both cultural groups, the themes were similar (see conceptual framework).

6.2.1 Zulus' Personal Responsibility for Inner Self and Inner Peace

The inner peace the participants get as they connect to their inner-self, regarding their actions towards nature and the inner peace that comes to them through their obedience to the elders, exhibit an understanding that informs practice for environmental ethics.

6.2.1.1 Accepting the Privileges Enjoyed by Traditional Authority

This is a kind of understanding that informs their personal responsibility to practice environmental ethics for nature. The expressions and responses of the participants in relation to this understanding and practices for environmental ethics are captured in the following excerpts:

The **chief (induna)** indicated that, “...a person should have an understanding that every individual is different and should be distinguished from others in terms of their role...even in the royal house we are not all the same and we have to respect that... if you understand the way to care and value nature – the earth, plants, animals, water-bodies you would obey what our traditional leaders tell you to do or not to do about them...”.

The elder (umdala) said, “...you are not the same class as the king so you cannot be wearing what belongs to the king and royal family... We are not all the same and we must understand that always...I know that I am not the king and we are different in terms of our position so I don't know why I should behave like I am the king...I don't even know which people we have now who can even wear the leopard skin and have the guts to ask why can't I wear them...asking, is the king more human than myself?...They forget there is a hierarchy...They just hate the king...different clothes are also worn like *ibeshu* (protect your back), *isinene* (protect your front) and *injobo* (for your waist) all these are different clothes you can wear to make you distinct from the king”.

The **diviner-spiritualist (sangoma)** said that, “...in every society there are different positions and the privileges that go with it, it is not everyone who will be allowed to have access and people have to show that respect for those who are higher than them... you have understanding of caring and valuing nature if you obey what the elders and ancestors say to you about the things in nature like the water-bodies, plants and animals...”.

The diviner-herbalist (inyanga) said, “...there are things that are reserved for only the royal families and even in my job it is not every plant or tree that people who are under me can go and harvest for medicine...if it is for the king or chiefs, it is for them and we have to accept that...certain plants (names not disclosed) are only meant to be used as medicine for people of the royal family and not for ordinary members of the community. And in harvesting it is only the *inyanga* and in his absence his/her assistant that is allowed to harvest and even in that you have to go through some spiritual initiations processes...”.

The youth (intssha) said, “...to understand what valuing and caring for nature is, one has to have respect for the things before they can care for them and know which one is used by either the kings, the chief and sub-chiefs, women, the youth and others... in every society there are people who we can say to be wise or have understanding and those people, I believe are the ones who listens to those who are superior to them, so understanding nature care and valuing it will mean you obey the traditional leaders who are directly in touch with the lands, water-bodies, forest and things in the forest...”.

Respect for constituted authority is paramount to the participants and anything outside of this is seen to jeopardise the socio-cultural values of the Zulu people. Some members of the community though, show a certain level of equality with traditional leadership, not recognising pyramidal leadership and authority structures. The reason for this could be due to these members recognizing human rights above that of traditional leadership and practices.

6.2.2 Zulus’ Collective Responsibility of Caring for Mother Earth

As explained in the conceptual framework, under collective responsibility, the Zulu cultural people see the earth as a mother and understand that it provides all the needs of the inhabitants for their survival and sustainability; therefore, they protect the earth’s resources.

6.2.2.1 Preservation of Lands, Forest Habitats and Water-bodies

Participants expressed the need to preserve natural resources like the land, forest, wild animals and water-bodies upon realising them as part of mother earth’s resources, which they understand as their collective responsibility. The following expressions of participants capture some of these understandings:

The chief (induna) commented that, “...what are we leaving for the next generation as our ancestors left these natural things for us...we have to make every effort to keep and care very well for the forests, lands and water-bodies in our communities so the future generations will not just suffer for nothing...”.

The elder (umdala) put it this way, “...It is only animals we rear at home that we don’t protect...I mean we kill some to eat...we must not misuse what is in the nature (wild species)...”.

we must protect them and not destroy so that we will not be suffering in the future with our children...the animals are more important to the king, the people and their generation so animals were not killed like flies...also we ensure that we grow new plants when removed or cut... ”.

The diviner spiritualist (sangoma) said that, “*...if we don’t take care of these water-bodies, plants and our lands, our ancestors will not take it kindly with us...we will be punished by them because they left something for us, that is why we are alive now... ”.*

The diviner herbalist (sangoma) said, “*...I don’t have to destroy the little we have in our nature. I must put back the trees that I cut...when I remove the bark of a tree, I don’t take the whole circumference of a bark of tree...any plant you harvest too you have to plant some back... ”.*

The youth (intsha) also said that, “*...if you have an understanding of caring for the environment you will ensure that every plant or tree that is removed or destroyed must be replaced...when you also hunt for wild animals, you don’t hunt everything for example babies, females and immature ones so they can produce more... ”.*

The preservation of nature components (like lands, forests, wild animals and water-bodies) for the future is of utmost relevance to the Zulu cultural group. Thus, every effort is made for the people to protect their natural resources.

6.2.2.2 Love for Wildlife and Hunting

Participants expressed their love for caring for mother earth resources and in this case wildlife, as part of their collective responsibility. The following are some of their expressions regarding such:

The chief (induna) narrated that, “*...when we (amazulu) used to fight lions and ferocious animals with bare hands and sometimes a spear, it was just a way to get the knowledge of how they behave so we could conquer them if we happen to meet them in the wilderness alone or in a jungle somewhere in the future...we loved the wild animals...the bravery of Shaka and his brother were as a result of their ability to kill lions and other ferocious animals like leopards with their bare hands and sometimes with only a spear... ”.*

they fought and killed strong cattle as they would other non-violent animals...these gave them the position they occupied...the kraal they built was in a military protective manner that housed all the families with... ”.

The elder (umdala) adds that, “... *interest in wild animals is a priority in our culture, so even wild animals that could be a threat to life, we did not attempt to kill them to go extinct so only spears were used and the men always fought them with spear and bare hands...this was done only to demonstrate bravery and ability to survive with them in the wild....there are even some families who when they even noticed that some of their favorite wild animals are not seen often, they would intentionally send men to go hunting for them, not to kill them but to only capture and afterwards they are released into the wild... ”.*

The diviner-herbalist (inyanga) said, “...*nature is beautiful, when you see all the vast land with the green vegetation and inside it with different wild animals, the colourful birds and many more...even see how the rivers go through those forest... amaZulu has great outstanding histories but things are changing now due to many things – poverty, government, disrespect...but years ago our people had lots of heroes who were able to kill wild animals like leopard, lions with their hands only and killed them... ”.*

The diviner-spiritualist (sangoma) said, “...*the water-bodies are really beautiful to see as well as the plants around it and that is why even our ancestors and other good spirits stay inside it...years ago we had lots of heroes, but now a lot of our men are cowards because they are disrespecting our ancestors by their actions, so a lot of the men now have no much strength and cannot even stand a wild dog...only a few men can stand the lion, the leopard, now with their bare hands but if the people take the ancestors serious and give the necessary sacrifices and rituals and protect their water-bodies, lands, forest, they will help them... ”.*

The youth (intssha) expressed that, “...*nature is very beautiful to behold...I love the nature...I love to see the animals and the forest reserves like the national parks they are very nice to see...I was told that during the late apartheid times there was a man that some police wild dogs were released to chase and torture but God being so good, not knowing that man was one of the people that had the strength to kill*

lions before...so he grabbed the wild dog skillfully, held the two jaws open and break them and the wicked police were standing there in a shock, but now I don't know if there are still people like that...I wish I was one!... ”.

Physical strength is perceived paramount in the Zulu culture as they sort of trained the young people with fighting ferocious wild animals for bravery, skill and wisdom to live among such dangerous animals. Meanwhile, efforts made to avoid cruelty towards or hunting the animals happen to be a kind of cultural EE that helps to endear such wild animals to the people.

6.2.3 Zulus' Interrelatedness, Interconnectedness and Interdependence with the Living and Non-Living Creation

The participants expressed how their cultural group and themselves have a sense of relatedness and connectedness with water-bodies and certain wild animals, and at the same time are interdependent, since one would not do well without the other. Participants generally explained interconnection with certain wild animals, and their interdependence and interrelations to water-bodies as their ancestors. These are captured in the following excerpts:

The chief (induna) said, “...we believe as Zulu people that we have some kind of spiritual link with some animals that is why you may either see their skull or bones in our premises or their skins used as various forms of clothing and regalia, as bandannas, anklets or bracelet...and many people show the connections they have with those animals by their surnames...all such people in one way or the other have an ancestor been helped or directed by the animal...the names speak for themselves, for instance...every society that want to live in peace have to always ensure that the spirit world is not against them because of their many wrong doings...if we do wrong we do some rituals to ask for forgiveness from the spirits in our water-bodies guided and directed by sangomas and some inyanga...”.

The elder (umdala) said, “...some clans wouldn't eat some animals or even prepare their meat because it's their ancestor and therefore respect them...in other instances the particular wild animal might have helped a warrior in the family...for instance, Ndlovu linked to elephant, Ngwenya linked to crocodile, Bhele linked to leopard, Mfene connected to baboon, Umajola linked to house snake or snakes,

Cele connected to zebra, Khumalo connected to dassie, the hyrax and Hadebe linked to crab...water-bodies are residents of many benevolent spirits and the ancestors too live under the water-bodies...sangomas help to do rituals in the water-bodies to our ancestors...they also punish when we do wrong to the water-body and we go there to pacify them...”.

The diviner-spiritualist (sangoma) also said, “...amaZulu are connected to some animals as well and ancestral spirits live in those animals...sometimes the simplest way to show that there is a spiritual connection between the person or family and that particular animal is the family names those people have...for instance, Ndlovu connected to elephants, Khumalo connected to the dassie and there are many more but some people only love the name and are using them...”.

The diviner-herbalist (inyanga) said that, “... there are several animals that are connected with the people and their names are normally used as the surname of those people...all of us have some of such surnames and the history behind many of such surnames is that some great grandfather was assisted in one way or the other by those wild animals and has become a part of their family that is why they bear their names...there are several names, some are ngwenya connected to crocodile, Hadebe connected to crabs...sacrifices and rituals for good harvest, fruitfulness and so on are usually performed in, or around the water-body...”.

The youth (intsha) said, “...we amaZulu have a lot of wild animals that are believed to be our ancestors, but I am told that the surnames we bear indicates which of those animal have relationship with you and the meanings of those surnames are very crucial to them that ...I love them and will not want to harm them anyway... most of the time our elders do rituals in forests and most especially in water-bodies with assistance of the spiritual leaders: sangomas and inyangas...”.

There exist a multiplex of interrelatedness of the Zulu cultural people with totemic animals in which is expressed in many of their surnames, while others keep animal remains in their homes as some sort of reminder and expression of connectedness. This has indirectly helped to preserve certain species of animals because of a cultural EE.

6.2.4 Zulus' Individual and Family Identities within Sociocultural and Spiritual Contexts

Participants' responses about their understanding and practices for environmental ethics also revealed an environmental ethic where an individual cannot be completely separated from another to the extent that some people's character could only be identified upon being exposed to some of the wild animals that are common to the cultural group. This is explained in the following excerpts:

The chief (induna) narrated that, *"...mothers were also known to train their male children to be heroes by whipping them with a ropelike disciplinary whip called, 'Isofithiya' not to come back to house but to confront danger when the boy makes an attempt to run home from dangers. Also, potential ladies to be selected for the prince or other royal family individual to marry were exposed to snakes unawares usually the mamba snake just to see how she would react...this was also done to check their bravery and test their respect in their own estimation"*.

The elder (umdala) expressed that, *"...your bravery as a man to become a hero and also be able to marry the king's daughter is your ability to fight a lion and kill it with your bare hand. It was done to convince the king and his subjects that you are strong to marry daughter of royal family by your act of bravery and show your ability to look after and protect the woman; and as a woman who desires to marry the king or a prince you will be exposed to a venomous snake to see your reaction...when a candidate is able to overcome the ferocious wild animal with the bare hands, that person is crowned and hailed a hero who may also be rewarded with the privilege of marrying the king's daughter..."*.

The diviner-spiritualist (sangoma) indicated that, *"...our (izangoma) training, ngoma practice our bravery is very paramount because of the nature of the job and in the case we are compelled to hold snakes and enter the water-body and come out with the snakes even though it is to check our acceptance into our job...being able to do this was also a way to show that you are stronger and clever than the ferocious animal and can survive when thrown among them..."*.

The youth (intssha) said, “...*there are some few things I witnessed when I grew up in the royal home but they are very long time issues...now I don't think people are killing leopards, lions, tigers with their bare hands because now I think people are not very bold like those times besides the government does not allow us to kill most of these wild animals...probably that is why it is not common as it used to be when I was a kid...*”.

From the participants' responses, the Zulu cultural people identify themselves with other aspects of nature and share similar practices, beliefs (collective thinking); for instance, the character of some members of the culture especially the potential spouses for royal families could be determined with wild animals.

6.2.5 Summary of Zulus' Understanding and CSEE Practices

The discussion of the findings on the Zulu cultural group's understanding and CSEE Practices have underscored that participants' personal responsibility for one's inner self and inner peace, and the understanding that a person must be able to make a clear distinction between what belongs to the king and other members of their cultural group, informs the persons practice for CSEE.

6.3 Zulu's Perception for CSEE

In exploring the Zulu participants' CSEE perceptions, the participants were asked to respond to conversational interview question (CIQ) 2 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories. Details of what perception embraces can be found in the discussion of the conceptual framework used for the two cultural groups under study; however, it is worth noting that it covers aspects of spiritual and physical senses for gaining knowledge about nature that motivates a practice for environmental ethics. As captured under perception in the conceptual framework, the subthemes are discussed further.

6.3.1 Zulus' Perception of Nature, the Living and Non-living Creation as the True Ground of Spiritual Reality

Details that represent the broad theme under perception were used to guide the following discussion. Several subthemes under the major theme were drawn from the responses of participants:

6.3.1.1 Infiltration of Spirits in Skeletal Remains of Wild Animals

The perception that spirits permeate the lives of everything in nature, was emergent in participants' narratives. They highlighted that, skeletal remains of most wild animals and bones were considered deities with supernatural powers used for protecting homes.

The **chief (induna)** said, *"...one of the main things you will notice in the homes of traditional leaders are skulls of some animals and some bones which may be displayed in various places and in different patterns, these are the connections we have with such animals and link with the great spirits that protects the environment..."*

The **elder (umdala)** said that, *"...the skulls and the bones on roof top of our building are all part of the presence of our ancestral spirits and powers of the gods that brings protection and blessing to us in our homes..."*

The **diviner-spiritualist (sangoma)** said, *"...we are connected to the spirit world through the animals and some plants and when we keep the skull and bones and skins of some of the animals it reminds us of the presence of the ancestors and great spirits that bring protection and also help us to hear when we call the spiritual world...sometimes antelope was slaughtered to pacify ancestors when there are problems with the weather and lower yield of crop..."*

The **diviner-herbalist (inyanga)** stated, *"...the bones and skull you (the researcher) can see on the roof of this building and the ones hanged on this tree represent the gods we believe are in this place keeping us, protecting us, helping us and providing for us...they have ancestral spirits in them that is powerful to keep us safe in all we do..."*

The **youth (intsha)** said, *"...we believe that the skull and bones of an antelope and the water buck siting on the roof top of this building is a form of protection for our family..."*

The participants' perception about skeletal remains of certain animals goes beyond what the physical eyes can see; such that, for skeletal remains of animals to offer protection over a house cannot be explained by science.

However, such perception still shows how strong their interconnectedness is to certain animals and their respect for them; if such value is placed on the skeletal remains of the animal, then how much of the living? These perceptions somewhat demonstrate a care and value for nature.

6.3.1.2 Natural Forms and Forces as a Reflection of Inherent Spirits

The participants indicated that there is a clear behavioral pattern and thought about particular components in nature and that their features are descriptions of the spirits that permeate them:

The **chief (induna)** expressed that, “...our cultural group have the perception of some animals like monkeys, baboons, owl as evil animals that could bring bad omen and be used for bewitching people so they are not loved by our people especially when they keep coming to the homes...isikhova (Owl) – works the same with baboon...it is bird used for witchcraft...when it is making sound on your family it means someone is witch crafting you it’s believed to be sent by someone...when it enters home, then it is sent by someone...inyoka (Snake) like the mamba and puff adder are believed not to enter the family or home, if it does then it means there is something wrong happening in the family or home...iPuff adder has a teeth that is long and takes long to bite and only bite when you step on it. When it has bitten you, that is, ‘uyabola’ because it takes longer to heal...the mamba also doesn’t enter the family homes but it’s also very dangerous...the presence of the ancestral spirits (amadlozi) manifest themselves in the forms of snakes or mamba snakes and in dreams...in the, ‘umchwayo’ dancing actually a dancer make snakelike movement in one accord and sing alongside as signs of some perceptions of their relationship and admiration of snakes which are considered as ancestors...”

The **elder (umdala)** expressed that, “...we are connected spiritually with our ancestors who are seen as our intermediaries who pray to the supreme creator on our behalf.... consequently we are interconnected with spirits, animals, plants and other wildlife...we have no value for monkeys and baboon, they are used for bewitching people and for the leopard skin only the king is supposed to wear it...those who kill it for the king are considered as brave people and the king honours them as heros because they kill them with the bare hands...”

...the python are for training someone to be a sangoma and if you are able to hold it and dive under water with it and bring it back you will qualify...it's our belief that ufudo (tortoise) can bite you very silently with no sound at all and when you annoy it can fart at you and the fart follows you...in same way when you anger ingungumbane (Porcupine) it shoots its spines in anger especially at dogs that hunt them... ”.

The **diviner-spiritualist (Sangoma)** said, “*...green snakes are perceived as ancestors and therefore respected, valued and protected...pythons are perceived to be connected to the ancestral world and is therefore used for our sangoma training after going through, ‘ukuthwasa’ an initiation...and usually your ability to dive with a python under a water and bring it out qualifies you as a sangoma after you have received the call from the ancestors...crabs are also perceived to liase between the human world and the spirit world...monkey and owl are evil animals that can be sent by witches...for ingwenya (Crocodile) when you swallow its body fat it makes you immune to bewitching or food poisoning. In the river too if tasted your blood before, it can follow you and can kill you...and ubhejane (Rhino) have wounds below its armpit that is what we believe can heal any wound so it's difficult to get it and the ubhejane (rhino) horn too can heal cancer... ”.*

The **diviner-herbalist (Inyanga)** said, “*...our ancestors actually reward bravery...you become great man and take your family to a higher rank in the ancestral world...some wild plants like, ‘umdungamuzi’, ‘Idumamozi’(in isizulu) bring misunderstanding, quarrels and confusion if you take it to your home and you would be crazy if you make firewood out of it...This is just like how we see baboons and monkey and most especially the owl which operates only in the night...they bring evil upon family especially when they have been sent...Intibane (warthog) is very sensitive or afraid of thunderstorm and lightning and it gets slim during summer months because of fear of the thunder...Imbabala (bushbuck) too when it scratches you with its horn it is, ‘uyabola’ (wound would take long to heal) because its horn is very poisonous as it eats too many very different plants...insinkwe (duiker) is believed to have bile below its eyes (the teary dark or black structural appearance below its eyes)...the bile is outside because of the way it runs... ”.*

The youth (intscha) said, “...In fact I have not had experiences of these evil plants myself only that I have been told and we have had a few cases reported when I was growing up. But for the snakes I have seen some myself in our home in the village and we were told it is one of our ancestors that have come to visit us and so we were not allowed to kill it... Intibane (warthog) fear thunder very much and people are able to use them to tell likelihood of thunder and lightning...isikhova (owl) are also like monkeys and baboon they have withcraft powers...as amaZulu we do not kill snakes that come to our homes anyhow and so do my family because we respect them and know that most of them are our ancestors who have come in that form...you don't kill them like that if you don't know their mission...”.

The responses of the participants indicate that many of the wild animals have spirits in them that bring only misfortunes, curses and are therefore scared of them; hence would not kill them to avoid evil repercussions. The wild animals that originally look frightening like the owls (isikhoya) and primates like baboon and monkey are associated with evil, while snakes especially pythons are welcomed by the Zulu cultural people. Participants indicated that they are able to predict the weather using the behavior of some animals and prepare for or avoid ensuing danger. Generally, all the wild animals mentioned were associated with spiritual forces that manifest in their behavior and their mere presence. With regards to the plants, participants believe they cause trouble in homes when used for firewood; to the participants, they have some kind of, “evil”. Despite these spiritual explanations, it might be that the active ingredients in those plants release hallucinogens in the smoke which when inhaled cause those behaviors. Above all, these perceptions have generally helped the cultural group to value and care for nature as a cultural EE.

6.3.1.3 Spirit Permeating the Lives of Gender Biased Plants and Plants used for Connecting to the Spirit World

Participants expressed that some plants are gender biased plants and other plants have spiritual powers for connecting to the spirit world. The following are excerpts from participants' narratives:

The **chief (induna)** recounted that, “...during certain performance of some rituals the umhlanga mat, and umhlanga hut are used just for easy connection to the ancestors and this is done usually with guidance of some diviners like the sangomas and inyanga...”

the muthi made from ubulawu may be used in different way depending on the purpose and the occasion thus may be ingested, inhaled or used otherwise as directed by the diviner... some tree plants are usually harvested by particular group of people, for instance, 'umahlamba hlale' and, 'mazwenda' and you can't go near some am aware that is only male inyanga that can harvest and even those they are training cannot do the harvesting except under their instructions...".

The **elder (umdala)** said, *"...there are some plants that are perceived to be very potent when it comes to connecting with the spirit world and these are the plants believed in our culture to make connecting with our ancestors easier...we have this mat that we have used umhlanga (reed) to make that when you sit on it or sleep on it you can easily have directions and dreams from ancestors and when you visit powerful sangomas and inyanga they usually give some muthi that they used ubulawu plant to prepare and it can clean your body and your mind so you have clear dreams from ancestors... according to our tradition, there are trees that are not to be touched by a woman because if she touches it, it will get withered...a plant like, 'umazwenda' female don't touch it...and there are those trees that have traditional instructions on how and when to harvest them, depending on the season of the year. And some trees there are beliefs that you must talk with them on what you going to use if for before you reap it...".*

The **diviner-spiritualist (sangoma)** said, *"these plants (umhlanga and ubulawu) are considered sacred needing just a few rituals to make them very potent for communicating and connecting to the ancestral world and usually this comes through dreams when one sleeps on umhlanga mat or sit on them and or use the ubulawu according to directions...also usually as you approach the sacred water-bodies with the correct rituals which could even be singing with applauds for the spirits, you will see, 'amakhosi', our great ancestor the python and, 'inkosazana', queen of heaven in those rivers at night...".*

The **diviner-herbalist (inyanga)** said, *"...the spirit of our ancestors live in them (umhlanga and ubulawu plants) and when you see some other plants around the sacred rivers or water-bodies it means that our ancestors are around...many times you encounter the presence of pythons which is a representation of our great ancestor, the, 'amakhosi'...*

at night too, the great queen of the heavens show herself she is the , 'inkosazana'...there are some plants like, 'umahlamba hlale', 'umazwenda', 'umbopha nyamazane', 'isihlahla somdlebe'...only men are supposed to harvest them, females are not supposed to touch... in cutting a portion of certain trees or plants for medicine one you have to follow certain instructions or it will not work but this is a very deep process...you tie a beadlike rope around before you can harvest them and you have to request from ancestors before you start-cutting...I go through a deep process before I can cut certain tree parts for medicine...it is not everything I can tell you...".

The **youth (intsha)** indicated that, “*...learning at home has made me believe in a lot of spiritual and ancestral things I have used muthi that was very powerful for healing and for giving me certain dreams from our ancestors and the mat too from the umhlanga (reed) is also very powerful when you want to let ancestors speak to you in dreams...I have not found myself in a state where I encountered a plant that I remember I was told I cannot cut because I am woman or a man...there are plants like, 'isihlahla somdlebe', which am told women cannot touch but I haven't seen one before...".*

The responses of participants indicate that certain trees and plants are permeated with spirits that can detect and react to the gender of the people that touch them or try to harvest them. Probably, the spirits that permeate them and the way the cultural people have been able to use their spiritual senses to see into the spirit realm what happens when a woman approaches such plants, have informed a strong perception about such plants. Nevertheless, this perception obviously would help reduce the rate at which such medicinal plants are utilised by members of the cultural group. Many of the plants have spiritual connotation such that they could purify people's dreams and other links to water-bodies.

6.3.1.4 Spirit Permeating Sacred Water-bodies and Creatures

Concerning perceptions on their cultural groups' environmental ethics, participants also referred to some water-bodies which they consider as sacred places, and the creatures that inhabit them. In addition, the creatures on the banks of the water-bodies are perceived to be permeated with spirits and consequently inform participants' value and care for them. These are captured in the following expressions:

The **chief (induna)** mentioned that, “...the sangomas and inyangas uses the sacred water bodies as their main medium through which they liaise or connect to the spirit world for us through some rituals...we perceive in our culture that there are spirits in water-bodies and that rivers are not dead but have life like humans that is why other animals can live in them and not just die...most of our water-bodies are seen as been inhabited by our ancestors and therefore we are careful how we treat all those water-bodies...because of this all the animals that live in them are given special treatment because we believe that they are the ones our ancestors send to either give some directions to an oncoming danger, showing medicines for healing some people, guides to riches through communication with more spiritual people...”.

The **elder (umdala)** said, “...our ancestors show themselves in the form of snakes and our great ancestor, the amakhosi and, ‘inkosazana’ the queen from heaven and all the families in the spirit realm are very powerful...we also believe they live under the water-bodies that are very pure and holy and that there is beautiful world under these water-bodies, in fact we believe that everything is there and that those living there are very rich and everything is perfect there.....water creatures -fishes, frogs, snakes, birds in and around sacred water-bodies are all seen to be extraordinary creatures that serves as messengers between the natural world and the spirit world or the ancestral world under water bodies...all those animals are treated with some kind of reverence in that you don’t hunt them for food, or do anything that will harm because the consequences are not pleasant...”.

The **diviner spiritualist (sangoma)** said, “...the python is the, ‘amakhosi’ that is to say the mightier or the great ancestor. These pythons (amakhosi) and the other water spirits are living under the water with, ‘inkosazana’ queen of heaven...the place is like how we all do things in an organized society...everything is there just like the world we are living in but that place has everything you need to make you happy in life comparable to heaven... all the animals and plants in the water-bodies that our ancestors have directed us to come and perform rituals are all holy things and holy places...the snakes, the fish, the frogs, the birds, the crabs found in the water or around the sacred water-body are all sent by our ancestors...”.

our amakhosi (the great ancestor python), inkosazana the queen of heaven (who can look like female human with long hair and fish tail)...if our people treat them badly and do not respect them the ancestors will be angry and vacate the place or relocate by relocate by making them leaving the water-body... ”.

The **diviner-herbalist (inyanga)** said, “*...there are spirit in many of the water-bodies and those water-bodies themselves have life in them like the way we also have life and that is why snakes can live in the water and not die because the snakes will not stay in the water that is dead...we respect all the spirits, the amakhosi and inkosazana and also we respect where they live that is why the river is important and very special to us, so we treat them very nicely and with care...the spirits give us all that we need like rain and children when we go to them and perform the necessary rituals they show us what to do, even when we are in trouble and they show us medicine (plants and animal parts) to use...if you have the reverence for the ancestors you will not even be tempted to fish from those water-bodies, or catch the crabs around there, nor kill the snake or the birds that live there, or even the frogs that croak there because they are ones that pass message from our ancestors and the spirit world to us and also from us to the spirit world...all the plants around too you will treat them well... ”.*

The **youth (intsha)** said, “*...we are told that there are spirits in water-bodies but not all the water-bodies, rather those that sangomas go and do their things and inyanga take things from those places too...I believe but I have not seen any of the spirit in any water-body before...honestly for water-bodies what I am told is that there are spirits in some water-bodies, these spirits are our ancestors I am told and that all the living things both plants and animals in and around it are the ones who our ancestors send to tell us a lot of things and usually when you see a sangoma going to those places they will be singing and praising the spirits there with reverence so they would be good to him or her... ”.*

Participants indicated that most of their water-bodies including some vegetation on the banks of it are inhabited by water spirits which are believed to sustain life. Also, majority of the participants attested that water-bodies are living entities and that the presence of snakes in a water-body is a good indication that the water-body is alive, since snakes do not live in dead water-bodies.

The spirit living in the water-body according to the participants, are manifested as python, or the half-woman half-fish creatures (inkosazana) that people usually called mermaid. The creatures in water-bodies and around them serve as intermediaries and communication channels. Such perceptions somewhat make the cultural people protect water-bodies since they are sacred like described above. Reverence for instructions regarding such water-bodies and showing obedience to the ancestors, bring many benefits and blessing.

6.3.2 Summary of Zulus' Perception of CSEE

The Zulu participants indicated, that spirit permeate the lives of the following: skeletal remains of wild animals; gender biased plants and those used for connecting to the spirit world; sacred water-bodies and creatures that inhabit them, as well as natural forms that reflect inherent spirits living in them.

6.4 Zulus' Communication of CSEE

In exploring the Zulu participants' CSEE communication, the participants were asked to respond to conversational interview question (CIQ) 4 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

As previously discussed in the conceptual framework, communication of the knowledge of the environmental ethics of the two cultural groups is based on the theme, *'use of oral traditions as essential elements of indigenous philosophies, spiritual wisdoms and worldview: communicating with various manifestations of inner and outer spirit which are consciously formed'*.

6.4.1 Zulus' Use of Oral Traditions as essential elements of indigenous philosophies, spiritual wisdoms and worldview

As discussed in the conceptual framework, the indigenous people are known to employ various oral means to transfer their knowledge about their CSEE to other members of their cultural group (See details in section 5.4.1).

6.4.1.1 Use of Oral Traditions regarded as Folk Media

The various oral traditions mentioned by participants have been grouped for clarity of discussion. Mentioned here is folk media which embraces all the aspects of story telling, fairytales, myths, rituals, festivals, durbars, dances, communal labor, proverbs and traditional songs. The following are expressions of participants' regarding this means of communicating knowledge of CSEE to members of their culture:

The **chief (induna)** said, *"...on several occasions the elderly would tell stories about various species of wild and domestic animals by portraying them as though they are humans in the way they talk and interact with other animals...Sharing such knowledge piques the interest of the young ones and makes them to especially aspire to be like them as they notice their cleverness, wisdom, strength, intelligence and what have you...when our people are doing any cultural performances, they are all not just for entertainment...the regalia, the poems and the different dances like the hunting and snake dance all teach amaZulu certain lessons...there was also a time for initiation and during this time boys go for special training in the chiefs palaces and are taught the tenets of the zulu culture...the young girls go through the umhlanga dance ceremony and are honoured for keeping their virginity..."*

The **elder (umdala)** expressed that, *"...common knowledge of our cultural ways of valuing and caring for nature and how to relate to the environment are usually done through several means – setting of taboos for things considered abomination, telling stories and fairy tales especially to children...special kinds of dancing like the hunting-dance and snake-like dances are all way in which are cultural group pass some kind of knowledge about the natural environment to others...these are actually done to teach people what it takes to hunt and respect for ancestors..."*

The **diviner-spiritualist (sangoma)** said, *"... when I was a child, because of the way my parents used to tell me and my brothers and sisters nice stories about animals in the forest, I fell in love with the animals and always desired to be like them in one way or the other...at other times too, the stories made me realise I got to become careful about some of them especially if those I was hearing their stories happen to be ferocious... singing, praising, clapping hands, different movement of the body, dancing are all ways to tell something..."*

sometimes it is a message an ancestors is passing across using dancing like the snake dance...others is a spiritual encounter to reveal things... ”.

The **diviner-herbalist (inyanga)** said, “*...myths and stories were very common when it came to us trying to teach younger children to have knowledge of the environment and take care of it or be careful about certain wild animals...everything done in our culture has significance...even just the dancing, like the snake dance which people who are ignorant think they are just entertainment are all means of communication of our care and value of nature... ”.*

The **youth (intscha)** said, “*...For now we hardly hear stories, myself...I do not use any of these to teach my younger siblings, these are not popular...they want the TV games than siting them down to tell them stories out of the blue, but occasionally they do listen...we learn how to dance and there are different dances, all of which I think are ways of teaching members of our community some moral lessons...I know of the reed dance, the snake dance and the hunting-dance... ”.*

Participants indicated that stories, myths, fairytales and some forms of dancing like the snake, hunting and reed dances are not just for entertainment, but deeply rooted and means to communicate the knowledge about natural environment value and care. Besides, the passions with which some of the dances are conducted are all moral lessons and a display of skill and enormity of energy and wisdom. The need to fight or hunt ferocious animals and overpower them is necessary to be crowned a hero. These modes of communication happen to be prudent means of transmitting ecological knowledge to other cultural groups to uphold the values of their culture and be there for each other whilst protecting and preserving natural resources.

6.4.1.2 Use of Oral Traditions in the form of Dreams from Ancestors

Communication can be oral, visual, tactile and others but in a supernatural or spiritual form. This is expressed further in the following excerpts:

The **chief (induna)** said, “*...our ancestors are more precious to us and so we remember them often and make sacrifices for them...and the direct blessing are the dreams the ancestors give us to direct us when we are in any form of need... ”.*

The **elder (umdala)** added that, “...one way by which knowledge of how we care and value nature is transmitted to other members of our cultural group is through the dreams that come from our ancestors...”.

The **diviner-spiritualist (sangoma)** said, “...dreams come to us almost every time we close our eyes because our ancestors are always talking to us to help us and other people that we stand for...the mat we sit on, the skulls and bones we throw, ubulawu muthi and others makes us get even very clear and vivid dreams where our ancestors communicate to us about how to take care or use some resources plants and animals...”.

The **diviner-herbalist (inyanga)** said, “...our ancestors give us dreams as a very common blessing to guide us how to use plants’ or animals’ parts to heal and therefore we get much knowledge about how to use the plants, animals, water-bodies and lands is a means of communicating to this knowledge to people...sometimes too as an inyanga, I get dreams about certain plants and where exactly I can go to find it...”.

The **youth (intsha)** said, “...one way that we get the knowledge of nature – earth, plants, animals, water-bodies is through dreams that our ancestors usually reveal themselves to us and teach you...and even when ancestors visit young people to select them as sangoma, truly they usually fall sick and encounter very unusual circumstances that make them look too strange among their colleagues and family but all start with dreams...”.

Participants recounted dreams as one of their main means of communicating cultural value and care for nature. Upholding dreams is one of the means of communication that expresses the holistic personality, spirit, soul and body. Such spiritual communication is also purified with some sacred plants and the directives for preparing medicine, discovering new medicines, and even identifying certain wild animals that need to be protected. Thus, dreams are very significant to the life of the Zulu cultural people.

6.4.2 Summary of Zulus' Communication of CSEE

Participants have indicated that their cultural group uses several ways to communicate their CSEE. The main means of this communication is through oral traditions in forms of stories, myths and fairytales. Other forms of communication mentioned include dreams, and dances such as the snake dance, hunting dance, and reed dance.

CHAPTER 7

FINDINGS AND DISCUSSION ON SCHOOL RELATED DATA FOR AKANS AND ZULUS

7.1 Discussion of Findings on Teaching Akan CSEE in SHS and its Implications

In this section, findings on the school related data generated from the Akans (Ghana) are presented and discussed. The narratives for the individual participants (both IK-holders and teachers) are presented in the appendices (see appendices 11-29). The findings on how to teach the Akan CSEE was analysed using the deductive approach guided by Simpson's (2002) model as the conceptual framework. However, an inductive approach was used for the prospects and challenges and there was no specific theoretical framework available for this, therefore thematic coding was employed.

7.1.1 How to Teach Akan CSEE in Senior High Schools

This section presents and discusses findings of the views of the participants (IK-holders and teachers) on how to teach their CSEE in schools and it is guided by the conceptual framework developed from Simpson (2002) proposal on components for successful indigenous environmental education. In exploring the Akan participants' views on how to teach the Akan CSEE, the participants were asked to respond to conversational interview question (CIQ) 5 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

7.1.1.1 Connecting to the Land

Participants indicated that to teach their CSEE, the students/learners should be allowed to make consultation and gather knowledge about their CSEE in their communities from their parents and elders. This is captured in the following excerpts:

The **chief** said, “...we have the knowledge about these; the teachers may know little of what we practice. They should let the students come and we will teach them...”.

The **elder** indicated that, “...the teachers may know nothing about these since many of them attended schools that did not teach them any of these. It is us at home in the community who know a lot of these...”.

so they should ask the students to come home and ask us and the Elders and we will teach them to go and narrate to the teachers to document them... ”.

The **traditional priest** said, “*...It is not everything that a teacher knows...we have school knowledge and home knowledge that only the parents and the elders can teach and explain about our culture and traditions...They should book appointments and we will be glad to teach them... ”.*

The **herbalist** commented that, “*...the teacher could organize their students and come to us, so we could teach them and their teachers too, to teach others what we only can explain about our work... ”.*

The **youth** said, “*...the teachers could make their students come to the chiefs, palace when they are celebrating festivals and doing durbars so they can learn... ”.*

Teacher 1 said, “*...students whose parents or family have more knowledge on such cultural things could gather more information from home and their community... ”.*

Teacher 2 indicated that, “*...students could learn lots of such cultural values and practices from their community by asking indigenous people or people well versed in cultural things about some of the stories and myths and taboos and come to school with such information... ”.*

Teacher 3 said, “*...many of the students are from traditional home and areas where a lot of cultural things are practiced...they could get more proverbial peoples from such towns... ”.*

Teacher 4 also said, “*...the students could actually interact with people in the community and usually the elders who have a wealth of knowledge about these cultural values and practices and gather as much information as possible because I believe there may be a lot that people have no idea of and how they were able to put to the whole community and natural environment stable... ”.*

One of the key reasons that many of the participants suggested with regards to how to teach their CSEE, was the realisation that the teachers in their school may not be well versed in the local communities IK and cultural values connected to nature because of the westernised education system.

Thus, connecting to the land in this case stands crucial if the teachings are to be done in indigenous philosophies using indigenous pedagogies. The teachers acknowledge that IK-holders have the wealth of cultural knowledge of CSEE. The traditional priest recognises that there is knowledge and wisdom befitting for the home and another for school, but above all, the students and their teachers ought to connect to the land, tapping into its indigenous system.

7.1.1.2 Including Elders as Experts

Participants suggested that the schools invite the elders (IK-holders) of their cultural group to assist in teaching, which would require experts in their cultural ethics.

The **chief** indicated that, “...*teachers should invite us occasionally to teach the students elderly wisdom from the palaces and give the student opportunity to ask any questions about traditional things that our fathers were doing that bothers their (students) mind...it is the wisdom of our fathers that have kept us up to this time...I have gone to school small but I didn't take it that our elders have no wisdom because most of them did not have formal education...our wisdom is what has made our communities good and safe to live in...*”.

The **elder** said that, “...*the headmasters can hold some kind of open day and ask the elders from the palace to teach their students some of the things that they don't know...they think that we are archaic and we have no wisdom because they have gone to school... therefore, you the teacher must teach them very well to know that all that the elders (IK-holders) were saying to us are wise sayings and that the elders are wise...the students should realize and respect the sayings of the elders for their future...*”.

The **traditional priest** said, “...*the school should invite us to come and teach the students, they could even hold forums and all of us the experts will come and teach them the difference between culture and rituals...because they have mixed them and do not know the difference that is why they say those things about us...we will explain everything to them when we come...see what is happening to our water-bodies now and our forest!*”.

...Everything is being destroyed now because these children do not see the wisdom in what we say and they go to school and don't respect what we tell them...".

The **herbalist** said, *"...the schools can call us to come and teach their students and their teachers some of the ways our fathers took care of the environment and protected it till today using their traditional knowledge...the teachers should teach their children to know that we are wise and it is that wisdom that made their parents survive and did not die...before white medicine came we were surviving with our medicine...the student should be taught to realise that whatever we say, there is wisdom in it...".*

The **youth** said, *"...let the teachers organize the students on some days they want to teach those local ways of caring and protecting the environment and then invite the those from the area with more knowledge to come and teach...I think that our old men and women are very wise than the young teachers so they should let the student know that...".*

Teacher 1 said, *"...I think we can invite those who are well versed in the cultural knowledge of such ethics to our schools as resource persons... I grew up in a village but the little experiences I have had in life shows that our fore fathers and elders were very wise...just note many of their proverbs and the consequences of not heeding...".*

Teacher 2 said, *"...our current school system rarely say anything about such local environmental practices...we could throw an open invitation to experts from our local communities to come and brief us more...no one can dispute the wisdom of the elderly who helped to keep the environment using their own indigenous wisdoms and traditions...many resources were kept intact by these traditional leaders who through their unique indigenous teaching could make the ordinary person in the society careful about their resource even though many of them had never had a formal education...".*

Teacher 3 commented that, *"...if there is anything to go by, it would be the chiefs, elders, traditional priests, herbalist and the traditional leaders who would have expert knowledge of such practices and...*

I think we could bring them to our schools for orientation and teaching us teachers too... honestly, no one can dispute the wisdom of the elderly but because most of them were not in formal education people sometimes think they don't know much...".

Teacher 4 also mentioned that, *"...those who have lived in the palaces of our local communities have expert knowledge about such ethics and should be invited as resource persons...my grandparents had enough wisdom to build houses and keep large farms and maintained their production cycle, selling their cocoa and yet keeping their environment intact..."*.

The participants (the IK-holders) demonstrated their willingness to teach their indigenous knowledge and wisdom in the schools and therefore requested an invitation from the teachers to teach (learners and their teachers) the many wisdoms of their cultural group. With regards to this, the IK-holders showed confidence in their ability to support the teaching with their IK and indicated that, it would be an opportunity to ask them questions to gain clarity on aspects that have spiritual connotation. The teachers expressed the importance of bringing the IK-holders to the classroom for support teaching as resource persons.

7.1.1.3 Use of Indigenous Language and Philosophies, and Indigenous Ways of Teaching and Learning

From participants' responses, using indigenous teaching strategies to teach indigenous wisdom and knowledge require using indigenous language. The following extracts from participants indicate this:

The **chief** said, *"...it is pathetic that now even traditional council meeting and traditional leaders are speaking English and our schools too they say no, 'vernacular' which is our own language how can we develop if we throw away our language...so in my view, I think that they should teach the wisdom of our elders that make us able to keep what we have in nature for a long time and when they are teaching too they can use the same way that are our elders were teaching us and the communities and then then add their own too which they say it's modern..."*.

The **elder** said, “...how can you translate our proverbial saying to English enough that the students will get the deep meaning of it...they should use the local language when teaching these our cultural ways of protecting the environment so the student will get deep understanding...if we are not careful our language will be lost but how can we do that...besides, it is the wisdom that our elders used to take care of the water-bodies, the lands, the forests and the animals and all the natural things in our communities that the teachers should teach or when we get opportunity to come there that is what we will teach...and they should use the same wisdom and skills our elders were using to teach because the way they were teaching us some deep things about some of the wild animals, our forest, our water-bodies and so on made us not to destroy it...so we should use some of their strategies to teach in the school...”.

The **traditional priest** said that, “...they should stop all this english and white man’s language and speak their own language in our schools, that’s why we are not developing because they use big English that we don’t even understand...and, when they are teaching too they should not use only the white people’s way of teaching, they should use some of our own way of teaching our children at home too so they will respect us and also ensure that the same things we teach our children and people in the community, they should them the same things...”.

The **herbalist** said, “...I do not know why here our people don’t want us to speak our own language and make the teachers teach in our own language like when you go to China, Germany, Arab countries and many other countries and they force us to speak other people’s language...It is not helping us that is why our children normally do not do well in school so even if they want to use English, they should add our local language too... our own elders who have wisdom that made us to protect and use the resources in nature with wisdom, the teachers in the schools should also use the same ways to teach what our elders were teaching and they should not forget to teach what the elders taught us about our lands, water-bodies, forest and the animals in them and everything that is surrounding us...”.

The **youth** said, “...maybe if they want to teach they should speak the local language so that people can express themselves about some of the things they have heard or know or some of the stories we heard from our communities because some of the things, you may not be able to explain or say it very well in English like some of the proverbs that our parents usually mention to us...and they can also teach with some of the ways the people who have more of that knowledge teach...”.

Teacher 1 said, “...I am of the view that to teach such things that have cultural background, the use of local or native language should be paramount because there are things that may be hidden in the language that may be difficult for someone to even interpret or express clearly and the student would also appreciate and would eventually enhance their understanding because even in examining students you would realise that many of them usually don’t do well because they actually didn’t understand the English used to convey the knowledge in the text or exams...moreover, I think that the local people ways of teaching could also be brought to the classroom situation to see the impact, after all it is those things about their own culture that we are going to teach so why not try some of their methods to see how they could work out...”.

Teacher 2 said, “...using the local language would also make the true meaning of some of the cultural ethics come out since our elders have deep proverbial sayings and many others that would be better understood in local language...and if this is to be done, obviously, we should also resort to using the local knowledge of the IK-holders as well as local strategies of teaching as well since many of our teaching strategies are westernized almost all the time...”.

Teacher 3 indicated that, “...therefore it will do a lot of good when the local language and the local ways of communicating and teaching local people their own way of care and preservation of the natural environment are used during the teaching segment as this will make the class interesting...”.

Teacher 4 said, “...it would be better if we teach something like that in the local language so that we can explain things better and that is why I think we should bring some of the elders as resource persons...and what sense will it make if you do not use their own ways of teaching to teach their own type of knowledge?”

I am referring to their teaching strategies and their depths of knowledge and wisdom about the natural environment...that is what and how it should be taught...”.

Participants came to a consensus regarding employing similar ways the local communities used to teach their cultural knowledge about nature and stressed that the knowledge taught must be exactly what their IK-holders teach in the communities. Above all, the local/indigenous language of the students are to be prioritised in such teaching and participants believe that there are in-depth intrinsic cultural knowledge and wisdom that might never be expressed or unravelled when a foreign language is used to teach their cultural knowledge and wisdom.

7.1.1.4 Making a Space for Resistance and Supporting Decolonisation

Participants’ indicated the importance of decolonising their schools through making students aware of the IK-holders’ efforts to preserve nature. This is captured in the following excerpts:

The **Chief** expressed that, “...it would be great if children in school are stirred up all the time to remember and ponder over the histories of our forefather who fought to keep our town and villages (some of which have become cities now) intact in terms of the peaceful settling down and keeping our forests, wildlife animals, water-bodies intact through their wisdom and of those who fought in war to ensure we still have these geographical areas that we have. That is, it is no longer whites who are ruling over these but we have our own land and that is why today I can boast of having a town to be the chief there and have all the natural resources at my disposal...in fact none of us should ever forget our forefathers who suffered to keep most of the natural resources for us...”.

The **elder** said, “... (yen nfa yen nsa benkum nkyere yen fie kwan) literally meaning, ‘we do not point our left finger to show the direction to our homes’... I am saying this to tell you that we must cherish what we have, the kind of strong and dedicated community loving ancestors that the creator of the universe gave us, who went to war and won their battles to keep safe our lands and its people from oppressive rule...We will become big ingrates if we forget what they did for us...”.

we too, the teachers and our children in school do whatever lies in our power to preserve and protect the lands they left for us in addition to the natural resources...Therefore, let's keep the spirit that our fathers had...the students should be taught...to do the same and ensure none of our cultural heritage is lost...”.

The **traditional priest** said, “*...if you look back into our history and how our great grandparents suffered to keep even these lands, the forests and water-bodies that we have in this place, that today some chiefs in certain places can just sell the land to some outsiders anyhow to build and destroy large forest and water-bodies, it is very pathetic...Do you know what it means for a legendary royal queen mother like obaa Yaa Asantewaa to go for war and lead a great army from here to ensure that we have all these lands, and forest and the animals in them as well as the water-bodies?...Their pain and their blood they shed to ensure that Asanteman will be where it is today should be remembered by all of us...the teachers have to teach the students about our way of caring and valuing our natural resources...in such a way that they will all remember our great warriors...the students...tell their younger ones...”.*

The **herbalist** said, “*...It will be very great for the teachers to teach the students what our great grandfathers also did to ensure that everything we have in nature are still there... This is because, the world we live in now is trying every means possible to make sure that we here in Africa will not value our culture and what our fathers taught us...You may be aware that the herbal medicine that I do here for instance, which everybody testify to be so good and potent, even some of the pharmacies don't allow us to sell them in their shops... they have drugs imported from white peoples' countries...meanwhile the plants they even use for many of their drugs, they got a lot of them from our forests here...*

...Don't forget that they fought to ensure that the white people would not take our lands and bring their own culture here...teach the students to remember these...so ensure our culture is not lost...”.

The **youth** said, “*...I think one of the things the teachers can also do when they want to teach our cultural ways of caring for nature that the elders teach us in our communitie...*

they should let all students they teach know that the elders in the communities are doing very well so that they will not be taken for granted. This will serve as motivation for everybody they teach in class and many of them may want to do the same things too just to help keep our environment and the natural resources protected. The teachers should also teach the students to be serious with our culture...”.

Teacher 1 said, “*...it’s unfortunate that in the schools most of our histories are gradually being cut out of the curriculum. And if it continues like that... will get to a stage where we would have no idea what are roots are...forgetting especially our cultural heritage...but we should rise up against such things and remember great legends of our culture like Okomfo Anokye, Obiri Yeboa, Yaa Asantewaa, Nana Osei Tutu and many more who stood against invaders of our lands and our cultural heritage and fought to keep the Asante kingdom and all the natural resources. When such consciousness is created in the classroom about the cultural ways of keeping our environment, it will spur up love and passion...in heart of the students...pass to others...”.*

Teacher 2 expressed that, “*...we should all learn to emulate the tenacity and strength of the great grandfathers of the culture who through boldness and readiness to save and serve their people went to every extent to ensure that not only were the lands kept intact but also our culture was preserved...such things are worth emulating and we should all remember their dedication when they struggled to get us the peace we are enjoying now and teach the students same things in the classroom”.*

Teacher 3 said, “*...it is quite interesting to note that, almost every person forgets what was done for him or her as years and years go by. This may continue until a time come, when we are prompted to show our gratitude we have for such persons who stood for us and this sense am referring to the great grandfathers of the Akans’ culture who fought battle to conquer these territories...but am of the view that, in our quest to teach the cultural ways of valuing and caring for nature, we could reenergize the desire for cultural things in our students through such teaching in class”.*

Teacher 4 said, “...let say that I go the classroom dressed like one of our legendary warriors, all the students would be amazed and start asking lots of questions and this will spark the teaching of the cultural way of valuing and caring for nature as I would link the struggle of the legend I have dressed like for students to see and by so doing I could pique their interest in what I am teaching. Moreover, they would be sort of motivated to be like such legends who fought to conquer many large land for us”.

Both the IK-holders and the teachers emphasised on the need to remember the cultural values and care for the natural environment, as well as the heroes of their cultural group who fought to preserve the lands, forests and other natural resources through colonial times. The teachers must prioritize such teaching to create some kind of environmental consciousness.

7.1.1.5 Demystifying the CSEE Practices and Teaching the Wisdom behind them

Another notable aspect that most participants suggested concerning how the teaching of CSEE could be done in SHS is that CSEE practices should be demystified and its wisdom taught. The following are the views of participants:

The **Chief** said, “...if a lot of mysterious things about water-bodies, plants, wild animals forests are mentioned in the teaching, students will be discouraged and not be interested and would rather revolt and say they are superstitious beliefs because they already live in a world where there is a lot of knowledge...
...if the teachers will let the students know that there is wisdom in what we say and do practice for such things, the students will embrace it without much questioning...when it comes to school don't talk about spiritual things too much they are children, when they finish school they will get deeper understanding of certain things...I suggest you tell them that if in their community there are some instructions like don't go to this forest or that that river they should just obey than thinking it is senseless...”.

The **elder** expressed that, “...‘bagyimi mmere’ literally meaning, ‘the days of dumb foolish children’ who wouldn’t ask why’ is past and gone so when teaching don’t mention things that look mysterious...if the teachers are able to teach the students the wisdom behind some of the practices in our communities, they will understand better our actions and will let them embrace it so that what we have in our natural environment is not destroyed...all the spirit, spirit things are very true but when you go to the classroom to teach, you have to remove spirit part from it...for instance don’t say river is a god in the classroom even though it is so...”.

The **traditional priest** said, “...despite the fact that the world is dangerous and there are a lot of spiritual things like I told you, even in my own experiences, it will be better not to tell the students a lot of the things that will bring fear into their heart but all the same tell them to be careful and not do what the elders tell them not to do...because usually students do not see the wisdom in what we do, they think they are evil practices and so they repudiate them but if the teachers would make some effort to explain the sense behind what we do, it would help them to take it serious...It is true that there are spiritual aspect linked to the water-bodies, wild plants and wild animals but because our children attend these modern schools where they use foreign ways to teach them they will not believe immediately so tell them the benefit instead and once in a while you can mention some of the spiritual aspects...”.

The **herbalist** said, “...it is not everything we teach children, they are in school and should just learn the normal things...there are a lot of things that they cannot just understand until they are matured enough...there are things that the physical eyes cannot see but they should not be taught those ones...if a student knows that what their elders are doing is wisdom they would not look down upon it but would rather promote it so the teacher should be strong and skilled to teach them that our practices are very wise...that traditional medicine is good too... spiritual aspect of the environment should not be added in the school teaching, they should be taught separately especially at the university when they are grown up...”.

The **youth** expressed that, “...if our elders would explain some of the things to us and the teachers especially so they will explain things because there are a lot of things the elders don’t explain...they just give the orders so teachers should know how best to teach this...usually we hardly understand our elders many times because some of the things they just tell us not to do without clearly telling us the brain behind them...if they teachers teach, they should find out if they can explain reasons behind them so students will take it in good heart... I think they should stop saying things that are scary about plants, animals and water-bodies and lands and teach it without any fear about the things like the way the white people can go to wildlife park and catch some of the wild animals and keep in their houses...”.

Teacher 1 said, “...many of the practices look mysterious but I think if we are to teach it, those mysterious aspects should be removed so the students will be convinced to follow them...many of the environmental practices of our local community seem to be only on belief so sometimes it’s difficult to see the wisdom behind them...maybe when the elders come over they will show us their reasoning for some practices...”.

Teacher 2 indicated that, “...a lot of the things done have no clearer meanings and elders rarely tell you their motives but to make it easier in teaching, there should be some level of clarity...I myself have to understand some the reasoning behind some of the practices because some don’t have scientific basis...in this day and age, you can’t just be telling these students there is spirit in this or that component of nature and expect them to just believe without further questions that you may not be able to answer so it will be better to just concentrate on the benefit and consequence of destruction...”.

Teacher 3 said, “...I believe that if most of the unexplained aspects of these environmental ethics are given proper explanation, it would make the teaching of it exciting...there is much wisdom behind what our elders used to do and even now...I think the students should only get to know the wisdom backing some of the cultural environmental ethics and it will let them fall in love with it...”.

we live in a modern world where science is prominent so things that have spiritual connotation would be difficult to be taught in a classroom context... ”.

Teacher 4 said, *“...almost every practice of our traditional people have some mysteries behind them...I don't think teaching student with such mysteries would do justice...we have to remove those aspects that look too puzzling...there are depths of wisdom behind everything that the elders were doing...they thought very deep before they made certain injunctions and sanctions...we cannot throw their practices away just like that...we should teach their wisdom...the world is becoming sophisticated so spiritual aspects of conservation would hardly work on students...it has to be thrown away... ”.*

Participants stressed the need to remove the mysterious perceptions and scary unexplained spiritual aspects that surrounds the Akan cultural EE especially in relation to certain water-bodies, lands, forests, plants and wild animals. Participants especially the IK-holders commented that much as they are aware that some of these entities possess spirits, when it comes to teaching in the present school environment the teachers would have to leave those aspects and share with them the benefits of caring and protecting the components of the natural environment. This is not to say, there is none of such spiritualities and mysteries.

7.1.1.6 Developing Modern Computer-Based Programmes for the Cultural Values and Practices of Conservation

The bringing in of computer software and programs for enhancing the teaching of the CSEE was also prominent in the responses of participants. This is captured in the following excerpts:

The **chief** said that, *“...the government and schools could also employ certain experts in computers that could also develop a programmes that contains the various cultural practices of the local people so that the students would see that the cultural values of their local communities about the environment has even crossed the borders of their country... ”.*

The **elder** said, “...since the world is changing so much and there are computers and computer games that are our children now love to use including phones, the things that are in the culture for protecting the environment can be put a form like a CD or some that you can put on your computer or phone that the students can learn and play with at the same time and this will let them take it serious...”.

The **traditional priestess** also said, “...this phone I am using here has a lot of things it can do and my children play games and different things on it that make them happy so I think that the school could also get people who are knowledgeable about making computer things and work with elders and people like us who know the culture so we can put all on the computer so that they will be interested to know more about it...”.

The **herbalist** indicated that, “...currently everything can be shown on computers, television, internet and you always see people going to it all the time to watch or learn something and students even do it the most...so I think that if there were people who are very good in creating computer programmes and take the knowledge of the traditional leaders on the wisdom and practices our culture use to take care of the things in nature it will do very well and students would even love it more since they know more about computers...”.

The **youth** said that, “...computer software engineers could develop a special software that has all the cultural practices and the cultural values and care for nature...this will make the teaching and learning it more interesting and the students may even participate more...”.

Teacher 1 said, “...the relevance of computer and ICT in general cannot be overemphasized. The present teaching demands that ICT be used in teaching and therefore, in my view, even though it may be quite challenging to develop software like that are captured in the local language and sort of interactive...also the current communication gadgets that the youth especially are all very much interested could be used as tools to enhance these aspects of the cultural groups’ value and care and for nature...”.

Teacher 2 also said, “...we are living in an information age where the computer and ICT tools are trending with things that has left our cultural practices because many of these are practically from the western world...but I am of the view that, the government and curriculum developers could contract experts in the field of software engineering who would work together with language experts from our country and knowledge holder to develop computer programmes about these cultural groups value and care for nature and this will boost the interest of the students and remove the gross disregard for the wisdom of the elders...”.

Teacher 3 said, “...our generation has almost everybody trying to learn something about computers and not only those in formal education in schools...therefore in my opinion, one of the fundamental things I suggest to be done is the development of computer programs solely for these indigenous aspects of valuing and caring for the natural environment in the present age because people are moving towards computer and ICT to the detriment of important cultural values about their environment that must be sustained for future generations...”.

Teacher 4 said, “...in fact presently, there can be connection with the world and crossing borders without a deep knowledge in ICT, and that is why almost every school and department is getting deeply involved to train its people...but my suggestion is that the aspect of the cultural groups practices that the elders used to take care of the natural environment be developed into a kind of a computer software that would be used in schools and could even be downloaded and used at home on phones to sensitize people again...this is because there is enough evidence that the earlier ways of conserving the environment using the indigenous knowledge of our forefathers was much more better for the African people than the current westernize conservation method for the natural environment...”.

Participants reiterated the need to develop some computer programme or software for their CSEE. In giving this suggestion, the voices of the teachers were more pronounced than the IK-holders, but they shared similar views. The suggestion of CSEE computer software is more essential according to participants, presently anything that may not be available online or on google app store, would not spark the interest of the students who are constantly in contact with their computers and phones.

Creating computer software or games or app for the CSEE, is believed to probably remove the kind of stigma people place on Akan cultural practices.

7.1.1.7 Students Wearing their Cultural Costume and Eating Indigenous Foods

Students being encouraged to wear their cultural costumes and eat indigenous foods are ways participants feel would enhance the teaching of the CSEE in their schools. These are captured in the following responses:

The **chief** said, “...let us not forget the ancient land mark which our fathers have set...our children should start wearing our traditional wear for all the occasion including their daily school dresses...this will let them fall in love with the culture...”.

The **elder** said, “...it would be nice if our children start wearing our traditional clothes and costume and also ensure that our local foods are available and made attractive to the students...”.

The **traditional priest** said, “...we should use things that are from our culture – the clothes we wear should all portray the culture and our children should be encouraged to wear them and use the things made from this place...”.

The **herbalist** said, “...we have to make things that are our culture and make our cultural practices get ingrained in our children...For instance if the children come to school and you tell them to start wearing our traditional dresses like tying cloth and wearing royal slippers and stuff, then you would gradually be rooting our culture in them...We have to let our children stop eating foods which are from somewhere and let them eat foods like apraprasa, akaw, prekesse etcetera...”.

Teacher 1 said, “...it may be nice if on the day that we teach such cultural things students wear their traditional clothes to just conscientise others people about their culture...”.

Teacher 2 said, “...our tradition goes on...we do not throw away traditions just like that...we could let the students wear their cultural dresses on certain occasions...”

Teacher 3 indicated that, “...its beautiful to be an African when we could make our culture appealing to people by just consistently wearing our local or cultural costumes...”.

Teacher 4 said, “...in my view, one of the things I think could enhance this teaching and bring the minds of the students on their culture and restore the respect for the traditions and the sayings of the elders would be that they should frequently wear the traditional attire of the Akans instead of the foreign ones...by so doing they will become conscious of their identity...”.

Participants consider wearing indigenous clothing and costumes as well as eating indigenous foods paramount to instilling certain consciousness about cultural environmental ethics and cultural heritage. Besides, it sparks students’ interest in cultural things and make them fall in love with their cultural values, especially regarding the teaching of their CSEE. Eating and wearing foreign clothing makes members of the community have cravings for things outside of their culture and gradually make them loose interest in theirs.

7.1.1.8 Mixing the Westernised EE with the CSEE

The expressions of participants regarding how to teach CSEE suggest the mixing of westernized EE and the African CSEE. These are captured in the following responses:

The **chief** said, “...a lot of things are changing in our world, even in our palace there are modern things now that are from overseas so when it comes to the classroom teaching they should not teach only the elders way of caring for the environment but also mixing with the one that is in their school that the colonial government brought...”.

The **elder** said, “...if we keep to only the traditional ways of doing things too we will become stuck to only one thing and not learn more because now computer has come so the teachers should teach both things but make sure that our own practices will be more...”.

The **traditional priestess** said, “...because the white people also have people who do spiritual things like us and they are able to do a lot of things that are helping our world that if you don't have eyes you cannot do, I think that the schools should not teach our children only what we teach them from our culture, they should also learn the ones that the white people also have and mix them together so that they will know a lot of things even if they finish school and want to go abroad to study...even my place here, last time some white people came and entered where my oracle is and was taking pictures and asking me a lot of questions that I know they are sending abroad to go and learn something from it so we should also not throw their own away completely but the ones that will help us that does not insult our culture we should teach the children those ones too...”.

The **herbalist** for instance said, “...every knowledge grows, therefore if we stick to only the olden ways that our fathers' used to care and protect the environment we will become too ignorant of our world and if we follow only what is currently being taught in our schools and neglect completely the wisdoms of our elders and their ethics we will miss a lot. So we must mix the two...”.

Teacher 1 said, “...formal education is making us to stop the use of fairy tales and stories too. Technological advancement is making these useless...It will be very difficult but if we could mix it with the modern one it will be possible...”.

Teacher 2 said, “...we should teach the modern and earlier time conservation together and it should not be one sided...”.

Teacher 3 expressed that, “...it would be much better if there is a complete mix or mixing of the different environmental conservation methods from local traditions and what is in the text books now...”.

Teacher 4 said, “...mixing of the different environmental ethics from the more western one taught in our school plus our own cultural ones will be the best option than just teaching something that all foreign...”.

Participants emphasised the mixing of their CSEE with that of the present westernised EE taught in the school. Some reasons were so that their CSEE can run at the same pace with that of the westernised EE taught in the schools.

Thus, a model could be developed that will make it possible to teach both the CSEE and Westernised Environmental Ethics (WEE).

7.1.1.9 Summary of How to Teach Akans' CSEE in SHS

The Akan Participants generally underscored several ways in which their CSEE could be taught in SHS. The findings and the quotes of the different participants were captured and organised according to Simpson's (2002) model for successful indigenous environmental education. Other themes that did not fit Simpson's (2002) model were presented and discussed as they are; notably, the voices of all the different participants i.e. the IK-holders and teachers. Most previous studies focused on only the perceptions of teachers concerning how to teach related IKS aspects such as CSEE in schools. This research sought the views of the IK-holders in this directive as well.

7.1.2 Prospects of Teaching Akan CSEE in Senior High Schools

In exploring the Akan participants' views on the prospects of teaching the Akan CSEE in schools, the participants were asked to respond to conversational interview question (CIQ) 6a in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

Participants shared similar prospects on teaching their CSEE in high school. Several these have been extracted from their narratives and presented as subthemes in the following section discussion:

7.1.2.1 Restoration of Sensitivity to the Natural Environment and Preservation of remaining resources

Participants are optimistic that when their CSEE is taught in SHS, one of the benefits it will accrue will be the restoration of the sensitivity to the natural environment and consequential preservation of the natural resources that are left. The following are expressions of participants:

The chief said that, "...by bringing our cultural ways of caring and valuing our environment to schools people would become more conscious of their natural environment and be sensitive to the spate of destruction of what we have – the lands, forest, water-bodies..."

people will learn to listen to us as chiefs and follow the various ways our forefather set aside for us to care for our lands, forests, water-bodies and all our natural resources too we will be able to keep what we have now and prevent further destruction...”.

*The **elder** said, “...our people who have lost their respect for the elders and ancestors guidance on how to care for what we have will realise where they are doing wrong and change their ways...there will not be much destruction to the wild animals, forests and water-bodies as it is happening now therefore our remaining resources would be preserved...”.*

*The **traditional priest** said that, “...people will come to themselves as to the danger of destroying all that we have in our environment...our community people will listen to our wisdom and respect our ancestors and the gods of the lands and reverence them by keeping the guidelines and follow their instructions about the lands, water-bodies, the forests and the natural resources we have now will not be further destroyed because you will even be afraid to throw rubbish into our rivers because you know the gods and spirits will not leave you unpunished...”.*

*The **herbalist** indicated that, “...we will come back to our senses about the dangers of our bad behavior towards the environment...people will really take care of nature better than what is going on today...you saw what has happened to that area I was showing you, they were all thick forested area and the muddy area was a big river but as people do not see and respect our gods and ancestors because of school and church, now they have destroyed all of that area...”.*

*The **youth** said, “...probably people’s bad attitude towards nature will change because now you see a lot of people throw things anywhere they like, even in the river that is good for all of us they put refuse inside them and sewage... I think that if we follow what our elders direct us to do we will all respect the resources (lands, forest, water-bodies) that the creator has given to us and they will no longer be destroyed...”.*

Teacher 1 said that, “...students and the people in our community would probably begin to have a new mindset about the natural environment around them and endeavor protect them...I believe that people were doing better protecting and caring for the natural resources when they had reverence for our traditional leaders instructions and sanctions as compared to what goes on today...so when our cultural ways are brought back through the school system I am believe that the little resources we have would be preserved...”.

Teacher 2 said, “...I believe that self-realization is the most important thing that make people begin to do the right things so by teaching these traditional ways of caring for the environment people may come to this point in their lives and make them care for the natural environment...I am optimistic that if we can restore our local and traditional ways of doing things the rate at which things are being destroyed would come down and the resource (lands, forests, water-bodies, wild animals) we have now will be kept from further harm...”.

Teacher 3 said, “...I usually think that when someone feels something is foreign to them they don't usually see the reason to be committed to them but I think that when our people begin to realise that even the students are learning about such cultural things, their mindset will change about them and they will rise up to support the entire community to help protect the remaining resources...truly people would become more conscious of the environment and sensitive to the way things are destroyed in nature...by going back to what (traditional ways of caring and valuing the environment) was working before but has been replaced by what is not effective for our communities...”.

Teacher 4 said, “...being conscious of one's wrong attitude towards their own natural environment is very pertinent and probably teaching this cultural environmental ethics in schools would be the only means people would start realizing their wrongs...the traditional ways seems to be more adaptable to the people than the modernized way because now people can destroy a water-body without any sense of fear but previously no one would dare do such a thing...I think if we are able to bring the traditional ways back a lot of things will change and the remaining resource would be kept intact...”.

Concerning the aspect of preservation of the remaining natural resources (lands, forests, wild animals, plants, water-bodies), the participants came to a consensus that CSEE teaching would make the people more conscious of preserving and protecting the natural environment without compulsion, as they would with the present WEE. Participants believe that the whole local community would collaborate with the schools, spearheading a common goal.

7.1.2.2 Gaining Respect from the Outside World

According to the participants, when their CSEE is taught in their schools they would begin to gain respect from the outside world.

The **chief** said that, *“...when we start teaching these cultural values and care for nature in schools, the western world will start respecting us if we are able to maintain what we have using our own culture, eat what we have grown and protect what we have and stop asking them for help...”*.

The **traditional priest** indicated that, *“...even some white people came to my place here sought permission and were asking me how I do certain things and were taking pictures...I think there are a lot of things that can be learnt from this place but because we don't respect ourselves and our culture and have gone to take what the white people have it make us have no respect from them...therefore, I think that if we can teach such things in school and other people learn it we will have more respect from abroad...”*.

The **herbalist** said, *“...majority of the medicines that are brought from outside this country were made from things extracted from this country and they go and put them together and come and sell to us and we buy that one more than our own because we got no respect for what we have so I believe that if we can keep what we have in our forests and respect what we have we will gain respect from abroad...but these will be possible if we can start teaching them in school for the schools to also accept them...”*.

The **elder** narrated that, *“...we should teach these in schools because if truly the world will respect the African person they would have to see use our own wisdom of doing things than just throwing away everything we have...”*

so I am of the view that if we can follow our traditional ways of caring for the lands, forest, water-bodies things will improve because when we went to take the white man's own ways of doing things a lot of things are spoiling in our environment... ”.

The **youth** said that, *“...when we teach our cultural ways of taking care of our natural environment in the schools, I think that the world will know that we also have something to offer and not always looking up to outside world... ”.*

Teacher 1 said, *“...a lot of the things we teach here are more foreign oriented and westernized...if we can perfectly put our own perspectives into the school and things are running it will bring us to the limelight and we will be respected by the world... ”.*

Teacher 2 also said, *“...by teaching this (cultural environmental ethics) in school, this country and Africa in general will start getting recognition as being self-sufficient and this would earn us some commendations and respects... ”.*

Teacher 3 indicated that, *“...if proper measures are put in place to teach these cultural ways of caring for nature and to instill our own environmental ethics to our people and is totally embraced it will easily get back into our communities as people normally give attention to people who have gone to school...and soon enough our local community will revive what they already have that they thought was of no value now because people are looking down upon it... ”.*

Teacher 4 said, *“...if we can embrace what we have that is our culture, it will be easier to keep and maintain, we will become and look more responsible for our own lives from the rest of the world...so teaching it in our school would bring this benefit too... ”.*

Principally, the participants (both the teachers and IK-holders) were of the view that through teaching their CSEE, the western world would start respecting them as African people; provided they do not become too dependent on foreign knowledge but on their own knowledge and wisdom.

7.1.2.3 Less Money Spent on Importation of Drugs

Spending less money on importing drugs for the health needs of the participants and their cultural group emerged as a possible outcome of using indigenous medicine. This is captured in the following participants' expressions.

The **chief** expressed that, “...now we have to pay very expensive amount of money to buy drugs that those who made it came to take them from this place, all because we respect them better than ourselves and that is why we are suffering...Now our own people think our medicine men are evil spirits and have put some evil spirits in their medicine and so people don't want to even buy their drugs unless they make it look like it is coming from abroad by putting foreign stamps on it before people see it to be proper. The hospitals do not even prescribe these drugs for us to take...”.

The **herbalist** said, “...our great grandfathers who are gone didn't know anything about white people's medicine and yet they were so strong that they could live over hundred years and could still go to the farm and were not even blind but now that we have left all our medicines thinking that they are useless and not even healthy and see them as part of witchcraft, and see the problems we are facing! Many people can't even afford the medicines they have to buy because they are foreign and expensive...”.

The **traditional priest** said that, “...all the medicines they bring from abroad to us, we have more potent ones in our forests...even the people, they come here to take a lot of them and bring them back to us...if we can use our own ways of caring and valuing what we have even medicine we will not spend so much money to go and buy them and we will be even more healthier and stronger...so we should be strong in teaching it in our schools...”.

The **elder** said, “...if truly we can keep to our wisdom of protecting our resources – the forests, water-bodies and others by teaching our students to make it even better, all the things we need in life we will get from it because we have everything, but the foreign ways are making us destroy all we have and even now we are importing everything, including medicine which we have in our forest but are destroying them all...”.

The **youth** said, “...if we don't destroy the environment that we live in we will get all we want from it and I think if something is from here, the price will not be too much to buy for instance, even water they put in bottles are more expensive than one full bucket of water, medicine too is the same...so they should do the teaching more in our schools...”.

Teacher 1 said that, “...we have very rich resources and we only mention them in books but in actual sense they are all being lost because we have no respect for our resources...in fact I believe in our traditional medicine because my mother for instance used to boil some in a pot for us and we were always free from all kinds of fever and flu and were always strong...we may not need to buy drugs from outside...”.

Teacher 2 said, “...we should teach these cultural ways of taking care of natural resource in our schools...if we really realized the potential of our resources and the rich biodiversity in this part of the world, we would have done everything possible to protect them...we will get to a stage where a very common thing like drugs mostly made from plants could be easily obtained and at cheaper prices compared to foreign ones...”.

Teacher 3 said, “...our local people have survived throughout the years and you can still have the men and women who live very long in the villages compared to people who live in the urban areas we can be sure of this that our local traditions could probably be of more help to us than the foreign ways of doing things...it may be cheaper for us with our own than our own being repackaged back to us at higher prices because...”.

Teacher 4 said, “...we could make life better for our people if our own things become very valuable to us. Therefore, I am of the view that if the cultural environmental ethics of our people can find its way in our schools it would get a higher prominence and basic benefits like potent drugs and rich healthy food resources could be harvested at lower cost than to be imported at higher cost that make life burdensome to our own people...”.

Participants bemoaned the high cost of drugs imported into the country when the local people have equally potent medicines, but participants lamented that their own, “medicine’ men are no longer respected; meanwhile when the medicine from abroad were not available these same medicine men (herbalist) provided medicine, helping their people to survive. The participants indicated that through the CSEE teaching in schools, a certain consciousness about the worth and potency of the local herbal drugs would be created, and people would start buying them. Besides, the exorbitant amount of money used for importation would also be cut down.

7.1.2.4 Restoration of Comfort to the Spirit, Soul and Body

Participants also indicated that when their CSEE is taught in schools it would bring comfort to their spirit, soul and body. This is captured in some of the expressions.

The **chief** said, “...*I grieve in my heart when I see the careless attitude with which people in our communities now destroy our water resources, forests, lands and other wild life animals because there’s no more respect for their elders and traditional leader’s instructions and directives. This is, ‘disheartening’, but I think that when our cultural wisdoms and knowledge of keeping the natural environment is taught in school it would bring a kind of restoration in our inner being...*

...there is nothing as painful as seeing what you have being destroyed and you look on helplessly...it would be comforting if we our practices that our forefathers left for us is restored fully because it I believe it would reduce the rate at which our environment is being destroyed...”.

The **traditional priest** said that, “...*when we are able to bring back to the schools the knowledge of our elders and the respect and fear that made us protect the land in the years gone by it will make us sensitive to the environment again and bring comfort to our spirits, soul and bodies...”.*

The **elder** said, “...my heart bleeds when I walk around and see how bad our environment is becoming because we do not respect the wisdom of our fathers...but I believe that if those who have gone to school (who usually are the one who think the local people don't have any values including their traditions) get a hold of these cultural things and take them serious it would bring joy and peace to our souls because they would help people know we are wise...”.

The **herbalist** said, “...when I see people cut down trees and spoil rivers with all kinds of dirt my heart breaks because they are destroying what we have and this eventually affects the medicines that we will make because the plants drink (absorb) the bad water and it spoils all the power inside those trees and this makes the problem worse...if we can really teach our culture and traditions where we don't touch and destroy things anyhow because we know that our ancestors will ask us and god will punish us...a lot of things will change and this will bring some coolness and rest to us and all our souls, and spirit and our bodies...that's why we have to teach it in our schools...”.

The **youth** said, “...everybody will even become happy because our environment will be neat, we will have nice and clean rivers that we can even swim inside and even drink without getting sick...every place will look very nice that we can easily get a nice grass area that you sit...”.

Teacher 1 said, “...there would be some sort of fulfillment if you realise that after introducing such things in schools has in the long run brought environmental sanity...”.

Teacher 2 said, “...there nothing like achieving results, after putting in much effort to teach with the mind of changing our world...therefore if we are able to introduce and mixture perfectly these cultural environmental ethics, it is hoped to influence our society and environment positively and when this happens in the long run we would feel at rest, fulfillment and a sense of comfort in our souls and within our bodies as well...”.

Teacher 3 indicated that, “...every endeavor made by man is for the sole purpose of solving problems of the world and keeping safe and possibly living as long on earth as you desire, and for this reason if such cultural ethics of the local people are put into school and it takes its proper place, it would yield great benefits, and this would bring joy and a sense of accomplishment to us...”.

Teacher 4 said, “...my greatest dream is to see me teach students to help change our world for the better and for this reason if such traditional environmental ethics are well integrated and mixed with current conservation ethics taught in our schools it is hoped to achieve better results than what is happening presently because in earlier times things were better in terms of environmental degradation...I believe all of us would feel some sense of comfort and sense of achievement as well as peace in our souls and spirits...”.

Participants expressed how they grieve when they see the careless attitude with which some people in their communities destroy their water resources, forests, lands and other wild life animals because of a lack of respect for their elders and traditional leaders’ instructions. However, they believe that through the teaching a certain consciousness would be created that would make many people, including the students, care for the natural environment which would restore peace in their spirit, soul and body.

7.1.2.5 Creating Good Rapport between the School and Local community

The participants believe that good rapport will be created between them and the schools as part of the teaching of their CSEE.

The chief said, “...when the students are allowed to come to the community to come and observe what is actually going on in here they will have a new mindset about their environment and as they come to learn wisdom of the elders...

...by coming on some kind of excursion where they will work and talk to members of the community they will start building good rapport with the different people they meet in the community and they will respect them as being knowledgeable too and not only their teachers and for this reason they will develop respect for them as well...”.

The **Elder** said, “...the school would see our importance when they invite us to come over to teach the knowledge we have in our local community and our traditions that has helped us protect the environment until new things came that is spoiling what we have...and when the students realise that we can also teach them things that are important and can come in their exams they will relate with us better and support some of the things done in our communities and not say they are old fashioned as they usually learn from school...”.

The traditional priest said, “...because the teachers and students and the school leaders are very far from us and usually don’t come to us because they think there is nothing important they can get from us and that we have too many traditions which they say is not important except what they see in church, it makes them not to normally respect us because they haven’t come to hear what we can offer them...but I am sure that when they start inviting to come and teach some of the wisdoms of the elders and the practices they will start admiring us and we can have good relationship with them...”.

The **herbalist** said, “...if the schools invite us to come and share some of the wisdom of the elders with them and we keep interacting, it will bring some good relationship and the students will not take it that we are not knowledgeable like their teachers, so we are not important...they will be glad to consult us too and not only those who have gone to university...”.

The **youth** said, “...interacting with the IK-holders of the culture will give more knowledge and remove the wrong thinking we may have about them and the traditions...we may relate with them better...”.

Teacher 1 said, “...community engagement is very essential for nation building and development and this starts when we (teachers and students) get involved with the local community... and I am of the view that when there is continuous interaction with community through they (IK-holders) being used as resource persons for the aspects of traditional ways of caring for the environment, then my view is that we will develop very good rapport with the leaders of the traditional leadership and local community members and this solidarity will be very helpful for addressing environmental challenges...”.

Teacher 2 said, “...reaching out to the local communities, touring and visiting sacred sites and actually engaging in community activities would develop a very good friendly atmosphere that will bring mutual benefits...student will respect knowledge and wisdoms of the traditional leaders and IK-holders and at the same time become sensitive to the real state of the local community as they interact...”.

Teacher 3 said, “...there are things we usually do not see nor understand until we come close to interact with the elders who fought to bring us where we are...and I am of the view that as we go to the communities and even invite IK-holders of our culture to come talk and teach certain things we would be able to get a deeper relationship with them and understand them and also take cognizance of what really goes on in the communities and the way we can work together to help sustain the natural environment...”.

Teacher 4 indicated that, “...through continual interaction with the IK-holders and local community leadership we will learn a lot, I believe and then we and the students too would become very broadminded in a diverse aspect of learning and this will augur well for a good relationship with the communities and that would bring beneficial relationship...”.

Participants were optimistic that, through the general invitation of the IK-holders into the schools and them going into the communities and visiting the IK-holders to teach them more about their cultural values and care for nature, a good relationship would be built between the schools and their local communities.

7.1.2.6 Higher Chances of Students Excelling in the subject

Participants also made mention of students standing a greater chance of excelling in their exams on CSEE.

The **chief** said, “...I believe that our children usually struggle in school and usually have to do remedial exams because a lot of the things are not from their environment and are from abroad and are still what the white people brought to the schools, so it would be much more difficult to relate to things well...”.

the students would be able to perform well in their exams if they are taught using things from home and in their communities like what we are discussing now and most especially when they use the local language... ”.

The **elder** said, “*...if you teach our children what they see all the time, hear about all the time or even talk about in their local communities, it will not be too difficult for them to learn it or if you give them exams too, I think they would do well because a lot of the things will be familiar to them... ”.*

The **traditional priest** said that, “*...I didn't go to school that much, but I know that the subjects that had cultural things inside, I always did very well because they were not new to me as my home and the town we used to attend a lot of festivals and durbars and funerals where a lot of traditional things are done so it was simple for me to talk about them...I had the knowledge of them without learning much...So I think that if the school will allow our children to learn the way our forefathers were caring for the lands, water-bodies, forest and all the things in nature, because it is already the culture in the place where they live or come from and that they hear those cultural things all the time and see them they would do much better even in their exams and put them into practice... ”.*

The **herbalist** said that, “*...the children will be able to do very well in school and during their exams because a lot of the children have wisdom to do a lot of things in their mind but the English to put it together is their main problem...in fact even me myself as I do this herbal job, I have attended several programs about herbal medicine that the universities organized to bring us together...but when you meet some of the people who are even called professor a lot of the things and medicine we make the professors don't know about them, it is only big English they use there to make us confused and afraid of them... ”.*

The **youth** said that, “*...when you learn things that you already know about it is not difficult to remember whether you are writing a test or exams and because the things we are discussing are all part of the local community practices and the elders are always saying things about it and citing a lot of proverbs especially in our villages, it will be easy for anyone to pass an exam on it... ”.*

Teacher 1 said, “...as part of the skills to teach, you teach from what the students know and then you add on any new thing that you want to teach and in this case, it will be much simple for the majority of the students especially those from the township and villages to grasp the content and make more contributions to the lessons...it will definitely enhance their understanding of the content and help them pass their exams at the long run...”.

Teacher 2 said, “...the best way to impart knowledge is to communicate in a language or gestures that the other person can grasp with total comprehension and for this purpose, I am of the view that as a lot of the things would be purely the local cultural way of doing things, most of which students would be familiar with and could help them excel in exams...”.

Teacher 3 said, “students are more likely to do well in an exam related to aspects like these on the cultural values and practices for caring for nature and its resources because none of the content would be far-fetched... they would even be able to contribute far better and add extra information that may be relevant for documentation purposes...”.

Teacher 4 indicated that, “...students would be confident to respond to things you ask them, and they could easily think through an answer on aspect that have local bearing as compared to those with terminologies that they have to memorize them...they stand the chance of doing well in related exams...”.

Participants were of the view that when the students are taught aspects that are from their cultural and local context, especially using their local language, it would enhance their chances of doing well in exams. The traditional priest gave an example of how she did not struggle with subjects that had cultural aspects because of learning from home.

7.1.2.7 Summary of Prospects of Teaching CSEE in SHS

The discussion focused on the prospects envisaged on teaching the Akan CSEE in SHS. Other researches usually focused on only the voices of the teachers in teaching the indigenous knowledge about the natural environment, its preservation, and sustainable use, otherwise referred to as CSEE (Refer to preceding sections for details from direct quotes from participants).

7.1.3 Challenges of Teaching Akan CSEE in Senior High Schools

In exploring the Akan participants' views on the challenges of teaching the Akan CSEE in schools, the participants were asked to respond to conversational interview question (CIQ) 6b in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

In this section, responses of participants regarding their anticipated challenges in the teaching of CSEE in SHS are presented and discussed. Several challenges were addressed, and the following are presentations of key themes that emerged from their narratives:

7.1.3.1 Stigma attached to CSEE as Archaic and Old-Fashioned

Participants indicated stigmatization of their CSEE as part of the probable challenges in teaching their CSEE in high schools.

The **chief** expressed with grievance that, “...*they do not respect our traditions and our culture. They look down on us so our children are not even bold to express it in their schools...they keep saying these are age old stuff...*”.

The **traditional priest** said, “...*people make us even feel ashamed of our culture as if we are some evil people when we tell them that this water-body doesn't want this kind of treatment and this or that is an abomination of to be done in our forests or even tell people not kill certain animals...they keep telling us, that is idol worship and archaic practices...*”.

The **herbalist** said, “...*it is so sad that even our own medicines they don't want to accept them in the pharmacy shops, and sometimes even selling them in the street they make you look like you don't know what you are about...*”.

The **elder** lamented that, “...*sometimes what is currently going on – current schooling systems and computer age time plus the proliferation of churches is making people make us feel some kind of shame when they talk about our cultural environmental practices as though they are not modern and as if people have been left behind...*”.

The **youth** said, “...these days people don’t want to hear about such things especially when you are in school and you mention certain things like some places are sacred and is only the chief and elders who can go there or talk about some rivers in the community that they are not allowed to eat fish from and so on...they can argue with you and be telling you, you are living in stone age era that’s why you are following such things...”.

Teacher 1 said, “...honestly sometimes in our current world it is difficult to convince people with these kinds of cultural stuff...people feel that you are not modern and don’t even know what computers are about that’s why you mention things like that...”.

Teacher 2 said, “...you will not believe it that even now Ashanti history and all of that they are facing them out of our curricula at the basic and secondary schools because of the western inclination of our political people...the cultural environmental ethics like we are talking about is most likely going to be looked down upon by people...”.

Teacher 3 that, “...if there is anything that you can easily feel like you are getting outmoded about it, it is our culture now...see how students can feel that things have so changed that everything should look like what they see on TV in Hollywood movies and South American soap opera...”.

Teacher 4 lamented that, “...when I walk around and water-bodies that have been polluted and still being polluted, forests been cleared anyhow in many places, my heart bleeds but the sad part is that it may be getting worse because people still feel that the cultural practices for conservation by our forefathers which kept the environment is now looked down upon with gross impunity but the hope of restoring such is not lost...”.

Participants mentioned various ways by which their culture is looked down upon by various groups, especially some religious groups and educational institutions; such stigmatisation would be a challenge to teaching their CSEE.

7.1.3.2 Demand for Proof and Experiment

Another aspect that participants expressed regarding the challenges of CSEE being taught in their schools involved students asking reasons for some of the CSEE practices and demanding experiments to prove the validity of the practices of their CSEE.

The **chief** said, “...today the children don't have much respect as we did and do have for the elderly and their instructions. We never asked why and said statements like what shows that a spirit will pounce on me when I go there into the forest, river or other forbidden places...people lately feel that they are living in a democratic world therefore they have a right to everything and use it anyway and anyhow they like so many people now dare ask reason why they cannot do certain things as enshrined in most traditional leaders' orders and instructions... but if genuinely they want answers to especially some of the aspect that have spiritual things in them, they can come to us for further explanation or we can also come over to help them get answers to some of them...”.

The **elder** said, “...the children conduct experiments at all times in their schools to prove things therefore, teaching them some of the conservation ways of our forefathers which were handed down to us, the children would demand that we conduct some form of experiment to prove some of the claims and this may be very challenging...if they want more information about some of the spiritual things they can consult the elders to open their eyes to some of the things...”.

The **traditional priestess** said, “...the way our current young people are very inquisitive it is too much...they want to know everything but many of the things they are not physical for us to explain to them...they don't even respect our orders and would always be asking, 'why' they cannot do this or do that for instance why they cannot go into the river on particular days nor cut some trees...yes they can come to us with you the teachers or when we even are invited too, they can ask us some of those questions that bother their mind...”.

The **herbalist** said, “...as a teacher, I know that because of the school it is not everything, about spiritual things that you know because you don’t learn such things in school so if any of the children you are teaching ask deep spiritual questions about the way we do our things and the spirits in plants and forest and so on, you can come for consultation so we teach you more things...children want you to tell them everything and sometimes ask you very irritating question about what we do because of the small things they want to learn in school but they should know that it is not everything you can know as a child...”.

The **youth** said, “... there are a lot of things that are not well explained, we are only told to obey them and we have to obey them and you cannot ask any of the elders to do something to show you whether what they say about some trees and rivers are true or not but in the school, teachers can be asked to do an experiment to prove some of the things... this would be a good avenue to ask some of the questions that the elders never tell us, at least in the classroom you can ask your teacher anything and he or she will find an answer for you...”.

Teacher 1 said, “...one of the major challenges is the spiritual connotations that cannot be easily proven but our students are living a scientific world and would want an experiment to prove almost everything but how would you prove the spirit aspect...”.

Teacher 2 said, “...many of them will be difficult to prove in the lab or on the truth table and the demand for proof and experiment from students about such cultural practices would be a big challenge to handle...even just over 30 years down the line the children now have no respect for the elderly and are not even patient and humble to ask questions about certain cultural things politely so they could learn and many times you hear them say that the elderly people’s time and culture is old-fashioned...”.

Teacher 3 said, “...students and especially as science students have deep inquiry minds and would ask many, many questions till they get to the roots but there are several aspects of these cultural practices of our environmental ethics which students would specifically demand that we make some experiments to prove them...”.

and this will be very challenging...the present-day students are prone to ask questions for clarifications... ”.

Teacher 4 said that, “*...you should know that this is science and science goes with either field or laboratory practical’s...surely students would ask us to prove what we teach and this is where there will be some difficulty...our children are living in the information age and would have many deep questions to ask regarding such cultural ethics but I just hope they wouldn’t be challenging these cultural ethics looking at how different it is from the western perspectives in which they’ve schooled from the foundation... ”.*

The general view of the participants was that, the present generation of young people, especially the students, are much likely to ask that some form of experiment is conducted to prove the validity of learning the CSEE and that this would pose a challenge especially with regards to spiritual aspects. The IK-holders were ready to answer any emergent questions.

7.1.3.3 Use of Foreign Language in Schools

Participants indicated the issue of using foreign language in the schools as another challenge to the teaching of CSEE.

The **chief** said, “*...how could we develop if we should keep using other people’s language...it is making is very difficult for the students to capture a lot of deep information that can make them think and invent things because even if they get an idea they do not know how they would express it in words in another language... ”.*

The **elder** said that, “*...the value and standard of the local language is even been lost and until we make use of the local language in our schools the values in it will be lost completely and when that happens all the meaning embedded in our proverbs and wise saying would all be lost.... ”.*

The **traditional priest** said, “*...why is it that in many nations they speak their own language and use the same language in school but when you come to Ghana they say that if you cannot speak English then you are dull in school and they look down on you like you are from some typical village and not educated... ”.*

The **herbalist** lamented that, “...a lot of our children have wisdom to do certain thing but the English language that is compulsory is a problem for them...They are born and bred with their local language and when they go to school they don't use even one of the sentence of that language to write one exams or even speak comfortably in it...they make us feel shy because we cannot speak good English but me for instance I have made a lot of drugs that even professors in universities have not done but they still don't respect us because we cannot speak English very well... and this is too bad, something should be done...”.

The **youth** said, “...using the English language is good but sometimes it looks like it is been too much to the extent that even if you are science student and you don't pass English you cannot further your education but in this particular case that we are discussing something related to peoples cultural ways of doing things, the local language should be used throughout since a lot of things learnt at home about these things are already in the local language...”.

Teacher 1 said,“...using the local language during the teaching of such cultural practices of environmental conservation would make it more interesting as the proverbs and many of the details and names used for certain aspects of nature could be easily understood...besides the elders or the IK-holders who may be invited as resource persons would feel comfortable and would be able to communicate deep thoughts and lessons...therefore teachers who don't know the local language well will make it challenging...”.

Teacher 2 said, “...it would be very interesting to teach such things with the local language if not the import of it would even be lost because the names and expressions of the elders all have their distinct meanings...otherwise, there would be a language barrier...”.

Teacher 3 said, “...language will be a bigger challenge in teaching such ethics in schools because currently most of the teachers don't even know and understand some of the deep words and proverbial sayings in the local language meanwhile a lot of the rich wisdom and knowledge of the culture is in the language...”.

Teacher 4 said, “...*the local language is even stigmatized meanwhile that is the best language for teaching such cultural things but we hardly value students who even speak the depths of the local language as compared to those who speak the English language which is foreign...*”.

One major challenge that participants expressed was the issue of using English language instead of their own local language which is highly stigmatized in the schools and not used to teach their students. The IK-holders would be more comfortable teaching in the local language.

7.1.3.4 Formal Education and Modernism

Issues of formal education and modernism were also indicated by participants to likely pose a major challenge to the teaching of the CSEE.

The **traditional priest** said, “...*all they do in our schools today are white people’s lifestyle...they don’t do anything that is from here and that is why the children don’t respect us...and they tell us that our time has passed, and they are the modern people...*”.

The **chief** said, “...*even when they are having traditional council meeting, they will be speaking English and every other thing you do that doesn’t look like European or American seems to be of no value if not how do you expect us to be speaking English in traditional leaders meeting all because of the so called modern times lifestyle which is all western lifestyle...*”.

The **herbalist** said that, “...*there will be a challenge because some people see the way the Akan people do their cultural environmental practices as old fashioned and for that reason the current schooling system and the way the world is changing with many computers people, it will make teaching it in school bigger challenge...*”.

The **elder** recounted that, “...*the way people see the world now and especially because of what they learn in school which are all white man’s things it will make the teaching of our cultural things about the lands, water-bodies, forest very difficult for the teachers because people do not respect what we have...*”.

Teacher 1 said, “...I have been to school, but I was trained in a very traditional home, but I have noticed that we usually don’t have respect for things that are from our own culture and it is worse in the school and in attitude of most formally educated people...”.

Teacher 2 also indicated that, “...although our cultural things are very essential to the wellbeing of our country and its natural resources, the effect of the modern technology and westernized education system poses a threat to its survival...”.

Teacher 3 commented that, “...weighing the traditions and cultural things as against our modern schooling system and the way people love to look and behave as westernized people, this will pose a big threat to the teaching of such cultural environmental ways of conservation...”.

Teacher 4 said, “...technological advancement and the way every Ghanaian seem to think that anything from abroad (Europe, Asia and America) is the best, it will be a big challenge in the effort to teaching such cultural conservation ethics...”.

Participants perceive that, the present educational system is unfriendly to their cultural values and consequently, denigrate them. Majority of the participants lamented that the formal education is too full of westernised culture and this directly make the students denigrate their indigenous culture and consequently their cultural practices for environmental ethics.

7.1.3.5 Loss of the Fear for the gods and spirits in Nature

The loss of fear for the gods and spirits in nature is one of the key challenges that participants (especially the IK-holders) indicated to most likely pose a challenge to the teaching of CSEE in the schools. The following are some of the views participants shared:

The **chief** said, “...the fear that was in us when we were young, now you can’t see it again...people don’t even mind entering the chief’s palace and start touching things meanwhile many, many years ago you could not even point your finger to a chief’s palace let alone just enter...people don’t even believe there are spirits in the forests and our water-bodies anymore...”.

The **elder** said, “...the Christian prayers have removed the fear that, there are spirits in forests, water-bodies, some wild animals and plants...the people have no fear in them again. They are not afraid to go to the places we tell them not to even go because they tell us there is no spirit there...”.

The **traditional priest** commented that, “...as for now, what is called fear that made people not to touch things in nature anyhow and destroy our water-bodies, forests, lands and even killing certain wild animals is almost lost from people...if not how could someone dare go drain the water in the river down here with mind of coming to build there...You would have panicked when you even walk to the river area at night but now, no they don't care and that is why evil things happens to them unexpectedly...”.

The **herbalist** indicated that, “...people no longer fear...but before when you say that we don't enter this particular forest no one dares enter because the gods and spirits would definitely arrest you in different ways but now people seem to have no such fears...and no wonder people die early these days and get all kinds of diseases that take all their monies and they don't even realise that it's that the fear for the spirits and gods and our ancestors that have left them ...”.

The **youth** said that, “...I can see that now people don't fear our elders and what they say much because they don't respect them, but I still fear those spiritual things because I have seen mad people that I was told ate fish from one of the rivers that they said no one should...”.

Teacher 1 said, “...when I was growing up I used to fear certain place because of what I told but honestly I still fear entry of deep forest especially those in the village because I think there are a lot of dangers there as compared to the urban centers...but generally because these students fear nothing these days, those aspects of the cultural environmental ethics that are associated with spirits will even be the ones that will bring a lot of questions that will be difficult to answer...”.

Teacher 2 said, “...currently people don't have 'fear' like the old times because now even these young students can go the cemetery, go and watch dead corpses laid in state in the night and are still able to walk home unafraid of any spirit meeting...”.

them or even coming to torment them in their dreams... ”.

Teacher 3 said that, *“...a bigger challenge to these cultural environmental conservation practices will be the issue of students and people in general throwing away the fear aspect, meanwhile many of the issues related in the ethics have spiritual connotations that make people have some kind of fear for destroying any natural resource -water-bodies, forests, wild animals, lands... ”.*

Teacher 4 said, *“...fear for the gods and spirits are being lost from people lately so it makes them even spoil things more, but this loss of fear will be a bigger challenge to instilling or implementing our cultural environmental conservation practices... ”.*

From participants’ submissions, a certain kind of fear for the gods and spirits that helped to protect the natural environment is diminishing and this is a challenge in teaching the CSEE. These are some of the spirits believed to inhabit nature’s components like water-bodies, forests, lands and others happen to be one of the major reasons the natural resources are cared for.

7.1.3.6 Irrelevance of Sociocultural Belief

Another aspect that participants highlighted, and this case mainly the teachers, to pose a big challenge in the teaching of their CSEE in schools is the likelihood of CSEE being considered as a sociocultural belief that has outlived its relevance in society.

Teacher 1 said, *“...the Akan cultural practices they use in protecting the environment are seen as a sociocultural belief and is classified as superstitions. Such sociocultural beliefs are seen to have outlived its importance. If we really want to put it in there, it may be for only a small group of people somewhere, but the practicality will be difficult in this day and age... ”.*

Teacher 2 said, *“...most of the practices of the Akans are currently seen as sociocultural belief and people think that such things are superstitious beliefs... ”.*

Teacher 3 said that, “...in modern days the cultural aspects of most tribes and ethnic groups are considered their sociocultural belief that will not help the world now again because of increased population...”.

Teacher 4 said, “...the beliefs and most practices of our cultural groups are being castigated as sociocultural beliefs that have outlived their relevance because of the westernized type of education and this thinking also poses a challenge...”.

The **elder** said, “...one of the ways people and most especially in our educational system where they’ve looked down on our culture and just embracing foreign cultures is the aspect where they label our cultural practices as sociocultural beliefs and because of that many don’t respect some of the beliefs and practices for nature by the traditional people...”.

The teacher participants reiterated the fact that despite everything, the CSEE would be seen to be a sociocultural practice that has outlived its significance and therefore, might not be welcomed in the schools. These perceptions were only addressed by teachers and one elder who was a school teacher.

7.1.3.7 A Centralised and Westernised Curriculum

Another challenge that was mentioned but by only the teacher participants is the issue of the centralised curriculum in the country, of which the curriculum is also westernised.

Teacher 1 said that, “...for this teaching of cultural environmental ethics to be possible we would have to decentralize the curriculum and then we could bring those aspects into them...”.

Teacher 2 said, “...putting cultural practices for environmental ethics into school curriculum could only be feasible in small communities mostly in the rural areas not the urbanized schools because our curriculum is centralised and inclined more to the western curriculum patterns...”.

Teacher 3 said that, “...the major issue with the curriculum now is the fact that it is centralized, and this will make it challenging in teaching the cultural environmental conservation aspects...”.

because of the diversities of cultures in the country but it could be possible if efforts are made to decentralise the curriculum... ”.

Teacher 4 said, “*...the centralised curriculum will pose a challenge to fully teach such cultural aspects of the Akans’ ways of caring and valuing the environment and most especially because most of the aspect of it have spiritual connotations... ”.*

The **elder** said, “*...the school curriculum would have to be decentralized to make this feasible but as it stands now it is centralized and this to me will also pose a challenge... ”.*

The teacher participants and one elder who had taught at school before indicated that the centralised curriculum that is being run in the country at the time would have to be decentralized if the teaching of the CSEE would become a challenge.

7.1.3.8 Democracy and Political Biases

Issues of democracy and politics also cropped up as a challenge that could possibly confront the teaching of CSEE. This view is indicated in participants’ expressions.

The **chief** said, “*...the so-called democracy, has affected us so much so that even something that will be good for the nation like this our cultural ways of valuing and caring for nature to be taught in school, they (political leaders) will remove it and put western things there because they the leaders want to get approval from the outside world... ”.*

The **elder** said, “*...everything is politics now, school, hospital, workplace even church...and I think that even if some people help for the government to make them teach this (CSEE) in the school very well so that the traditional leaders could be able to work well to protect our resources, another government will come who will not agree and this will make it very difficult to continue it... ”.*

The **traditional priest** said, “*...even our job here there is politics in it...if the chief of the town doesn’t like you, a lot of things you will never get to help you work and it is the same thing that will happen in the schools if people don’t stop politics, politics things even the thing you want to teach in the school they will not allow you to do it... ”.*

The **herbalist** said, “...because of democracy even if something will benefit everybody, someone who has more political power and hate such cultural things could fight it so much that they will remove it from schools...”.

Teacher 1 said, “...they have been changing the school curriculum every time there is a new government...this is pathetic, it’s like there’s no national goal it is all political goals...!”.

Teacher 2 said, “...even now Ashanti (Akan) histories are being removed from school text books as though it is no longer important but how can we progress if we are going throw away everything about our culture. In fact, how can we move forward if we throw away our own culture and go to take another country’s culture. It is only politics that can cause this and the same will be for what we are discussing about teaching our cultural ways of valuing and caring for nature...”.

Teacher 3 said, “...I only hope that even something like this (cultural ways of caring and placing value on nature) could be sustained looking at the fast pace at which governments come and keep changing the curriculum...”.

Teacher 4 said, “...it is sometimes disheartening when we keep changing something like a curriculum including the number of years to complete such curriculum every time a new government takes office...we are just going back and forth...our democracy and political biases are not helping us achieve a common national goal and this I think will pose a challenge in this new wave in an attempt to teach cultural environmental ethics in schools...”.

Participants indicated that, political biases and the democracy makes people have their own voice that must be listened to and could pose a great challenge to the teaching of the CSEE. A political power or any group of people who are not interested in such cultural things could rise up against teaching of the CSEE through various means and may be able to prevent it.

7.1.3.9 Summary of Challenges of Teaching Akan CSEE in SHS

Several challenges have been envisaged by the teachers and IK-holders of the Akan culture in the event when the teaching of the Akan CSEE in SHS is to be done:

stigma attached to it; seen as archaic; demand for proof and experimentation; using foreign language; formal education and modernism; loss of fear for the gods and spirits in nature; considered as a sociocultural belief that has outlived its relevance; a centralised curriculum in the country and democracy and politics. Details of these challenges have been presented.

7.2 Discussion of Findings on Teaching Zulus' CSEE in SHS and the Implications

In this section, the findings on the school related data generated from the Zulus (South Africa) are presented and discussed. The narratives for the Zulu individual participants (both IK-holders and teachers) are presented in the appendices (see appendix 20 -29). For clarity of presentation and discussion, the conceptual framework developed from Simpson (2002) on components of successful indigenous environmental education was employed. A summary of the key aspects under each component (captured as themes for how to teach CSEE in SHS) are discussed respectively. In exploring the Zulu participants' views on how to teach the Zulu CSEE, the participants were asked to respond to conversational interview question (CIQ) 5 in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories.

7.2.1 How to Teach Zulus' CSEE in Senior High Schools

Under this section findings of the Zulu participants (IK-holders and teachers) on how to teach the Zulu CSEE in Senior High School is presented and discussed. This presentation and discussion is guided by the conceptual framework developed from Simpson (2002) which discusses components for successful indigenous environmental education.

7.2.1.1 Connecting to the Land

Participants indicated going into their communities to learn from the knowledge-holders of their CSEE and tour relevant places. These are captured in the following excerpts:

The **chief (induna)** said, “...*the teachers and their learners can also decide to pay us visit in the places where they can easily interact with the knowledge holders and this will also let the learners appreciate their cultural values and easily embrace them...there are several cultural villages and rural areas where they can see lots of these cultures that will let them see the way we value and care for nature...*”.

The **elder (umdala)** said, “...if you live at a distance and don’t get close to people you can easily not like them and think they are evil or primitive in their doings but when you get closer and interact a little with them your whole mindset will change as you find the depth of wisdom from them...I suggest the school visit the cultural villages and spend some time with some of the experienced IK-holders of the Zulu culture...”.

The **diviner-spiritualist (sangoma)** said, “...people normally have wrong perception about our work when especially they to go to school but it is because they usually don’t come to see how we do our things and even how we initiate someone as sangoma...so the schools could organize themselves and come to visit us here and we will gladly teach them what our ancestors say about the things we have in nature – the lands, water-bodies, plants and animals...”.

The **diviner-herbalist (inyanga)** said, “...it is important that the learners get to know what we do so that when they are in school or finish school and work in the offices they will not say things bad about us that they do not know and feel ashamed of us to identify with us...I think therefore that, the teachers and their learners organize themselves on a planned visit to meet us here so we teach them what we actually do and the knowledge about our job and care for the environment that they will not hear in school...”.

The **youth (intsha)** said, “...I do think that having an excursion to places and teaching learners at the place will be the best since this aspect has to do with the nature studies of the natural environment...they could even visit the cultural villages to appreciate the indigenous knowledge of our people, so they will not look down upon them...”.

Teacher 1 (uthisha) said, “...I do think that if the schools tour places where there are cultural practices like the ones related to the natural environment that we are discussing now, I am of the view that it will go a long way to enhance the integration process...”.

Teacher 2 (uthisha) said, “...tourism and excursion are ways of getting cultural knowledge of a people’s environment...”.

therefore if there is some frequent excursions and tour to some of the places where such cultural things are still relevant, it will boost learners' interest and they will be able to reflect on a lot of important environmental issue that will help the nation... ”.

Teacher 3 (uthisha) also said, “*...our schools could organize regular excursions to places that are related to such cultural way of caring for the environment and interacting with the knowledge holders... ”.*

Teacher 4 (uthisha) also said, “*...I am of the view that going to visit places like zulu cultural villages in addition to the classroom teaching will make the studies more interesting, in addition to seeing places which have been kept intact by the cultural practices would make it more appreciable... ”.*

As indicated above, the participants generally indicated that the teachers and their learners come to the local communities in a form of touring cultural places and community engagement; most especially to visit and learn from the elders (IK-holders) to teach some of their knowledge and wisdom regarding their natural environment.

7.2.1.2 Including Elders as Experts

Participants in response to how their CSEE could be taught in SHS, mentioned inviting their elders (who are the knowledge holders who have been referred to in this research as elders or IK-holders of the culture) to the schools to help in their teaching.

The chief (induna) said, “...knowledge holders should be exposed to the learners by calling upon them to come to the schools regularly to teach them lots of these practices that helped us keep our environment...when the learners are always with teachers who don't know much about the cultural stuff and keep teaching the foreign things, the learners would definitely loose interest in their cultural stuff... ”.

The elder (umdala) said, “...when we invite the elders, the IK-holders who have in-depth knowledge about our culture and most especially if such persons also have high formal academic background, it would boost the interest of the learners... ”.

*The **diviner-spiritualist (sangoma)** said, “...we have the knowledge of our ancestors and they keep talking to us to able to help our community but when people go to school they forget the wisdom we have from our ancestors...the schools can invite us to come and teach the learners some of the things and it will make them more interested in the cultural things...”.*

*The **diviner-herbalist (inyanga)** said, “...you have to use experts in everything you do so you can get the best results...the teachers can organize regular programs and calls us who have more knowledge in the traditional and cultural things to teach the learners...”.*

*The **youth (intsha)** said that, “...I think that the schools can organize some forums where they will invite the IK-holders like the chiefs, sangomas, inyanga, elder and other traditional leaders to help in teaching the learners the cultural ways of caring and valuing nature...”.*

***Teacher 1 (uthisha)** said, “...one of the best pedagogical strategies is to get a resource person in any technical area that you are teaching, and this will enhance the teaching and enable free flow of ideas, so I suggest the IK-holders of the Zulu cultural be invited for such teaching...”.*

***Teacher 2 (uthisha)** said, “...to make things quite simple and interesting, I will suggest that experts in the field, that is IK-holders of the amaZulu cultural knowledge about the environment be invited to assist in teaching the learners on such issues...”.*

***Teacher 3 (uthisha)** said, “...you can’t do away with people who have substantial knowledge about a particular area of study...it will be prudent that the schools seek out for people from the community who have wisdom in such area of study to come and engage their learners...”.*

***Teacher 4 (uthisha)** also said, “...we would need extra hands in terms of the level of content knowledge in an aspect like this...therefore I am of the view that more knowledgeable people, the IK-holders of our culture be called up to help in teaching the learner...”.*

Generally, the participants acknowledged the fact that they are aware of the elders' (IK-holders) wealth of knowledge regarding the culture of the Zulu people. To teach the Zulu CSEE, IK-holders would have to be invited to teach the learners as resource persons. The elders (IK-holders) themselves desired that the teachers invite them to teach.

7.2.1.3 Utilising Indigenous Language, Indigenous Ways of Teaching and Learning, and Indigenous Philosophies of Education

Participants considered that the teaching of their CSEE in SHS should consider language used, the pedagogies to employ, and the content of their CSEE. These are discussed in the following excerpts.

The **chief (induna)** said, *“...because of politics we cannot use only our local language, isiZulu in our schools but I believe that this aspect of teaching we are discussing now are all of cultural things therefore our local language should be used to teach it...and when they teach it too, they should teach the way we were taught by our elders and ancestors or better still they should come to us to teach them how to teach it in school or call us to do it for them in their school...remember that when our elders used to teach us things about our culture and how to care and value nature, they used their own styles and strategies that would make both children and adults understand...sometimes they would even just be telling you in a dream they had or someone had, sometimes deep proverbs and riddles that you have to sit down and think to get answers but all in all they made sure that every part of your life was impacted by their teaching in terms of your morality, attitude to others, the feeling in your spirit and in your heart and your normal daily physical life...”*.

The **elder (umdala)** said that, *“...if the teachers could teach the learners the wisdom of our ancestors on how we protect the nature, and use the isizulu language, it will make the learners love the cultural things you teach them and they will understand it better and especially when they teach like the elders used stories, dreams, observing things and so on...they should also remember that when the elders teach you they talk about physical and spiritual things that can touch your heart too...”*

at the same time you will be learning a lot of wisdom to live in peace with your elders and with nature and fellow human beings...besides the learners should learn to dress more of the cultural way... ”.

The **diviner-spiritualist (sangoma)** said, “...we should not throw away our language and go to use other people’s language in our schools, and so if they want to teach about our cultural ways of protecting nature, they should use our local language to make it easy and interesting...our way of teaching is what they should use but they can add their own but make sure they do not remove any of our own ways of teaching our people...they should also use some of the stories and proverbs and the dreams from ancestors to teach their wisdom about nature...and like how they teach us to heal people, they should make sure that touch on the spiritual part of the learners too, just like how we sangomas try to heal people both physical, psychological, spiritually and not just the normal physical things if not they will not take everything serious... ”.

The **inyanga (diviner-spiritualist)** said, “...how can you teach someone a cultural practice without using their own language that they speak?... if not it will make the teaching difficult because some of the natural things like most plants, animals we do not even know their English names...the things you teach too must be the things we teach in our culture to our own people, I mean our own knowledge and wisdom that we came to hear our elders teach...and if you are to teach our knowledge too, then you will do it better by teaching it the same way we also do our teaching here, like how we use something like proverbs to make you think deep and become wise so you will not destroy our natural environment for us... ”.

The **youth (intsha)** said, “...I believe that using the isiZulu language of the people to teach during this aspect will be the best and will even make the teaching nice and interesting...I am saying this because sometimes it is even very difficult to tell a nice story our parents taught us in English it is not our mother tongue...and if they teach too they should be taught like how the elders and our parents taught us because you always remember what you learnt in the community, or from your friends or an elder told you but the school one you easily forget it...the elders they teach you everything whether spiritual things or physical things so that you will be cautious in your actions to the natural environment... ”.

Teacher 1 (uthisha) said, “...teaching aspects like this cultural things, the local language will enhance it...and for me I am of the view that much as it is our cultural values and knowledge about nature that we will be teaching, the knowledge holders would have been the best teachers but even in their absence we as teachers should endeavor to learn the way they teach using things like stories, proverbs, fairy tales, dreams, taboos etcetera and also teach deep things that touch all the aspects of human personality but I believe that we as teachers can find a way to refine it and mix it with our own teaching strategies at a point although we will not have to change their content that they teach...”.

Teacher 2 (uthisha) said, “...the indigenous language of the people have all the deep things (the deep knowledges and wisdom) they want to say and therefore to teach these cultural ways of conserving nature, the peoples (which includes myself) local language, isiZulu must to be the mode of teaching although we can intersperse with English but at least 80 percent of it must be isiZulu...the teaching methods could be a mixture between the different types of teaching both the indigenous and regular ones used in our schools...”.

Teacher 3 (uthisha) said, “...the teaching strategies should take the form of what was and is done by the elders was practiced by the ancestors whether stories, proverbial sayings, dreams and the many other ways...In my view, the local language of the learners should be used to teach these aspects as it will bring out the depth of some meanings and enhance understanding of learners...the depths of the indigenous wisdoms should be taught...”.

Teacher 4 (uthisha) also said, “...it will be much interesting to use the local language to teach it as learners will be able to express themselves very well and even narrate and quote proverbs that may be beneficial to the topic being studied...we have to follow the footsteps of the elders and knowledge holders ways they used to teach in the local communities and probably modify it, the only things is that we should not teach things different from what they wanted to pass across to us...”.

Participants generally expressed that for the teaching of their CSEE in SHS to be effective, it should be done in a cultural way using the local isiZulu language, while the content encapsulates their cultural values and care for nature.

7.2.1.4 Making Space for Resistance and Supporting Decolonisation

Participants indicated that their learners and teachers are to value their culture and be grateful to the ancestors for their efforts in resisting the colonialist ways of separating them from their culture and occupying their geographical areas. Participants indicated that for the CSEE teaching to be effective in the schools, there should be a process where both teachers and learners decolonise their mind. The following extracts expound this.

*The **chief (induna)** said, “...when the teachers are to teach this, they should be in a position to be able to convince the learners that their culture is their culture and that they cannot throw away their culture and take other people’s culture...they should therefore love, cherish, appreciate what is their own...and always remember what their elders and ancestors have done for them to still have their culture intact and their natural resources (the lands, forests, water-bodies) available for them and protected...the mindset of black Zulu learner should be changed so that they can embrace their culture and the practices boldly...the thinking that they are inferior to some white people should totally be removed from their thinking if not anything that has something to do with culture of the Zulu people will be difficult for them to learn...”.*

*The **elder (umdala)** said that, “...when learners are conscientise about their culture to know the value that their culture holds and how the ancestors have fought to keep the culture...it helps them to rid their mind of the wrong mentality some of the learners have about their culture...for instance there are many times learners of the black community who go to multiracial schools even feel they are better off than their colleagues in other schools because of the different culture of the other races... our children go to school and come back and still feel like the white child is better than them...they cannot see that just as they can fail or do well in exams...*

the other races also do likewise the teachers themselves should be the first people to show this to the learners and help decolonize their own minds and that of the learners that they are not inferior to others... ”.

The **diviner-spiritualist (sangoma)** said, “...learners should know the value of their culture so that they will appreciate the IK-holders and ancestors for great work they have done to have fought long and strong battles to keep what we still have in nature now and give them due respect...the teachers are to help them take appropriate decision to keep to their culture...our children in the school should know that they are also great people and not let other people make them feel everything about their culture is not important in their school...they should know that we have a lot of white people who also have been trained to become sangoma’s like me so they should remove the wrong thinking in their mind that white people are greater than them, so it is only things that are from white people that they will learn in school... ”.

The **diviner-herbalist (inyanga)** said, “...teachers and learners should all become conscious of the fact that their culture is their culture and their traditional leaders are their leaders and they cannot throw away their culture and these people who are their leaders away...beside they should realise that the ancestors have done great deal of work both emotionally, spiritually and physically to ensure that both the culture and the little lands and all that are contained on it like the forests, the water-bodies, the wild animals are belong act and them away... if the teaching of our cultural groups way of caring and valuing of nature is going to be successful, the learners should first of all start clearing their minds from any mentality that the white man is greater than them and therefore learning anything that African is inferior... ”.

The **youth (intssha)** said, “...everyone in our culture should understand that our ancestors have done a lot for us by ensuring that the white people did not take everything we have and could not remove our culture and we love our culture too...But I am not happy at all when I see people who feel that their cultural practice is inferior to other people’s culture and this is wrong mentality so the teachers should teach the learners to embrace their culture and not look down on it...it will be better if our people in school would be confident of their cultural...things and

not feel ashamed of it as though they are of no value and that only the lifestyle of the Europeans, America, Asia are the acceptable ways of doing things in our modern world... ”.

Teacher 1 (uthisha) said, “*...appreciating one’s culture should also be a key area to consider in the in the teaching process because any form of disinterest in the culture would make learners not be attentive to what will be taught...and as much as lie in the power of the teachers and their learner, they should recognize the efforts of the ancestors in ensuring that they have helped to keep their culture and the natural resources...a certain kind of mentality should leave all the learners and we the teachers too about how we sometimes feel as though we are inferior to other races and that we have to throw away every one of our cultural practice to take a foreign one... ”.*

Teacher 2 (uthisha) said, “*...one aspect that would have to be looked at will be how learners would be interested in the cultural stuff and therefore effort would have to be made to ensure that learners enjoy what is in their culture by teaching to become cognizant of what their culture holds for them, and has done for them and more especially realizing the effort the ancestors to ensure that irrespective of what they went through during colonialist rule and apartheid, they still did their best to protect their culture...every culture has to be proud of themselves despite what happened in the past through colonialism and apartheid...I think the effect is still in the minds of many of our people and even more in the minds of learners who go to certain higher level quintile schools in this place...I still feel that many of our people still feel that they don’t match up with people from certain continents like Europe and America and so issues related to their own African culture are usually not upheld...there should be total decolonization of our minds... ”.*

Teacher 3 (uthisha) said, “*...learners would need to fall in love with their cultural practices and know that their culture is their culture and it cannot be relegated to the background...and if nothing at all, the mere fact that the ancestors are remembered in many homes, so should the ancestors and the elders who are ensuring that our culture is still preserved should be commended for what they have done about keep our culture... ”.*

in fact, if this teaching would work smoothly and achieve the purported results, there should be complete removal from our minds any colonialist damaging thought about our culture...this applies to both teachers and the learners...doing this will help to uphold our cultural values...”.

Teacher 4 (uthisha) said, “*...cultural values are very paramount if someone would be able to learn things that are based on cultural practices...learners would have to realise the essence of their culture and make them appreciate their ancestors and elders in order to enjoy related things about their culture...in my view, until the learners and teachers continue to decolonize their minds from the thinking of being inferior to other races, this teaching of our cultural groups’ ways of caring and value nature cannot achieve good success...”.*

Participants generally, called for teachers and students to be taught the CSEE in such a way that they would recognise what their ancestors and elders have done to particularly withstand the test of time to ensure their culture has been kept despite oppressive rule and colonialism. Consequently, some lands and other natural resources have been preserved for the future generations. The learners should be taught to teach others as well to keep this same spirit of the ancestors and keep their cultural heritage. Participants were of the general view that the learners in school must re-orient their thinking, that they are subservient to other races or other cultures, and that it is incumbent on teachers to help their learners in this direction. The confidence of the learners should be boosted about their culture, acknowledging their intelligence. Doing this is expected to support the decolonisation process.

7.2.1.5 Removing Scary statements from CSEE and teaching the Wisdom behind them

Participants indicated their concern that there are lot of unexplained aspects of their CSEE and somewhat scary statements attached to some of the CSEE practices which have to be addressed.

The **chief (induna)** said, “...it is not everything that you the teacher can tell the learners because they are young and some of the things are spiritual...so when teaching it you can tell them there are spiritual aspects of those things but you will need the wisdom of the elders to be able to explain things like that to them in the school...I do not mean you should put fear in them that spirits that they are afraid are found in many of the natural things in nature like some water-bodies, forests, wild animals...when it comes to those aspects you must consult elders or invite them to come and teach...”.

The **elder (umdala)** said, “...we grew up to come and see and hear our elders say a lot of things about nature that are spiritual, some were scary but they were here before we came, so we had to obey them and continue...we didn't go where they said we shouldn't go, we didn't eat fish from some water-bodies they said we shouldn't eat, we did not do any bad thing to any water-body they said we should not go to...our only reason was that we had the respect for them and therefore did all our best to obey them without asking further questions...but if the teachers are going to teach, they should teach the learners the aspect they understand...the spiritual part that they don't know, they can consult or invite the elders...”.

The **diviner-spiritualist (sangoma)** said, “...there are lots of things that the teacher will not be able to explain very well in school about our practices unless the ancestors give him or her the knowledge and wisdom about it because there are a lot of spiritual things that are connected with nature...the teachers could call upon us anytime to come and teach them and their learners...but they should not tell them anything that will scare them because our ancestors are not wicked even though they come from water bodies and manifest in some forms of plants and wild animals...”.

The **diviner-herbalist (inyanga)** said, “...there are a lot of spiritual things attached to the things in nature that when young people hear they can be scared and become afraid but it is not everything you can explain in school...for instance some of the plant used for normal physical things can also be used for other spiritual things...the teachers should therefore teach the physical aspect and benefits that they know and invite us when it comes to the spiritual aspects...”.

The **youth (intscha)** said, “...the old people habit of stopping you from doing something without telling you the reason behind as well as their hiding of the knowledge deep down some particular practices but instead telling you scary stuff about some certain and certain aspects of nature like plants, water-bodies, lands, forests, wildlife, I think should be changed and the main reason be said to the learners...”.

Teacher 1 (uthisha) said, “...many of the cultural ways for the conservation of nature in our cultural group are based upon spiritual connections that sometimes are scary and can cause fear for nature and therefore in my view those aspects must be well tackled...In all these however, there was a sensible thing that made this work...”.

Teacher 2 (uthisha) said, “...our traditional people’s way of caring and placing value on nature are mostly linked to emotions and spiritual attachment...but naturally many of us are afraid of things that has spiritual implication and so for the teaching of such in school I suggest that those aspect that can make a person afraid be removed from it...rather we should find out what reasoning the elders had before saying those spiritual things...”.

Teacher 3 (uthisha) also said, “...I do know a lot of the aspect of our cultural practices for taking care of nature but my concern is that they have too many spiritual implications and this has to be resolved with traditional leaders coming to explain some to us in our schools because sometimes even as adults you can become afraid how much more these young learners...the most significant part will be to teach the spiritual aspect and device ways of teaching the learners the wisdom behind the actions of the elders...”.

Teacher 4 (uthisha) said that, “...every indigenous way of doing things especially of the African people have areas that are related to spiritual things and this has to be looked at from the right perspective of the IK-holders of our culture else it will be difficult to teach learners about such as aspects...the wisdom of the elders attached the spiritual aspects have to be taught instead...”.

The general view of the participants, especially the teachers and the youth were that their elders usually make statements and stories about certain natural resources which are scary (These referring to the spiritual aspects). The participants' (IK-holders) statements indicate that some unexplained and frightening statements are attached to some components of nature. The statements from the participants indicate that spiritual aspects are usually excluded from the curriculum because they do not conform to western ways of education. This points to a disjuncture between indigenous and western pedagogies, with indigenous pedagogies being spiritual and holistic in nature.

7.2.1.6 Developing Computer-Based Programmes for Zulu Cultural Environmental Ethics

Participants were also of the view that when computer programmes are developed for their CSEE, it would enhance its teaching. The following extracts from participants speak to such views:

The **chief (induna)** said that, *“...the generation we are in now people love electronic things and mainly computers and things that you can use with the computer like the phones...I will suggest that the schools find ways of developing special computer program that the learners can use to study the traditional peoples values and care which was placed on the lands, water-bodies, forest and other things in nature...”*.

The **elder (umdala)** indicated that, *“...in my thinking the learners are more interested in computer and phones that our traditions at the moment and this may be the reason why they are not respecting the wisdom of the elders...therefore in my view, some computer programmes should be made that contains the wisdoms, practices, values and our cultural ways of caring for our natural environment that we came to meet our forefathers and ancestors do that was making environment protected...I think that the learners would realise that what the traditional leaders also teach are very wise and important that is why they are on computer programs and they would respect it and the communities too, could have similar programmes on their phones”*.

The **diviner-spiritualist (sangoma)** said that, “...now people believe more in computers, television and phones that it makes life much more easier so they don’t even worry themselves about our culture and what the ancestors say about our water-bodies, plants and animals and so I think that the school can create something with computer about the way our ancestors kept the environment and learners will use it and they will know a lot about importance of our culture and stop following other people’s culture...”.

The **diviner-herbalist (inyanga)** said that, “...people who use computers to do things are accepted more in these days than those who are not using computers for their work...and that is why sometimes some people think that traditional healing is not good because we are not using computers to heal and check the body of people...so since the learners are always in school where they use computers, it will be better if government and the school leaders could create some computer programme for developing all the knowledge and wisdom of our ancestors that show the way we care and value the nature and which the learners can use to study about their culture and this will help them to see that our cultural things are also very important since they are also on the computers...”

The **youth (intsha)** said, “...as for now almost every one of us in school use computers and internet for the things that are studied. I for one love playing a lot game on my phone with many apps downloaded from google play store and so do many of my friends and many elderly people too...I think that if some kind of a computer programme is developed that has all the various practices of our culture and how we care and value nature even from the time of the ancestors till now can make this teaching very effective as I think many of the learners would appreciate it more and even create more school interactions that can make things work well in...”.

Teacher 1 (uthisha) said, “...we live in a dispensation where knowledge has so widely advanced...people are running after computer technology and software that enhance teaching...ICT is becoming a must in every classroom teaching and I am of the view that something concrete must be done with to make teachings of such cultural values attractive to the current generation of learners...”

this could be done by development of computer software related to practically all the traditional or cultural aspects related to the natural environment and the various means that the IK-holders used to care and the various practices that they adopted to keep and preserve natural environment that made them sustainable... ”.

Teacher 2 (uthisha) said, “*...there should some modernized teaching tool that would be engaging the learners...some kind of a hands on experience and this could probably come from a particular apps or computer software that has detailed aspects of these our cultural values that our learners can be engaged with and made in a such a way that it would have the wisdoms of the elders and large vast areas that they could probably preserve with the wisdoms as compared to current state of the environment...this may pique the interest of the learners more and more and even for the fact that it would be developed in the local language... ”.*

Teacher 3 (uthisha) said, “*...I believe that ICT should be added in very special way with the other suggestions and when this is done, there would be a change in the mentality of the learners and many other educated people who seem to be throwing away their cultural values to embrace only the western ways of doing things...imagine having a software that is purely in your local language with all the various functionalities sound, responses, quizzes and answers...it would be interesting to deal with... ”.*

Teacher 4 (uthisha) said, “*...the present-day learners would want to go with what is trending just like us the teachers...and I think that people in general are losing interest in cultural aspect that we were born into because there’s little or no computer software that are purely our cultural practices and in this case regarding how we value and care for nature...if we could have something like that it would help and great deal and more importantly restore respect for our traditions... ”.*

Participants suggested the development of a computer programme or software or google apps that has Zulus’ cultural values and care for nature. The participants indicated that it could even be an interactive programme like google app game that could be put on phones to stir up the interest of the learners and to bring a certain consciousness that their CSEE is a contemporary area of study.

7.2.1.7 Summary of How to Teach Zulu CSEE in SHS

From the preceding sections, the Zulu participants (the Life Sciences teachers and IK-holders of the Zulu culture) have indicated clearly, how their CSEE could be taught at school. The views could all be located in Simpson's (2002) proposal for successful indigenous environmental education. In addition to what Simpson proposed, the Zulu participants indicated several ways such as removing scary statements from CSEE and teaching the wisdom behind the practices, as well as developing computer programmes and software for their CSEE. Inductive data analysis and thematic coding was employed to gather emergent themes mentioned by all the participants.

7.2.2 Prospects of Teaching Zulu CSEE in Senior High Schools

In exploring the Zulu participants' views on the prospects of teaching the Zulu CSEE in schools, the participants were asked to respond to conversational interview question (CIQ) 6a in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories. Several notable prospects were addressed by the Zulu participants (IK-holders and teachers) regarding the teaching of their CSEE in SHS. The following is a presentation and discussion of some of the common views that the Zulu participants expressed.

7.2.2.1 Protection of the Natural Environmental Resources for Future Generations

Some participants indicated that teaching their CSEE in SHS would lead to the protection and preservation of their natural environmental resources for the future.

The **chief (induna)** said that, "*...if our own cultural ways of taking care of the environment is to be taught in school our children would be much more interested in it and would likely get involved in it and this will help us protect the remaining natural resources for the future...*".

The **elder (umdala)** recounted that, "*...in years gone by the environment was kept intact because people were afraid of the instructions of the elders...*".

The **diviner-spiritualist (sangoma)** said, “...if the schools and the learners take the things we do in our culture serious and learn them in school, the way our ancestors were caring for the water-bodies, forests, lands, animals and have told us to also care for them, we will be able to keep them for our children’s children...”.

The **diviner-herbalist (inyanga)** said, “...the wisdom of our ancestors that they have left for us, people who go to school normally don’t take care of it and many times feel ashamed to be associated with it...But I believe that if we can teach them very well in our schools, the learners will start loving the wisdom of our elders that help protect the lands, forest, water-bodies, animals...we will all be able to protect what is left for future...”.

The **youth (intssha)** said, “...people usually take what they learn in school as very important and therefore if our cultural practices for preserving the nature is taught effectively in schools, the learners will take it seriously even when they come home...we will then be able to protect the natural resources we have for ourselves and the future generations...”.

Teacher 1 (uthisha) said, “...one of the greatest benefits of people becoming conscious of the natural environment is the fact that they will help preserve for the future generations, that is why teaching our cultural ways of caring for nature will be very helpful...”.

Teacher 2 (uthisha) said, “...when learners embrace their own cultural ways of doing things it will make it easy for them and we all to take care of what we have without the feeling of compulsion...and this will let us all protect the little precious lands, water-bodies, forests, animals so that the future generations would also come to enjoy...”.

Teacher 3 (uthisha) said, “...we will be able to preserve what we have in nature now for the future generations as the learners and all of us will have better understanding of the limited resources that we have and will teach many others in their communities...”.

Teacher 4 (uthisha) indicated that, “...many times our people who go to school are the ones who are likely to look down upon their own cultural practices that is helpful to their society and natural environment...the learners would therefore have a new mindset that will make them respect their culture which has proved to be environmentally friendly and therefore motivate them to care of nature and preserve what is there for the next generation...”.

To the participants, one of the key prospects of teaching their CSEE in high schools is to help make the learners (who would obviously bring it to their local community) and local community members to realise that their cultural values and care for nature are relevant and given a place in formal schools; this would motivate them to value and care for nature in their cultural ways.

7.2.2.2 Making the Learners’ African Mind greater

Majority of the participants stressed that if such CSEE was introduced into the schools it would bring a change of mindset about the African person.

The **chief (induna)** said that, “...the child or learners can learn from home and from the community where he or she resides and feel confident about it, that, what they know at home and in their community, is relevant for school and this will make them love to be involved in any meaningful community labour and make it easy to mix in class...they will think from their own African mind and this will make them greater...”.

The **elder (umdala)** said, “...learners will get deeper and stronger in the wisdoms and knowledge embedded in our cultural ways of preserving nature and this will shift the mindset of people from being so dependent on the western world and begin to think from their own African mind...”.

The **diviner-spiritualist (sangoma)** said, “...when the schools take our cultural knowledge and wisdom serious by making our children learn it at school it will make other people see how important our culture is to us...they will respect the mind that we also have and they will see that we the black people too have a mind that can change the world and protect our natural resources...”.

The **diviner-herbalist (inyanga)** said, “...*there is so much wisdom in Africa that even our own people cannot see because they have been made to feel inferior because of apartheid...for instance our medicine can heal both physical and spiritual sicknesses...when the children learn our wisdom very well in school and apply it there, people will begin to see how great we Africans people can think and help solve the problems of the world...*”.

The **youth (intscha)** said, “...*the histories of the zulu people show how strong and wise the ancestors were during times of war and so are many African people...I am of the view that if we can put all the different knowledge and wisdoms of the blacks in our school educational system we will see the impact and how we can reason to help and with this, how big the learners’ African mind is will be revealed to all the world...*”.

Teacher 1 (uthisha) said, “...*the learners would be able to learn at home and make proper association of what they learn in the formal school setting because there would be a link between what they study in school and what they naturally encounter at home...by so doing...and in such cases, the African mind of the learner will be given the necessary respect and not look subservient as it seems to...*”.

Teacher 2 (uthisha) said, “...*when learners are given opportunity to learn in their own cultural perspective, making contributions in school would not be difficult because learners can reason from the cultural setting they grew up in and relate and make associations with what is taught in school...they would be able to make reasonable deductions and contribute to more knowledge and this makes the African mind greater...*”.

Teacher 3 (uthisha) said, “...*the identity of the learners would not be lost in the process of teaching and being in formal school that is more westernized...rather they would be able to express themselves freely without any fear and intimidation and make proper contributions to promote learning...this will make them realize the greater capacity of their thinking abilities...*”.

Teacher 4 (uthisha) said, “...*Many of our learners usually feel intimidated when they are in class of mixed culture and many have the mind that people from other races are better than them in terms of their level of intelligence and usually because they cannot express themselves very well in the English language this becomes a limitation...But if these cultural ways of learning about their environment and all aspects of it are not so far-fetched the learners will be able to express themselves in ways that will reveal the higher levels of their thinking abilities of their African mind... ”.*

Participants were of the view that giving the CSEE a place in the classroom would make the learners feel that their own cultural values and care for nature are not marginalized compared to the westernised EE. Besides, the learners could easily understand what would be taught in this regard and be able to make significant contributions during the lessons as opposed to the abstract things that have no local examples. The teacher participants especially, perceive that the learners would become very confident in class and express themselves freely without any form of intimidation especially in the multiracial schools. Thus, there is a great need to contextualise formal education processes in order to promote epistemological and ontological access to indigenous learners in the classroom.

7.2.2.3 Restoration of Respect and Value for Traditional leaders and IK-holders of the Culture

Participants are of the view that if their CSEE is taught in their schools, one of the main prospects will be the restoration of respect for their local constituted authority.

The **chief (induna)** said, “...*I am of the view that respect for traditional authorities and knowledge holders of our culture will be restored if the schools, teachers and learners will all begin to realize the depths of wisdom of the elders especially when they are called upon as resource persons during such teaching of cultural values for nature... ”.*

The **elder (umdala)** said, “...*through this teaching, we will become conscious of ourselves and respect and value constituted authority...again we will start accepting the fact that leadership is a pyramid and that we are all not equal in terms of position and privileges... ”.*

The **diviner-spiritualist (sangoma)** said, “...if people who are in school realise that what they we do as traditional people are relevant for school teaching the learners and their teachers will begin to show us some respect and recognize the wisdom that the elders have...”.

The **diviner-herbalist (inyanga)** indicated that, “...when the wisdom and knowledge of the elders are taught in schools and they are consulted or invited as resource persons for most of the school programs the respect and reverence for them that is almost lost will be restored...”.

The **youth (intsha)** said, “...people will start respecting the knowledge holders of our culture and not think they are archaic if the schools start teaching things that will need their contribution...”.

Teacher 1 (uthisha) said that, “...there is a greater hope of restoration of respect for our culture if our cultural values are upheld in our schooling system...our traditional leaders and IK-holders of our culture will have their respect restored from the different quarters of educational hierarchy...”.

Teacher 2 (uthisha) said, “...teaching our cultural aspects of caring and valuing nature will generally bring our cultural values into the limelight and people will start recognizing it like never before and this will eventually lead to restoration of the lost respect for our traditional leaders and the IK-holders of our culture...”.

Teacher 3 (uthisha) said, “...we stand a better chance of bringing a kind of a balance in the kind of knowledge that we study in school if for instance the cultural aspects of learners are given the necessary priority...it will also yield an indirect by product which will be the respect for traditionally constituted authority and other knowledge holders of our culture...”.

Teacher 4 (uthisha) also said, “...there is greater probability of people recognizing the traditional people in our society who are the main sources of our cultural values...there will be greater reverence for the traditional leaders and other knowledge holders from our culture...”.

Participants were generally of the view that, through the teaching of their CSEE in school, the respect for their IK-holders which is dying out gradually would be restored. Since the IK-holders would be invited as experts to their schools to support them as resource persons with their IK expertise, at the same time, teachers and the learners would be visiting them in their local communities, and learners and the community members will begin to recognise how valuable they are to both the formal schools and their local communities.

7.2.2.4 Bring Peace in Soul and Spirit

Participants see the teaching of their CSEE in schools to be an avenue that would restore to them peace in their soul and spirit. The following are extracts from participants' narratives regarding this prospect:

The **chief (induna)** said that, “...one of the benefits of teaching this in school is that it will bring everybody on board to help take good care of our natural environment like our ancestors did...and when we do that we ourselves will be at peace in our souls and spirits and our ancestors would be happy with us...”.

The **elder (umdala)** said, “...our ancestors are not happy the way we destroy the forest plants and animals in our land and if we are able to do the good things to the environment and not destroy them, we would be at peace and our ancestors will promote us for doing the good thing for the children that are coming...”.

The **diviner-spiritualist (sangoma)** said, “...our ancestors are always making efforts to help us here on earth so we will not suffer much pain and agony, that is why the ancestors are always telling what to do about our lands, forests, water-bodies, wild animals so that we will benefit and at the same time keep for generations to come...when everyone (ourselves and the learners in school) get serious with the cultural way of caring for the nature we will have great peace of mind and comfort for our soul, spirit and body...”.

The **diviner-herbalist (inyanga)** said, “...we will all be excited deep down in our spirit if all the schools and other people in the community start following what our elders have been teaching us about our lands, water-bodies, plant and animals...”.

we will have peace within us if we follow the wisdom of our elders with the learners and teachers in the school... ”.

The **youth (intsha)** said, “*...it is disheartening when you see the way some people careless destroy our natural resources, therefore I am of the view that if we teach these cultural aspects of caring for nature, and learners together with all others in the community, we will all have our peace in our soul and within our spirits and our ancestors will not punish us with calamities... ”.*

Teacher (uthisha) 1 said, “*...there’s nothing comforting as seeing a well-kept natural environment without any single pollutant...you will feel at peace within your spirit and your soul... ”.*

Teacher (uthisha) 2 said, “*...I am of the view that when this is done the learners as well as we the teachers and people in all other sectors may work together with the local community as they see the value and good impact of it on preserving the natural resources...this will bring peace of mind and our spirit will no longer fear for the future of our children but rather be at peace... ”.*

Teacher (uthisha) 3 said, “*...when teaching these cultural aspects become effective and many people in the schools embrace them and apply them, we will see a great change in the environment and we will feel comforted as people would naturally care for the environment and its natural resources without compulsion...we will have peace and comfort for our souls and spirit... ”.*

Teacher (uthisha) 4 said, “*...there are lots of environmental dangers when you see environmental pollution therefore if we are privileged and the teaching of these cultural ways of caring for the environment get rooted in the learners who will also take it back to their communities, it will drastically reduce the current environmental pollution and when this happens it will make our souls, spirits and body be at peace and in harmony with our ancestors... ”.*

Participants reiterated that the teaching of their CSEE would restore absolute peace to themselves especially, the IK-holders and their ancestors, as the teaching would restore consciousness for the whole local community and learners to value and care for nature; hence, peace in their souls and spirits of ancestors. Moreover, the indigenous (cultural) of teaching obviously embraces holistic teaching, which includes spirituality.

7.2.2.5 Preservation and Protection of Knowledge and Wisdom of Cultural Knowledge Holders

Participants' responses indicate that when their CSEE is taught in school, their knowledge and wisdom would be preserved and protected.

The **chief (induna)** said, *"...teaching our cultural group's way of preserving the environment will make the learners capture deep knowledge that will also be recorded in school books that will help preserve and protect the deep knowledge and wisdom that the traditional people have..."*.

The **elder (umdala)** said, *"...putting our cultural values of caring for nature into the schools will be a great avenue for protecting and preserving the wisdom of the IK-holders and knowledge holder like that of our traditional healers (izinyanga and izangoma)..."*.

The **diviner-spiritualist (sangoma)** said, *"...our cultural groups knowledge that our ancestors have given will not be lost but we will all help to protect it and keep it well because the school people can put some of the knowledge on the computer and make them into books..."*.

The **diviner-herbalist (inyanga)** said that, *"...before there was any form of medicine found in pharmaceutical shops today, our people were taken care of with the medicine of their traditional healers because the traditional healers are endowed with a wealth of knowledge about giving wholesome healing to different kinds of ailments and sicknesses...such knowledge we have can be preserved and protected when the schools allow our wisdom and knowledge to be taught and recorded for the learners to learn what we teach..."*.

The **youth (intsha)** said, “...when we study things in schools they are usually documented in different way and this will help to preserve and protect the knowledge of our elders and we and the future generations can study it for the benefit of all...”.

Teacher (uthisha) 1 said, “...teaching these cultural values on nature will definitely come with a curriculum and a text book and this will mean that it will be a great avenue to keep and preserve the knowledge for the benefit of society without been lost...”.

Teacher (uthisha) 2 said, “...through teaching these cultural aspects of environmental conservation, we will eventually preserve and protect the wisdom of the IK-holders of our culture for the benefit of all...”.

Teacher (uthisha) 3 also said, “...teaching these cultural aspects of caring and valuing nature in our schools will serve as an avenue for us to preserve and protect the knowledge and wisdom that the previous and current generation have and use it to help the next generation...”.

Teacher (uthisha) 4 said, “...we will have a greater opportunity to document and preserve and protect the knowledge of our traditional leader and IK-holders of the culture...”.

Participants were optimistic that if their CSEE gets its rightful place within the schooling system and is embraced by the people, it would help protect and preserve the wealth of wisdom and knowledge of IK-holders in their local communities. In addition, their local industries, especially the handicrafts and herbal medicines, could be documented in books and other learning formats that would help to protect their wisdom and knowledge.

7.2.2.6 Possible Higher Achievement Scores in Related Exams on CSEE

Participants indicated that through teaching their CSEE in schools the learners stand a greater chance to excel in exams related to their CSEE.

The **chief (induna)** said, “...when learners are taught things that they can get more information about from their homes, communities, during occasions, festivals they are more likely to do well with it...because the things studied will come from their culture they stand the greater chance of performing better in school and in exams...besides things which will have their culture in it would be better understood than aspects that are more foreign to them...”.

The **elder (umdala)** said, “...since learners will be given exams for whatever they learn in school, I am of the view that when they put these our cultural values and practices into the things they learn in school, the learners can easily pass their exams because they will know a lot of the things as it will not be foreign to them...from home they see, feel, hear and interact with a lot of things but you know that because the things taught in school are usually not related to their everyday life they don't do well in their exams but I think that for this particular one they would be able to do well in their exams because the things would not be too far-fetched...”.

The **diviner-spiritualist (sangoma)** said, “...the learners and their teachers will find it easy to do teach and learn things that are from their own culture because they are already in it only that when they go to school and then they decide to throw away their culture and stop respecting their elders who have the wisdom for their communities...I am of the view that because these things they will learn, they will also learn more from the home and the community they will understand the things better and will do well in their learning and in their exams in school...”.

The **diviner-herbalist (inyanga)** said, “...going to school is very important, but when it comes to learning and passing exams it is also a different thing...but I think it is because most of the things taught in school has no bearing on what goes on in the community or in our experiences...but this particular things we are talking about will not be too different for the learners and they will also have the opportunity of communicating in their local language and this will even enhance it and make them pass their exams on it very well...”.

The **youth (intssha)** said, “...learning about your culture would be more interesting than doing subjects that are very different from what you know from home or at least hear about and see regularly...I am of the view that because the things that will be taught will have more of the cultural aspect and cultural practices, the learners would easily grasp it and perform better too when given some test or assignment or exams on it...”.

Teacher (uthisha) 1 said, “...prior knowledge base of learners are very fundamental for building on your new knowledge in the classroom situation and if it so happens that the learners are already learning in a cultural context, it would not be difficult to pick up what they would be taught in school and they are even more likely to be involved in the lesson in such instance...understanding the content would eventually lead to passing exams set on such content...therefore the learners would most likely do well in their exams if they are taught such cultural things that they are familiar with or at least it would not be far-fetched...”.

Teacher (uthisha) 2 also said that, “...learning in such cultural context would definitely enhance the comprehension of the subject matter by learner and therefore they stand higher chances of excelling in their exams of such subject matter...”.

Teacher (uthisha) 3 said, “...the advantage of teaching contents that has basis on usually day to day life, is the fact that it helps to really make association with what is taught in the classroom...I am therefore of the view that, when learners are taught these cultural values and care for nature from their own culture they stand the chance of getting more involved in it and understanding things better besides they would be able to ask relevant questions and make contributions that would enhance the teaching and at the end of the day they would also do well in their exams...”.

Teacher (uthisha) 4 said that, “...learners are more likely to be interested in topics that has their culture as the basis and for that matter will be more involved in the teaching and learning...the interest would make the learning less challenging and for that matter they would very likely pass all exams set on such aspects...”.

Generally, participants were optimistic that as the learners are taught the CSEE which would obviously not be too abstract to what they know from home and their local communities, taught with their local language, there is a greater possibility of excelling in related exams. The teaching of the indigenous learners should be contextualized to promote their access to the epistemology and ontology of the knowledge.

7.2.2.7 Good Relationship with Local Community

Participants did indicate as part of the prospects in teaching their CSEE in school a resultant good relationship building between the schools or educational sector, their local community members and IK-holders.

The **chief (induna)** said, “ *usually, the school environment seem to be so different from the local community that, the learners usually don’t even interact properly with the community members who are not in school or are just working...but I am optimistic that when such cultural values and practices are given good place in the schools and there is continuous interaction, it will create very good relationship between the community and the schools...the invitation and consultation of people who have the cultural knowledge of our values and practices would also make them feel important and the learners would also sense the various challenges that goes on in the community...* ”.

The **elder (umdala)** said, “ *...when there is much interaction between the schools and the community, as they come around to learn lots of cultural things and we are also allowed to participate in some of their school programmes like what we are talking about now, it will create a very good relationship among us the local community and the schools...they will not feel that they are not part of us but will see and share in the problems in the community...* ”.

The **diviner-herbalist (inyanga)** said, “ *...we would be able show some oneness among us in the community and the school people who usually feel that they don’t really need us...there will be nice relationship and we can interact very well...we would also see that we are relevant to the school because they would consult us and also invite us for programs...* ”.

The **diviner-spiritualist (sangoma)** said, “...*the learners and their teachers will see the relevance of we the IK-holders of the culture as they (teachers) will consult us and invite us to the schools to teach their learners...this will also create a beautiful relationship and friendship between us...we will understand the problems of the schools and they will also know the problems in our communities because they would come here to visit...*”.

The **youth (intsha)** said, “... *the learners will get to know what really goes on in the local communities as they would go there (local communities) on some occasions and learn a lot of things. The elders in the community would also feel important and there will be nice interactions...*”.

Teacher (uthisha) 1 said that, “...*by the interaction with the community leadership and IK-holders, a kind of a mutual relationship will begin to develop...the learners will actually see that the things about their culture is very relevant because the schools may bring on board the IK-holders to teach or interact with them and the IK-holders would also feel that they are really wanted because even the schools are giving them a place to operate...there will be good and relevant relationship...*”.

Teacher (uthisha) 2 said, “...*there will be healthy relationship and rapport between the school and local community as they (local community knowledge holders) may feel that their knowledge is important for the school world too...*”.

Teacher (uthisha) 3 said, “...*if learners go on tour in the local community, get involved in activities in the local community, their mindset about life and studies will be transformed... and in this case because the IK-holders of the culture would also be invited to come engage with the learners, they would definitely interact well with them and the respect they have for the teachers will be transferred to the IK-holders too...*”.

Teacher (uthisha) 4 said, “...*there will very cordial relationship among the learners and their local community for several reasons in that, the people in the community who would provide them with some of the cultural values and practices would also admire the fact that they have been consulted by learners for their wisdom...*”.

in addition the learners will also learn to identify with the problems of the local community and cooperate with them in the attempt to solve such environmental problems...”.

The participants indicated that the teaching of the CSEE would involve the learners and teachers visiting the IK-holders and touring the cultural places within the local communities. In addition, the IK-holders coming over to the schools to support the teaching, would build a good relationship between the schools and the local community.

7.2.2.8 Summary of Prospects on Teaching Zulus’ CSEE in SHS

Participants of the Zulu culture indicated several prospects they envisaged in the teaching of their CSEE in SHS which cut across issues of preservation of natural resource for future, restoring respect for traditional authority, preservation of knowledge and wisdom of elders, improvement in intellectual capacity and excellence in exams, bringing peace within individuals and good community relationship. Refer to the preceding sections for details on these prospects.

7.2.3 Challenges of Teaching Zulus’ CSEE in Senior High Schools

In exploring the Zulu participants’ views on the challenges of teaching the Zulu CSEE in schools, the participants were asked to respond to conversational interview question (CIQ) 6b in appendix 29. See Table 4.2 in section 4.4.2 for the details of the questions asked participants and the pages where their responses are captured as well as the narratives created for the participant categories. Under this section, the common challenges Zulu participants (IK-holders and teachers) addressed regarding the teaching of their CSEE in SHS are presented and discussed using the extracts from their narratives and categories under common subheadings or themes.

7.2.3.1 Stigmatization of our Cultural Values

Participants indicated that, one of the challenges they perceived the teaching of their CSEE in schools would be confronted with is the issue of stigmatization of their cultural values.

The **chief (induna)** said, “...we would be powerful thinkers if we took our indigenous knowledge serious but colonial people made us disrespect our knowledge...”

but the surprising thing is that the same colonial people themselves now have picked up our indigenous knowledge that they made us to look down upon and are researching into various aspects of it and turn back to us at a price...but this is the extent to which our cultural practices and values have and is being stigmatized by certain segments of society...a challenge like this would confront the teaching of cultural ways of valuing and caring for the nature... ”.

The **elder (umdala)** said, “*...almost all traditional and cultural things that we practice these days are looked down upon by different segments of society as though they are of no value because of computer...some people even feel shy to do certain things if they are directed by an inyanga or a sangoma...in fact many people shun things given by them (sangoma, inyanga)...this is just one example of how people stigmatize our cultural values...some young men even feel it is only their skin colour that makes them black but for them they are already white in heart...this is problem teachers would face with some learners and their parents when they are teaching our cultural ways of caring for nature... ”.*

The **diviner-spiritualist (sangoma)** said, “*...teachers are likely to face a lot of problem when they try to teach our cultural practices for protecting nature in their schools because even publicly people stigmatize us and they wouldn't want to even have anything to do with us and our medicine nor with our practices...many people wouldn't even want to take our products and sell in the shops or use it... For instance, if you pull out your traditional thing in public people raise eye brows... ”.*

The **diviner-herbalist (inyanga)** lamented that, “*...many people (especially high ranking people in society) look down upon the knowledge of traditional healers and our practices but in the night, some of them secretly come to us...meanwhile in public the same people wouldn't want anybody see them to be associated with us...nobody feels ashamed to walk into a pharmacy to purchase a drug but many people would rarely come out that boldly to buy drugs from traditional healers... even the government build clinics for the others but do not build traditional healers' clinic...But if they give us the opportunity, we can educate the public...they just stigmatize our culture and the wisdom that our ancestors have given us... ”.*

The **youth (intssha)** said, “...one of the main challenges that the teaching of such cultural practices for conservation will be confronted with is the stigma that is attached to the indigenous knowledge associated with the natural environment... Sometimes even people from our culture who seem to have had some kind of exposure feel they don't need these...”.

Teacher (uthisha) 1 said, “...one of the key challenges to the teaching of these cultural ways of conserving the environment will be the way the current generation stigmatizes the cultural practices of our people...the traditional leaders are not even accorded the needed reverence they deserve in society...many people feel their position does not count...”.

Teacher (uthisha) 2 said, “...many people in society now feel it is kind of shameful to practice certain traditions...a common thing like the use of cow dung to even fertilize farms, people are shunning it using the same kind of wrong thinking about our culture...stigmatisation of the cultural values will be one of the main challenges...”.

Teacher (uthisha) 3 also said, “...it is pathetic but at the same time a reality that our cultural practices and wisdoms of our elders and IK-holders of the culture are looked down upon, disregarded and seen to have no much value than what comes from the western world...in fact, our rich cultural practices are grossly stigmatised by many people...”.

Teacher (uthisha) 4 said, “...we will face the challenge of stigmatization of our cultural groups' practices for caring and protecting nature – land, forest, water-bodies, animals as people already see most of what is done in our culture as having less value...”.

Participants reiterated that, their cultural values and care for nature may be looked down upon, discriminated against, seen as shameful and outdated or people may have gross disrespect for it especially the educated elite in society. Consequently, participants indicated that because of such stigmatisation, their people are not confident to showcase some of their cultural practices in many places.

7.2.3.2 Apparent Loss of Communal Sense

Participants expressed that a challenge they perceived would confront the teaching of their CSEE in schools and its effectiveness in impacting their communities is the loss of communal sense.

The **chief (induna)** said, “...the democracy and the effects of apartheid is making a lot of people in the community look to themselves and only their nuclear family...the sense of communal living where members of the community used to care for other people’s children and were even able to even correct them outside their home is almost gone now because of many political reasons...”.

The **elder (umdala)** said, “...some practices can’t fit this generation because people have personal interest and no communal interest, so it will not have impact now. People are selfish and have lost the communal sense...”.

The **diviner-spiritualist (sangoma)** said, “...the love we used to have for each other and each other’s family is fading away and this making is difficult for us to work together to protect our water-bodies, forests, animals and lands because everybody feels he or she should do everything to survive so even if what they will destroy the nature and affect other people they don’t care...that’s why some people can throw rubbish into our rivers and don’t even mind what happens after...”.

The **diviner-herbalist (inyanga)** said, “...the days when we could correct someone else’s child in our community being lost completely in our society and this makes it a great challenge to work together towards a common goal of say keeping, protecting and preserving our natural resources for future generations...”.

The **youth (intsha)** said, “...the way the world is changing now it is very difficult for us to work together as one people to fight for a common goal that is to fight environmental conservation problems...can you imagine that people sit in taxi’s and be throwing stuff in the middle of some first-class roads...people still put rubbish in some of our water-bodies...it’s unthinkable...”.

Teacher (uthisha) 1 said, “...one of the main challenges that will make it difficult in our attempt to restore the cultural values placed on nature and natural resources is the loss of communal sense that made our people work together as one...but sad to say, the common adage that says everyone for himself, God for us all, is taking its toll on amaZulu...”.

Teacher (uthisha) 2 said, “...our generation is going through very challenging times because people are now concerned about only themselves...showing sympathy is even a problem...the cultural ways of conserving the environment will actually need the cooperation of all but now that we are losing our togetherness and care for each other, I am wondering what is going to happen...”.

Teacher (uthisha) 3 also said, “...a united force is what builds a nation...our forefathers were the community type who cared for each other, respected each other and especially the instructions of traditional leaders...but we are seeing a different breed of people now who only look inward...we really need that consciousness or sense of communalism...”.

Teacher (uthisha) 4 said, “...selfishness on the part of many people in our community today is a great devil that must be dealt with else we cannot achieve any environmental goal to preserve the natural resources – the forest, land, water-bodies, lands that our forefathers left for us...the gradual erosion and loss of the communal sense will pose a big challenge...”.

Participants sounded very concerned about the decline of the unity and communal sense that existed among their cultural group, which to the participants was so strong that a member of the community could even correct another person’s child as indicated by the chief (induna); however, politics is eroding this. This gradual loss of communal sense, according to the participants, would most likely hinder the smooth teaching of the CSEE.

7.2.3.3 Cultural Practices seen as Archaic, Barbaric and, Superstitious

Participants indicated that some of the key challenges the teaching of their CSEE will face will be with the issue of being archaic, barbaric and superstitious.

The **chief (induna)** said that, “...when the colonialist labelled our cultural practices as, ‘barbaric’ and saw it as, ‘superstitious’ it makes the current generations also to grossly disdain and disregard everything African and see all African perspective as useless and of no value...and this will make it a great challenge to teach...many people see the cultural ways of doing things in Africa as primitive and archaic and this will be a challenge during the teaching...”.

The **elder (umdala)** lamented that, “...because colonialism and apartheid tried to remove the oneness we had as Africans, many ill statements and unkind descriptions were given for almost all our cultural practices as sheer hatred for us and total disregard for us...a challenge that is most likely to be is the wrong thinking that our cultural values and practices are primitive, old-fashioned or archaic that is why many of the well educated people sometimes feel that they are whites and blacks in the way they think and go about their life...”.

The **sangoma (diviner-spiritualist)** said that, “...sometimes people can just look down on our cultural practices because this apartheid came with the way to take away our strength...the colonial people saw that they could not defeat the black man with his beliefs so they came up with statements like, this practice is superstitious and barbaric to the west...the respect for our culture is almost gone because some people think that, it is not modern and that what is modern is what people from abroad (Europe and America) do...they will be saying that these cultural ways of doing things are archaic so they should throw them away...”.

The **diviner-herbalist (inyanga)** said, “...despite the many bad statement used to label the our cultural practices as being, ‘barbaric and superstitious’, the paradox is that they (those who castigate us) do not label our rich natural resources which is part of us, with similar words as being, ‘barbaric resources’ and, ‘superstitious resource’...”.

meanwhile all the natural resources are connected to the people who have used their, 'barbaric' and, 'superstitious' practices to protect and preserve the environment...they utterly love our natural resources – our mineral resources, our rich biodiversity but not the people...this is an unfortunate situation...”.

The **youth (intssha)** said that, “*...our oneness as I was told of is no longer there because I am told there was stronger unity and oneness among our people than we are seeing today but the colonialist saw that there was no way to defeat them so they started making comments of the cultural practices as being barbaric and superstitious and this made them loose their strength of working together...in many places they have no respect for African traditions and even our own people who are in school...so some of the challenges we will face if we want to teach these cultural practices for conserving the environment in school, will be the comment that they are old-fashioned and primitive...”.*

Teacher (uthisha) 1 said, “*...one challenge to confront is the general perception that many African cultural practices are barbaric and superstitious...we should be able to defend again this wrong outright statement against African cultures...we will surely be confronted with the statement like, these are all old-fashioned and archaic practices that are not relevant...”.*

Teacher (uthisha) 2 said, “*...people generally look down upon majority of the cultural practices of Africans and that is why even though we are in Africa, many of the things we study in school has nothing to do with us, but are westernized...our cultural practices are usually considered to be full of superstitious beliefs and therefore branded as irrelevant to current society...also regarded as barbaric...one challenge will be the disrespectful comments that what we are trying to teach are archaic and not needed...”.*

Teacher (uthisha) 3 said, “*...we have to anticipate this challenge that the aspects of cultural ways of caring and valuing nature is likely to be seen as part of the superstitious African practices and beliefs which some of the people say have outlived their relevance all because they have no respect for African way of doing things there will be challenge coming from the disgusting statements like these are primitive, old-fashioned and archaic practices for caring for the environment...”.*

Teacher (uthisha) 4 said, “...*there will be the thinking that is already known that the African cultures and practices are superstitious and barbaric...just to discourage people from doing things the African way but rather the Westernised way...the thought of African cultural practices being old-fashioned and of no much value in contemporary times will be one of the major challenges in the plan to teach the cultural values...*”.

According to the participants, the thinking that some African cultural practices are barbaric and superstitious would pose a challenge to the effective teaching of the Zulu CSEE in SHS. Such wrong thinking about the African culture is what makes people to denigrate practically anything African with regards to their peculiar cultural practices for preservation and protection of land, forests, water-bodies, wild animals and other components of nature.

7.2.3.4 Demand for Proof and Experiment

Participants referred to learners asking for proof and experiments to prove the validity of some of the practices in the teaching of their CSEE. The following are extracts from participants’ narratives:

The **chief (induna)** said, “...*truly, we really have a new breed of people in our present generation. Can you imagine that even very young people can question you in way that you can see that politics and democracy has spoilt them and it is evidently clear that there is less respect for traditional leaders and our instructions because now everybody feels they have the same right with you... In our time, we never asked further questions from our elders as a way to challenge their intelligence when we were young but things are changing now...I am of the view that the learners would be asking you (teacher) to prove to them why they cannot wear even the leopard skin. The learners would probably even ask for an experiment to show what will happen if they wear it and are not the king or chief...*”.

The **elder (umdala)** said, “...*the generation we are in are always asking questions, sometimes not because they want any sensible answer but just to challenge what elders have said...maybe he or she is highly educated and may be in a political position now...they do that just because they don’t want to cooperate and be obedient like we were...*”.

when we were young and just accept anything that came from our elders and traditional leaders without asking them to prove whether what they are saying about that water-body or that forest or that animals is true or not... ”.

The **diviner-spiritualist (sangoma)** said, “*...the children in school will ask a lot of questions to show them some of the things you will be teaching...some of them you cannot answer if the ancestors don't tell you so you can bring them for visit to our place so we will teach you all the things you don't know... ”.*

The **diviner-herbalist (inyanga)** said, “*...our children want to know the details of everything but some things are hidden to the mind of a child because it is not everything they can understand or take it in...so truly it is not everything you can teach the learners or be able to answer them because I know many of them will tell you do some experiment to see for instance if there is a spirit in a particular river...but you should know that the spiritual aspects you cannot teach, that is why you have to invite us to the schools to teach certain aspect...but some things were very deep and they were connected with spirits, as a result you will never know even if you are their own children they will not tell you or you will never know about them... ”.*

The **youth (intsha)** said, “*...there is a habit of the elderly people in our cultural group, who if they don't want you to do this or that thing because of a hidden knowledge or mystery deep down our interaction with various factors in nature (the lands, water-bodies, forests, wild plants and wild animals) they will just say something that will make you fear in interacting with that aspect of nature without telling you the honest fact or the hidden thing...some of the things they should be able to prove it... ”.*

Teacher (uthisha) 1 said, “*...the old people deep down them have the knowledge of the thing or reason for telling you not to interact in a certain way with that factor of nature but will not tell you but only put fear into your heart...and normally when you grow old or mature and they perceive you can understand such mysteries, that is when the elders will tell you things ”.*

Teacher (uthisha) 2 said, “...the present generation are born in a science and technological age and would therefore demand proof and experimentation to explain or justify any claims that will be made by the cultural ways of preserving and conserving nature...”.

Teacher (uthisha) 3 also said, “...the current learners are living in an information world where they can access information at the click of a button, therefore to teach certain thing that you cannot do experiment to prove will be very challenging because the learners would definitely ask you to prove to them whatever you teach...”.

Teacher (uthisha) 4 said, “...learners would demand a proof or an experiment to answer any bothering thought or statements made in the teaching about the cultural practices for conserving the natural environment...the challenge I am anticipating are that learner would ask you to prove some of the aspects that are linked to spirits and other mysterious aspects...this is because the old time way of telling children things without tell the reasons why you said that or trying to hide things from them is past and gone...the learners will not take things on surface value...”.

Participants indicated that the learners would likely demand for proof and experimentation of many of the cultural perceptions and practices enshrined in the Zulu CSEE. Besides, the participants (the IK-holders) claimed that the young people presently ask certain questions not to get information but to challenge the authority and privileges enjoyed by the traditional leaders.

7.2.3.5 Democracy, Politics and Human Rights

Participants also see the issue of democracy, politics and human rights advocacy to most likely pose a challenge to the teaching of their CSEE.

The **chief (induna)** said, “...we can teach the cultural ways that we use to conserve the natural environment but the rate at which people leave their culture for other foreign cultures now cannot be reversed...It can be taught but I think the practicality will be a challenge...I mean the teaching can be done but...the culture people have picked up now will be very difficult to reverse...”.

What is even worse is that, our children go to the multiracial schools...there is so much politics and people demanding their rights that even if they disrespect a traditional leader they can even see it but they are protected by politicians... ”.

The **elder (umdala)** said, “*...we can include it (CSEE) in the curriculum but nobody can reverse the wrong thinking that the people have now. For instance, you can’t tell people to no longer wear leopard skin. They will tell you this is discrimination...but I tell you, we don’t understand what this word discrimination even means now! Our new generation in their so-called democracy and having their human rights do not even realize that authority is like a pyramid and the king is at the top of this pyramid...the subjects are definitely more and increases as you go down it...there is a hierarchy and we are not all the same in position... ”.*

The **diviner-spiritualist (sangoma)** said, “*...there is politics in everything we do now so I think that because of politics some people will fight you and not allow you teach them (CSEE) in school...some learners can even say they don’t like to study things like that and it will even bring more problems... ”.*

The **diviner-herbalist (inyanga)** said, “*...there is politics in schools, offices, hospitals, everywhere...even my job, the only reason why they are not building any clinic for us but only clinics for white medicine are all because of politics...I think that politics can also be a challenge in the school if you want to teach the things... ”.*

The **youth (intsha)** said, “*...politics is in the schools too and some people can decide that they don’t want them to include something like that in school... ”.*

Teacher (uthisha) 1 said, “*...political stance and people’s human rights and all of that can make some key people who could make the teaching of such cultural things to happen, decide he or she is not going to allow it and nothing can be done in such cases... ”.*

Teacher (uthisha) 2 said, “*...democracy and political affiliation could either allow these to be taught in school or not... ”.*

Teacher (uthisha) 3 said, “*...politics will and human rights may or may not support this worthy cause because it may not favor a particular greedy person... ”.*

Teacher (uthisha) 4 also said, “...people’s political orientation may or may not allow the smooth running of certain valuable things like this to be taught in school...some may oppose it or other reasons could be changes in government that may or not favor such cultural values...”.

Participants lamented that politics, human rights and democracy could stand as barriers to the smooth running of the CSEE in school and that they could be a reason why the CSEE may or may not have a place in the curriculum.

7.2.3.6 Summary of Challenges of Teaching Zulus’ CSEE in SHS

Participants generally raised many challenges they perceived the teaching of their CSEE in SHS would confront. Some key challenges discussed included cultural values being stigmatised; cultural groups losing their oneness and communal sense; CSEE being archaic, barbaric and superstitious; demand for proof and experimentation; and democracy, politics and human rights.

CHAPTER 8

CONCLUSION

8.1 Introduction

In this chapter, the conclusions based on the findings presented in chapters 5, 6 and 7 as well as discussion on the research literature are presented. The chapter is organised according to the conclusions to the research questions. The current research explored the Akans' and Zulus' CSEE. The cultural groups and teachers' views of how the CSEE could be taught and the implications (prospects and challenges) of teaching this CSEE in biology or life sciences curriculum in senior high schools were also explored. The study argued that the Western way of conserving the environment is foreign, disengages indigenous people from their own practices, and that it is probably the cause of the current environmental crises within the geographical contexts under study (King & Schielmann, 2004).

In South Africa, for instance, the Department of Education (2003a) has indicated that there are valuable wisdoms of indigenous knowledge systems and that teachers must integrate the learners' indigenous knowledge of related topics in their teaching of natural, life and physical sciences. Kaya and Seleti (2014, p. 35), have addressed that "African indigenous communities have lived in harmony with their environment and utilised natural resources without impairing nature's capacity to regenerate them". This research study focused on the Asante group of Akans who make up approximately 14.8% of Ghana's population, as opposed to the many related researches which focused on the Bono group of Akans who are approximately 4.6% of Ghana's population (Ghana Statistical Service, 2012). Besides, limited researches linked their study to formal school curriculum.

The following research questions guided the study:

- 1) What are the Akan (Ghana) and the Zulu (South Africa) cultural groups' understandings, perceptions and practices of *their* Culturally-Specific Environmental Ethics and how are these communicated to other members of the cultural group?

- 2) What are the views of the Akan (Ghana) and the Zulu (South Africa) cultural groups and Senior High School Biology/Life Sciences Teachers on how to teach their Culturally-Specific Environmental Ethics in Senior High Schools?
- 3) Why do the Akan (Ghana) and Zulu (South Africa) cultural groups and the Senior High School Biology/Life Sciences Teachers have particular views (prospects and challenges) about the teaching of their Culturally-Specific Environmental Ethics in Senior High Schools?

8.2 The Understandings, Perceptions, Practices and Communication of Akans' and Zulus' CSEE

This section responds to research question one. The preceding sections in chapter 5 and 6 expounded in detail the voices of the Akan and Zulu IK-participants respectively. Firstly, the chapters discussed the Akan cultural group, followed by the Zulu cultural group. The views were organised and discussed with the conceptual framework developed from Goduka (2000) (see **section 3.1**). The general understanding of and CSEE Practices of the Akan (Ghana) participants could be summarised in the following sub-themes that have been duly discussed and supported with findings from other researches: *heeding the words of elders; earth providing basic needs; land belonging to ancestors and the unborn child; replacing harvested resources with immediacy; interconnection with water bodies and totems; having the, 'we' feeling communal thinking and, 'we' identification, as well as hunting in season*. Generally, the understanding and practices are inextricably interwoven and cyclical in action in that many times the understanding (of CSEE) informs the practices (for CSEE) and vice versa.

8.2.1 The Akan IK-holders' Voices and Opinions on Akan CSEE

8.2.1.1 Regarding the Words of the Elders

According to the Akan participants, taking the words of the elders to heart (5.2.1.1) is paramount as this could be sources of wisdom for life, bringing long life, blessings and prosperity or spell doom for individuals and their immediate families. Consequently, the elders' words (be it instructions, warnings, directives or general information) spoken about any component of nature (land, earth, plants, animals, water bodies) should be highly revered.

The youth considered the elders' words to be a source of virtue and precautionary measure for a safe long life. Democracy and the current politics in the country have been blamed by Akan participants for stripping the youth from heeding the words of the elders. Many indigenous societies in Ghana have prohibitory and restrictive institutions of laws and regulations for conserving natural resources (Attuquayefio & Gyampoh, 2010; Awuah-Nyamekye, 2009; Ntiamoah-Baidu, 2008; Oduro & Sarfo-Mensah, 2007). The findings of this study adds to the existing research on indigenous knowledge systems.

8.2.1.2 Land Ownership and Provision of Needs

The Akan participants indicated that their cultural group has an understanding that land is generally not for the living but for the unborn children and ancestors; therefore proverbially, land will never be the property of any one person (see section 5.2.2.2). This understanding is what informs the Akan cultural group practices of valuing and caring for land. Awuah-Nyamekye (2009) made similar findings. It is however interesting to note that such understanding, according to some participants (chief, herbalist), is not possessed by some government officials in the country who are interested in economic gains, in that they send their own men secretly into the forest reserves in the dead of the night to log trees in the forest, while allowing some, "galamsey" (*illegal small-scale gold mining in Ghana*) which greatly destroys water bodies. The earth is understood to be a mother that provides basic needs and notably green leaves that fall in water bodies and dissolve their active ingredient are understood to provide health when such water bodies are consumed (see section 5.2.2.1). Awuah-Nyamekye (2009) found out that Akans of Berekum (in Ghana) mainly preserve their natural resources with their religious, spiritual and deistic perceptions.

Ogungbemi (1997a) found out that indigenous Africans make efforts to live sustainably with nature on basis of the benefits they get from it. For instance, Workineh (2005) stated that the Oromos of Ethiopia are aware of the ecological and economic benefits of trees; therefore, they consciously make an effort to conserve them.

8.2.1.3 Replenishing Reaped Natural Resources Promptly

The Akan participants expressed that harvested resources be replaced instantly for their continual preservation (see section 5.2.2.3). Their practices of replanting trees, medicinal plants and food crops, releasing some of the fish caught back into the water, not killing all female species of wild animals and their young are important in these cases. For instance, removing the whole circumference of tree bark even for medicinal purposes is seen to be an abomination as opposed to taking strips.

8.2.1.4 Interconnectedness with Totems and other Natural Resources

The Akan participants expressed that their cultural group is intrinsically interconnected with components of nature - living or non-living (see section 5.2.3). The interconnectedness with water-bodies emanates from them living mainly in deep rain forest areas (where there is a high existence of water-bodies), close to rivers and other sources of water, naming their towns after water-bodies, calling upon water-bodies to intervene in their day to day living with other people and also to punish people. The Akans consider rivers as, “gods’ themselves and not just being inhabited by, “gods’ or, “idols’. Amisah et al. (2013) established that inhabitants along the Birim river (major diamond-producing area in the Eastern region of Ghana), have spiritual, physical and provisional relationships with the river. Studies conducted in Ghana, Zimbabwe, Ethiopia, South Africa, Nigeria and a few other African countries indicate that indigenous African people, animals, and spiritual entities are inextricably interconnected and interrelated with their environment. Moreover, that the African environment embraces a three-way interrelationship of people, animals and spiritual entities (Attuquayefio & Gyampoh, 2010; Awuah-Nyamekye, 2009, 2012b; Mawere & Awuah-Nyamekye, 2015; Ntiamoah-Baidu, 2008; Oduro & Sarfo-Mensah, 2007; Ojomo, 2011; Tangwa, 2004; Workineh, 2005, 2013).

Bujo (2009) affirms that the traditional African does not separate sacred from secular as it prevails in western worlds. Contrarily, Yang (2006a) indicates that in Western worldviews, humans are higher than nature and have no moral commitment to non-humans. Awuah-Nyamekye (2009) indicates that the element of spirit or god in such relationships made preservation of such natural resources a formidable force compared to struggling government environmental conservation efforts.

Regarding totemic relationships, the Akan cultural groups are connected to eight different totems (see section 5.2.3). Awuah-Nyamekye (2014) produced similar findings. However, the participants from the current study indicated that some members of the Akan cultural group consume their own totems whenever they travel out of their territories, showing lack of understanding and allegiance to their totems. Mangena (2013, p. 30) pinpoints that some cultural people's survival is inseparable from "totemism and spiritualism". Murove (2009a) found out that the interconnectedness of people to totems is a foundational African environmental ethic. Mokuku and Mokuku (2004) in Lesotho found that many plants, birds, reptiles, amphibians and insects have been preserved through the traditional beliefs of being connected to such species.

8.2.1.5 The Communal Reasoning and identification

The Akan participants pointed out that their cultural group, live with 'we' or communal thinking as a kind of understanding that informs their practice of caring for nature, as well as nature components (see section 5.2.4). Every effort therefore is made to ensure that all members of their community work together to achieve a common goal free from selfishness. Thus, when there is need to protect a natural resource, the whole group tries to respond. The communal thinking goes to where directives and instructions are given. Or when there is a social ceremony for families they are not related to; they do attend and see their neighbors as family members. All such understanding makes the Akan cultural group work together communally to protect what is reserved for the community, and this informs the practice for CSEE. This finding is akin to the Southern African most popular philosophy of ubuntu: humanness (Kamwangamalu, 2007; Kimmerle, 2006a; Mawere, 2012a)

8.2.1.6 Hunting Wildlife Periodically

The Akan participants recounted that they and their cultural group understand that hunting wildlife should be done seasonally and occasionally in groups (see section 5.2.2.4). Much as this is the normal hunting lifestyle of the Akan cultural group; this kind of hunting is important for the conservation of the species. Ntiama-Baidu (1995) pointed out that indigenous biodiversity conservation has been governed without legal backing, most effectively by local rules and regulations which are mainly enshrined in religio-cultural beliefs and superstitions that are enforced by taboos.

Regarding perceptions, the Akans' CSEE happens to be majorly spiritual as most of the claims and beliefs expressed could only be perceived with spiritual senses.

8.2.1.7 Natural things are a display of the spirit in them

The Akan participants and their cultural group perceive animals, plants, trees, water-bodies, land, rocks, elements of the weather etcetera, as spiritual beings which manifest themselves in diverse natural or physical forms as seen by the natural eye and sensed by the five human senses. These perceptions make the Akan people feel interconnected to other components, therefore valuing and make them feel obliged to mutually care for them. Ntiamo-Baidu (2008) indicated that large numbers of certain wildlife species have been preserved and protected using indigenous beliefs. The Akan participants (IK-holders) indicated that deep dark forests and sacred groves are dwelling places of spirits and souls of Akan ancestors (see section 5.3.1.2). Therefore, entering such forests could spell doom for intruders without permission from traditional leaders and undergoing spiritual purification and ritual performances. Besides, many trees in the deep dark forests are believed to be able to make facial gestures, communicate in various forms, talk, and even travel at certain times but surprisingly, such plants happen to be very potent in treating life-threatening ailments, and other, 'disgraceful' diseases like mental illness, epilepsy, stroke etcetera. Mawere (2011) indicates that spirits are fluid and could inhabit these tangible entities and phenomena. Nhemachena (2017) describes beliefs related to spirits inhabiting tangible and visible entities and phenomena like trees as animism. These dark forests are believed to be the places where many Akan ancestors hid their wealth and family treasury and, 'idols'. In addition, the Akan cultural group might have some form of spiritual senses to be able to perceive some unseen realms in nature to make such claims (See section 5.3.1.2). These perceptions however, make the Akan cultural group to value and care for natural resources even in such deep dark forests.

Ogungbemi (1997a) stated that African natural resources are perceived to literally have a spiritual nature. Kimmerle (2006b) found out that many indigenous Africans believe every aspect in nature can be infused with spiritual powers or become the abode of spirits (especially trees). Burnett (1994) similarly found among the Bantus of the Kenyan highlands, that forests are perceived to have an unusual spiritual connection with mankind.

8.2.1.8 Water-bodies as, ‘gods’ and imbued with spirits

The Akan participants recounted that their cultural group perceives water-bodies especially rivers, lakes, and streams to be gods or deities and not only infiltrated by spirits (see section 5.3.1.3). From the numerous descriptions and statements made about water-bodies and the kind of relationship the Akan cultural group has with these, the participants went beyond just seeing water-bodies as abodes of spirits but rather as gods or deities themselves. Besides, the fact that the cultural group prays to them; calls the names of the water-bodies to intervene in their daily affairs; uses them to help reveal perpetrators of evil, curse evil people; and through evidence of people falling sick with strange diseases and other calamities etc, the water-bodies would most probably be gods or deities as expressed by the participants of this study. Moreover, the water-bodies are described with animate features such as having emotions of being kind, wicked, or gendered as being male or female, having a motherly heart, with children, and descriptions like “the river has left the area” or was seen on, ‘evil/bad’ day, and even used for baptism. Awuah-Nyamekye (2009) found out that the Akans in Brong Ahafo region of Ghana perceive rivers to have deities living in them.

8.2.1.9 Wild Animals manifesting spiritual power

The Akan participants recounted that certain wild animals are imbued with special spiritual powers, therefore their cultural group would not intentionally kill such animals because of the fear of evil repercussions (see section 5.3.1.4). Mysterious manifestations include metamorphosing into different forms, vanishing or turning into human forms of those deceased and some were believed to have swallowed some Akan, ‘gods’ making them extraordinarily powerful. Such perceptions make the cultural group value and care for the wild animals.

Some earlier researchers indicated that there is spiritual power called, ‘sasa’ or, ‘tumi’ in some animals (Awuah-Nyamekye, 2012a; McCaskie, 2003; McLeod, 1981; Rattray, 1969; Sarfo-Mensah, 2002). Kimmerle (2006b) found out that the indigenous Africans generally believe that certain components of nature are abodes of spirit beings and could be used for natural resource preservation.

8.2.1.10 The Transmission of Knowledge of Akans' CSEE

The main modes of communication mentioned by the Akan participants include storytelling, fairytales, myths, rituals, festivals, durbars, dances, communal labour, proverbs, traditional songs, direct or deliberate instructions and direct observation. Frightful, scary unexplained sayings about natural components are employed by the cultural group to transmit knowledge of the CSEE to make the people conform since many of them fear spiritual repercussions (see section 5.4). Participants indicated that stories are usually told to the young chaps and proverbs to the elderly. However, from participants' voices, stories trigger interest and curiosity among the young ones whereas proverbs provoke deep thinking towards a discretionary action regarding how to treat nature. Akwadaapa (2008) indicates that African cultures like the Akans, the Dogon, Dagara, Zulu and others in Africa, have preserved their cultural heritage in a very unique way through their traditional and oral histories. Dunn (2014) discovered that the elders of indigenous societies mentor the youth about their lands, water bodies, and wildlife using stories, proverbial sayings, folklore and mythologies. Awuah-Nyamekye (2014) shared similar findings among the Bono people who are part of the Akan cultural group.

8.2.2 The Zulu IK-holders' Voices and Opinion on Zulus' CSEE

8.2.2.1 Capability of Accepting the authority and privileges enjoyed by Traditional Leaders to Utilise Certain Natural Resources

According to the Zulu participants, a person's ability to make a clear distinction between what belongs to the king, other traditional leadership and members of the cultural group sort of gives a clue that a person understands the Zulus' CSEE (see section 6.2.1). This understanding informs the CSEE Practices. For instance, the ability to recognise and accept that the king is the only one allowed to wear any amount of leopard skin and his other induna (chiefs) wear only a part of it; and that certain medicinal plants are harvested only for the royal family, is an understanding that informs a certain value and care for certain wildlife, plants and animals. McCracken (1986), decades ago, found out that the Zulus kept some particular tree species like the red ivory, solely for royal family utilisation; and that forests were seen as sacred places for interring deceased chiefs.

8.2.2.2 Recognising the Essence of Preserving Natural Resources for Sustainable Usage

According to the Zulu participants, becoming conscious of the need to ensure that natural resources like land, forests, and water-bodies are protected and preserved for future generations, demonstrates understanding of CSEE that motivates the practice for CSEE (see section 6.2.2.1). And persons who do not make an effort to culturally value and care for the natural resources are perceived as short-sighted people and less prudent as participants in society. UNESCO-UNEP (2002) posits that the concept of sustainable use of biodiversity is deeply-rooted and ingrained in the value systems of the cultures of the indigenous societies.

8.2.2.3 Passion for Wildlife Animals and Hunting with Fiscal Hands

Some of the Zulu participants recounted the special love they and their cultural group have for wildlife and their natural environment which shows understanding that informs practice for CSEE. Participants also mentioned that hunting with bare hands was training for survival in the wilderness or jungle, which determines bravery and is perceived as a way of becoming a hero with many royal benefits. The wisdom of building a kraal for instance, for wealth is an innovative idea (see section 6.2.2.3). This type of hunting with bare hands is no longer prestigious or it is not rewarding in current times since it was done during the colonial and precolonial times. Probably, such physical prowess is not needed because of many sophisticated weapons. Besides, to hunt with hands, presupposes that the individual really means no harm to the animals and that in the fight, just like in the jungle, it is a win-win scenario or survival of the fittest. Fien (2010) asserts that regardless of the religious and cultural diversities across the globe, people share common beliefs with respect to the necessity of caring for one another and the natural environment. Beliefs like these are crucial for a sustainable future.

8.2.2.4 Spiritual Interconnectedness to Ancestral Animals and Skeletal Remains

The Zulu participants indicated that they and their cultural group members have a certain physical and spiritual connection and relation with certain water-bodies and wild animals. This is one level of understanding that informs a practice for Zulu CSEE.

The relationship goes beyond the living organism to dead organisms' bones as seen on some thatched roofs in their communities. Some organisms are totems of certain families or ancestors, and their names are used as surnames in most cases. Such organisms are respected, not hunted. In modern times, one may bear a surname which has none of such relationship (see section 6.2.3). Ancestors are believed to be living under some water-bodies in another world akin to paradise. Such water-bodies are considered sacred and are regarded to be abodes of certain deities and spirits like the, 'nkosazana', the other water creatures are messengers from the ancestors. The diviner-spiritualist (sangomas) or diviner-herbalist (inyangas) is usually the intermediary between the Zulu cultural group and the ancestors that deliver a special, 'prayer' for bumper harvest, fruitfulness, riches, favourable weather and for pacification to avert some form of calamity (see section 6.2.3). This understanding consequently informs the practice for the Zulu CSEE that makes them preserve such natural resources like water-bodies and the organisms inhabiting them. Murove (2004) found out that in AEE, the kind of relatedness and/or interconnectedness is not confined to humans but to the natural environment, which is signified mostly in use of totems and the continuous interdependence on the components of nature. Ogungbemi (1997a) asserts that the African ethic is such that, it inspires humans to make efforts to live in harmony with nature and natural resources perceived to have a spiritual nature.

8.2.2.5 Determining Natural Behaviour and Abilities of People through exposure to Wild animals

The Zulu participants reiterated that, through the physical and spiritual interconnectedness of people to other components of nature, the behaviour of some personages could even be determined upon their unconscious and accidental exposure to some of the ferocious or venomous wild animals. For many royal homes, this was a way of determining qualities of a female suitor for a prince or other royal family members (see section 6.2.4). The elders of the culture have in-depth ways of telling who a person is just like using aptitude tests and/or a temperamental wheel. With regards to perception, the Zulu CSEE happens to be spiritually discerned, since a lot of the things mentioned go beyond the physical senses.

8.2.2.6 Spirit Manifesting in Bones of Dead Wild Animals

Spirits (of ancestors and other deities) permeating skeletons of some wild animals is one perception that informs some practices of Zulus' CSEE.

This is usually expressed through displaying skeletal remains in public for spiritual consultations, hanging skulls or other bones within houses or putting them on the roof. This is evidence of the presence of ancestral spirits and powers which are known to offer protection for families and help to connect to the spirit world (see section 6.3.1.1). Members of the community with such perceptions obviously see beyond the five senses. This is based on the assumption that, in the physical it is impossible that a bone of an animal could offer spiritual protection. But the above-mentioned highlight the uniqueness of Zulus' CSEE.

8.2.2.7 Animal and Plant Characteristics connected to Spirits in them and influence on humans

The Zulu participants recounted that they and their cultural group perceive the physical characteristics and behaviour of many wildlife as clear expressions of the kind of spirit inhabiting them. For example, the monkey, baboon and owls are perceived as evil animals that bring bad omen and are used for bewitching people (see section 6.3.1.2). Most probably, these wild animals (owl, baboons) with seemingly ugly and scary looks are what the Zulu cultural group bases their perceptions on.

This perception has indirectly helped to preserve some of these animals as they are rarely hunted by members of the Zulu cultural group. Snakes like puff adder, the mamba and python are perceived by the cultural group to possess ancestral spirits, the, 'amadlozi', and even being used for sangoma training and other cultural practices. These snakes are thus respected and are rarely harmed or hunted. Swallowing the fat of a crocodile is perceived to make a person immune to witchcraft manipulations and food poisoning. The warthog is perceived to be sensitive to weather changes like impending lightning and thunderstorm (see section 6.3.1.2). Such perceptions would obviously prevent any ecological imbalance and determine impending weather changes. Some wild plants like, '*umdungamuzi*' is perceived to bring quarrels, confusions, and misunderstanding, could make someone go crazy and also creates lots of noise when the sticks are used to make fire. Most probably, these plants might contain certain chemical compounds that react with the fire, producing certain heat and fumes which when inhaled may cause the craziness that the participants of this study claim.

8.2.2.8 Human Female Prejudiced Plants and plants used for Linking to the Spirit World

The Zulu participants recounted that some plant species like, '*umahlamba hlale*', '*umazwenda*', '*umbopha nyamazane*', '*isihlahla somdlebe*' have spirits in them and are perceived to wither when touched by females (women) and when females harvest them for making herbal medicine, the medicines lose their potency or become ineffective (see section 6.3.1.3). Probably, the spirits that infiltrate these plants might be repulsive to female species or may have tactile chemoreceptors that shut down upon sensing some female hormones. Nevertheless, such perceptions could probably reduce the rate at which such plants (which obviously might be of high medicinal value) are exploited as an environmental preservation mechanism. The Zulu participants also indicated that they and their cultural group accord some plants like, '*umhlanga*' and, '*ubulawu*' with respect as they are believed to inhabit the spirit of the ancestors and could be used to connect one with the 'spirit world'. Moreover, they are perceived to wield so much power that, they could purify the dreamer's dream to get clearer messages from their ancestors and other spirits. Besides, most plants growing along some sacred river banks are also perceived to be sacred plants with spiritual powers and help one to connect with the spiritual world of the ancestors (see section 6.3.1.3). These perceptions obviously reduce the rate of exploitation of such plants to help preserve the aquatic habitat.

8.2.2.9 Spirits Manifesting in Sacred Water-bodies and Organisms inhabiting them

The Zulu participants indicated that the water-bodies which are generally described as sacred water-bodies have spirits that inhabit them; the water-body serves as a dwelling place for water spirits and ancestors. These habitats are used for religious practices by sangomas and inyangas for various rituals for the cultural group such as appeasing ancestors and for sangoma training. In these sacred water-bodies, participants indicate that the presence of snakes being alive in them is an indication that the water-body is alive or that the water is a living thing. Creatures in and around them, are perceived as messengers from ancestors. There is a spiritual world under the water-body perceived to be the abode of ancestors that is akin to paradise (see section 6.3.1.4 for further details). All creatures in and around such sacred water-bodies are not in any way harmed as it is perceived to bring evil repercussions.

The python, 'amakhosi' is seen as a great ancestor and, 'inkosazana' the princess from heaven is perceived to occasionally reveal herself through spiritual intermediaries like the sangoma, inyanga and other persons who go to the water-bodies in the night (see section 6.3.1.4). Such perceptions create a certain, 'fear' and somewhat restrict the rate of exploitation of the natural resources – the water-bodies, the plants and animals are preserved. Similar findings by Bernard (2003) indicated that there are water spirits and other creatures which are intermediaries between ancestors and the people.

8.2.2.10 The Transmission of Knowledge of Zulus' CSEE

The Zulu participants generally mentioned the use of stories, myths, fairytales, dreams and dances like the snake dance, hunting dance, and reed dance. Stories and fairytales target the education of children where wildlife animals and domestic animals are made to mimic human behavior to stir up interest in the children and to endear the animals. Although this was done avoiding dangerous and venomous organisms with wisdom (see section 6.4.1.1). The IK-holders really had depths of knowledge and wisdom to teach the young about nature and nature components using their own locally-developed pedagogical skills which could sustain interest and make children remember the teachings after many years.

Knowledge of CSEE could be transmitted with snake and hunting dances, which are intended to express the wisdoms and strategies for relating with certain wild animals and hunting (see section 6.4.1.1). The use of dreams as a means of transmitting knowledge of Zulu cultural values and care for nature was recalled by the participants (see section 6.4.1.2). As much as dreams appear to be an intangible phenomenon that could not be proven in the science laboratory, they are significant to the CSEE of the Zulu cultural group as they are treated as realities that could be applied to daily living, utilisation of natural resources and manufacture of medicinal drugs. Obviously, dreams could only be validated with some spiritual senses as it may not fit scientific methods of solving a problem.

8.3 How to Teach CSEE in SHS: Tapping from the Akan and Zulu IK-Holders and SHS B/LS Teachers

This section responds to research question two respectively.

8.3.1 Visiting IK-holders and Touring Cultural Places in Local Communities

The Akan participants suggested that students and their teachers take time to visit and tour cultural places regularly and seize the opportunity to meet with knowledge-holders within their local communities to teach their CSEE. It is believed that, this would enhance proper interactions and most likely, clear out any form of misconceptions that the students and their teachers may be having about the IK-holders or elders. The participants who formed the IK-holders' group, indicated that the students and their teachers could approach them to learn more about their CSEE and even suggested that the teachers intentionally give the students assignments and homework that would require them to meet with the elders of their culture (see section 7.1.1.1 for details). The IK-holders expressed confidence in their ability and willingness to teach in the science classrooms. The teaching of the IK-holders in the classroom would probably bring about the physical, spiritual, psychological and emotional aspects of the CSEE which could be taught. Dei (2000b) and Kimmerer (2002) have suggested a teaching strategy that would prioritise the participation of the local community. Berkvens (2009) and Nguyen, Terlouw, and Pilot (2006) bemoan the many curricula developers who are deficient in the cultural understanding of the local people leading to cultural discrepancies.

Similar submissions were made by the Zulu participants that teachers and their learners should tour the various cultural places, indigenous conservation sites, visiting and consulting IK-holders or elders within their own local communities to learn things in their indigenous context. The elders or IK-holders called on teachers to approach them and interact with them for in-depth teaching of the Zulu cultural values that help to preserve nature (see section 7.2.1.1 for details). George (1999), Semali (1999), and Semali and Kincheloe (1999) point out that learners are to be taught using culturally relevant strategies, while the teachers are encouraged to conduct research on IK within the precincts of their schools since the learners get their relevant previous knowledge from their local communities.

8.3.2 Inviting IK-holders to SHS Science Classrooms to Teach Indigenous Epistemology, Ontology and Wisdoms of CSEE

The Akan participants reiterated the need to bring the IK-holders to the classroom as resource persons and experts of IK. They added that the teachers are to make their students aware that the IK-holders or elders have wealth of knowledge and much wisdom for which reason they have been able to preserve the natural resources since colonial times. Besides, many of the science teachers might even be deficient of knowledge of CSEE (see section 7.1.1.2). The need for schools to use their local language to teach, and teach their local knowledge, wisdom, and beliefs, using their own cultural ways of teaching was emphasised by one of the participants of this study (see section 7.1.1.3). The local language, according to the participants is replete with vital cultural information and would bring out deep-seated meanings, wisdom and knowledge intended to be transmitted rather than using other languages. Besides, some teachers struggle to speak their local language, and this happens to be one reason participants who are IK-holders suggested that teachers call upon them (see section 7.1.1.3).

Generally, the Zulu participants made similar submission that their IK-holders have enough wisdom to teach the learners, and thus indicate that the elders be called upon to come to the schools as skilled persons to teach the learners their Zulu CSEE similar to how their local communities use the isiZulu language (see section 7.2.1.3). The views are that by bringing the IK-holders to the classroom as resource persons, it would cater for the inadequacies of the teachers. The learners' interest is believed to be triggered through such strategies of teaching. Semali (1999) established that, introducing IK into formal school science curriculum will involve consulting with IKS experts. Several other findings attest that indigenous people possess an in-depth knowledge of their natural environment that could augur successful, efficacious and productive teaching and learning within the local context. Masoga (2004) indicates that when the elders are seen as knowledgeable, it would give them their proper place as key stakeholders in curriculum development. Kaya (2013b) found out that the university students felt at home and comprehended what they were taught better when their lecturers taught them in their local language. Several researchers uphold the view of teaching in local language as part of prioritising culturally relevant teaching in the curriculum (Dei, 2000b; Gervedink-Nijhuis, Pieters, & Voogt, 2013; Kimmerer, 2002; Klein, 2011; Nguyen *et al.*, 2006; Owuor, 2008; Workineh, 2005).

8.3.3 Reminding Students/Learners to Cherish Heroes of Their Cultural Heritage as a Decolonisation Measure

The Akan participants called for teachers and their students to recognise the efforts of their forefathers, ancient IK-holders and elders who have kept their cultural values, knowledge and wisdom and consequently preserved their lands and other natural resources since colonial times till date (see section 7.1.1.4). Oduro and Sarfo-Mensah (2007) found out that religious beliefs and practices for natural resource conservation among some Ghanaian tribes are still relevant. Dei (2000b) and Ntiamoah-Baidu (1995) had suggested decolonising schools in an attempt to uphold the validity of the AIKS and African cultural renaissance.

The Zulu participants indicated the need for teachers and learners acknowledging their ancestors' relentless efforts to keep the cultural values and practices intact despite their colonial struggles. This must serve as a motivation for learners to forge ahead and teach others in their community (see section 7.2.1.4). Most probably, when the learners realise the value of their culture, they would take much interest in it and fight to keep natural resources according to the ancestors' wishes. The Zulu participants recounted the need for the teachers and learners to eliminate the mentality of white supremacy over their own cultural knowledge, values, and CSEE Practices. Odora Hoppers (2001) affirms that IK has not been totally lost but has only been marginalised as most people still depend on, and practice various IKS in their local communities like farming. Besides, Prozesky (2009) has attested to the resilience of the African indigenous ethic despite the oppression of many non-African influences.

8.3.4 Demystifying or Uncovering Mysteries Surrounding CSEE Practices and Teaching

The Akan participants acknowledge that some of their CSEE has some spiritually mysterious attachment. Although in the event when teachers are to teach their CSEE, such mysterious and scary connotations should be divulged from the teaching, since many teachers may not be familiar with such spiritual things to be able to explain them as the IK-holders of the culture would (see section 7.2.1.5). Such spiritual connotations to natural resources is what science would not be able to prove in the lab and would rather provoke the students to demand for proof and experimentation to challenge certain aspects of CSEE.

The Zulu participants recounted that in teaching their CSEE in a science classroom, scary statements behind some of their cultural practices must be eliminated and rather teach the wisdom behind such practices (see section 7.2.1.5). The Zulu participants as well do not deny the fact that there is spirituality attached to the components of nature by their cultural group. Such suggestion is based on the assumption that the learners may not easily side with what they would teach because of the scientific world in which almost everything is experimented in the lab. Meanwhile, it would be herculean to prove something spiritual in the physical. Some studies have indicated that there are spiritual connotations to AIKS. For instance, Boaten (1998) attests that taboos in African culture have spiritual backings. Nakashima and Nilsson (2006) affirm that there is spirituality attached to cultural ways of caring for nature. Corsiglia and Snively (2001a) indicate that spirituality is a local cultural perspective that may lead to long-term sustainable societies and assist in addressing environmental dilemmas. Kimmerle (2006b) found out that, the African belief in spirit happens to be the center of traditional African religion. McCracken (1986), decades ago, found out that the Zulu forests were safeguarded with fear, particularly of spiritual entities.

8.3.5 Students Adorning Themselves with Cultural Clothing Use Locally Produced Items and Consume Local or Native Food

The Akan participants indicated that to enhance the teaching of their CSEE and uphold its values, the students should be encouraged to wear their cultural costumes as often as possible and continue to consume their indigenous foods, as well as use locally produced materials. To participants, this would uphold their cultural identity and value for their CSEE (see section 7.1.1.7). The students would lose their cultural identity and practically divorce their culture and indirectly start to lose interest in their local cultural values, like their CSEE if they continue wearing clothing and costumes that are foreign to their culture. This might be aggravated as students may develop a stronger appetite for foreign or westernized foods and products if they are not encouraged to keep their cultural values. It is believed that their consciousness would make them uphold their cultural values and care for nature, thus preserving natural resources.

8.3.6 Mixing the CSEE with WEE

According to the Akan participants, their CSEE should be integrated with that of the WEE which is already in the school curriculum. Nevertheless, the CSEE takes a greater weighting or percentage than the WEE. This is to keep the head of the CSEE from being submerged as it may be happening currently (see section 7.1.1.8). Van Wyk and Higgs (2011b) call on curriculum planners to make an effort in incorporating the rich local or indigenous knowledge into the formal school curriculum to remedy the epistemological imbalances in the curriculum in the current times. Attuquayefio and Gyampoh (2010) suggest integrating the government's newly introduced foreign model of environmental conservation in Ghana with that of the local people's IK practices. Mawere (2012c) indicates that the Western-based environmental conservation strategies cannot be undermined; it would therefore be much profitable if they are infused with the indigenous conservation techniques.

8.3.7 Creating or Developing Computer Programmes or Software for CSEE Epistemologies and Ontology

The Akan participants were of the view that developing a computer software or programme or google app that has their CSEE with all the various cultural values, understanding, knowledge, perceptions, practices, and communication, would enhance the teaching of their CSEE in schools. Besides, it would become appealing to contemporary students as they use their phones, computers and the internet every now and then. This is an indispensable tool that would enhance the teaching of CSEE; most especially in this cyber technology times (see section 7.1.1.6). Doing this would trigger and sustain the interest of students about their CSEE and other cultural things. In addition, the teaching of CSEE within or outside the classroom would also be enhanced. Moreover, when computer programs are developed for the CSEE, it would be positioned in such a way that the CSEE becomes more resilient in this contemporary time where a lot of African cultural practices are denigrated, giving leeway for westernised cultures. Besides, students would feel proud of studying their CSEE in science classrooms.

The Zulu participants recounted that some form of computerised programs, software, and applications that are fully fledged with all the Zulu cultural values and cultural knowledge could be developed for the CSEE.

In this endeavor, participants believe that the teaching of the Zulu CSEE would make the people and learners feel they are not behind in technological advancement in terms of the place and position occupied by their CSEE (see section 7.2.1.6). A rebranding of the CSEE for nature value and care would emerge in contemporary times if such computer programmes are developed for the Zulu CSEE. Moreover, the software could make use of both English and isiZulu languages. Besides, the software could have different conceptions about trees, land, different wildlife animals, plants, water-bodies, motion pictures and models of the different spirits and repercussions, spirits infiltrating nature and many more.

8.4 Prospects and Challenges of Teaching Akans' and Zulus' CSEE in SHS: Views of IK-Holders and SHS Biology/Life Sciences Teachers

This section responds to research question three.

8.4.1 Prospects of Teaching CSEE in SHS

8.4.1.1 Creation of Environmental consciousness

Generally, the Akan participants were hopeful that teaching their CSEE in SHS would serve as an avenue to preserve the remaining wild animals, the lands, water-bodies, forests, plants and other natural resources (see section 7.1.3.1). Furthermore, the Akan participants believe that their CSEE would be revitalised and prevent further denigration as it would be taught in schools like that of the Western environmental ethics. Reasons given by Akan participants include the assertion that the current Western ways of environmental conservation and or sustainability makes less impact owing to the alarming rates of biodiversity loss and environmental degradation. The Zulu participants maintain that when their CSEE is taught in schools, a kind of environmental consciousness which could propel the learners and the community to protect and preserve the natural environment without persuasion from government would be created (see section 7.2.3.1). The Zulu participants are not convinced that the current westernised ways of preserving natural environmental resources would help solve the environmental dilemma, except the incorporation of their Zulu CSEE. Some studies maintain that IK about the natural environment is an indispensable environmental education tool that could stir up some form of respect for natural resources and make indigenous people passionately value and care for nature (Brook & McLachlan, 2008; Dei, 2000b; Murove, 2004; Ntiamoa-Baidu, 1995).

8.4.1.2 Enhancing the Expression of the African Learners' Intellectual Capacity

The Zulu participants are optimistic that through teaching their Zulu CSEE in school, it would enhance their learners' confidence about the Zulu cultural values and cultural knowledge within the science classrooms. The learners of indigenous epistemologies like the CSEE would be able to stand shoulder to shoulder with the Western epistemologies that attempts to suppress the African indigenous epistemologies. Besides, depths of wisdoms and knowledge are indicated to be embedded in the Zulu CSEE (see section 7.2.3.2).

This findings most probably confirms Van Wyk and Higgs (2011a) findings that infusion of IKS into education in South Africa, would empower educators and learners to gain confidence in their own capabilities and make them acquire a sense of pride in their own ways of doing things.

8.4.1.3 Reverence of African Cultural Values by the World

The Akan participants indicate that through teaching their CSEE in schools, their cultural group, Ghana and Africa in general would start gaining respect from the Western world. This is based on the assumption that the Western world recognises that they use their own knowledge, ideas and wisdoms to run their own affairs and are not dependent totally on the Western world (see section 7.1.3.2). The continuous use of the Western world's epistemologies in the school system is what participants and their cultural group highlighted as the reason for the disrespect they experience from the Western world. McKinley (2005), and Van Wyk and Higgs (2011a) assert that integrating IKS in formal schooling stirs up great passion and inspiration for self-worth, abilities and self-confidence.

The Zulu participants were optimistic that through the teaching of the Zulu CSEE there would be a restoration of the almost lost reverence that their traditional leaders or elders enjoyed. Basic reasons given were that through the visits and consultation of these elders within local communities and inviting them to the schools as experts, the learners and their teachers would ascertain the depths of their wisdom and knowledge and accord them the respect they deserve (see section 7.2.3.3). It is obvious that the Zulu cultural knowledge, wisdom, value and care for nature would be fully documented when they are being taught in school as opposed to the local communities. This knowledge might also be kept in other formats such as softcopies, documentaries, teaching aids etcetera (see section 7.2.3.5).

Muchenje and Goronga (2013a) indicate that school education has been singled out as the vehicle for translating IKS into reality and an important way of making IKS a competitive knowledge form that equates with Westernised knowledge. James and Bansilal (2010) found that the isiZulu women have a wealth of knowledge of their IKS for practical livelihood as they produce many outstanding handicrafts. Besides, such knowledge and wisdom could be preserved and upheld through teaching in school.

8.4.1.4 Purchase of Locally Manufactured Drugs/Herbal Medicines

The Akan participants stated that their forests have one of the richest biodiversity and claim that many of the raw materials for manufacturing pharmaceutical drugs were taken from their own country and exported back to them. Participants claim that many years before white medicine even came, their cultural group members were living and surviving on their own (herbal) medications extracted from their own rich forest (see section 7.1.3.3). Through teaching the Akan CSEE in school, the consciousness of the potency of indigenous medicine will be revitalised and would decrease the rate of importation of foreign pharmaceutical drugs which sell at higher prices. The school system is what makes most of the local communities look down on their traditional medicines; therefore, the school accepts to teach things related to the cultural values which includes their local medicines.

8.4.1.5 Bringing All-Round Comfort to Indigenous People, Elders and Ancestors

The Akan participants shared that a certain kind of comfort will be restored to their spirit, soul and bodies and to that of their elders and ancestors upon the teaching of Akan CSEE in schools since it would promote the consciousness to protect the natural environment. Besides, students, teachers and other members of the local community would most likely start respecting and heeding the instructions of traditional leadership and IK-holders of the Akan culture regarding care for nature espoused to them by their ancestors. Such consciousness would obviously bring some comfort and peace within their ancestors' spirit who would be satisfied and pleased with them (see section 7.1.3.4). The Akan participants are much more hopeful of a gaining holistic environmental sanity when their CSEE is taught in senior high schools. Similar views were shared by the Zulu participants (see section 7.2.3.4).

The resultant action would bring about a certain kind of peace and comfort to the spirit and soul of the ancestors and to the other cultural group members (see section 7.2.3.4). The wisdom and wealth of knowledge enshrined in the Zulu CSEE will come into the limelight as the members of the cultural group and their ancestors' desire and when teachers begin to teach it. Besides, the present westernised environmental ethics is not doing its best to the Zulu cultural peoples' expectation.

8.4.1.6 Sound Relationship with Local Community Members

Creation of good rapport between the school and their local communities is anticipated by both the Akan and Zulu participants when their CSEE is taught in SHS. The reasons given included that since teaching the CSEE would require students/learners and teachers to interact with the local community members and the IK-holders through various visits and tours, a good rapport would be created between the schools and communities (see section 7.1.3.5 for Akan participants' views and section 7.2.3.7 for Zulu participants' views). Through this interaction, the wrong perceptions and misconceptions about some of the IK-holders would most likely be dissipated. The findings is in line with Kaya (2013a) findings, that integrating IKS modules into the higher education curricula strengthens relationships with academics and their local communities making the academics sensitive to the developmental challenges of the local communities.

8.4.1.7 Probable Excellence in Related CSEE Exams

The **Akan** and **Zulu participants** stated that upon teaching their CSEE in high school, the students or learners stand a greater chance of excelling in the subject and other related topics. A few reasons given include the thinking that this teaching would likely be student-learning friendly especially because it would prioritise the use of the local language, offer real practical examples from their localities, and cut down the many abstract epistemologies taught in formal schools. Besides, the teaching would involve local teaching and learning strategies which students may be familiar with (see section **7.1.3.6** and **7.2.3.6** for Akan and Zulu participants' views). This finding is in line with Kaya (2013a) and Diwu and Ogunniyi (2012) who assert that infusing IKS modules into the higher education curricula leads to the creation of meaningful learning outcomes. The participants perceive various lower academic performances to have resulted from the foreign content being taught and westernised pedagogies that might not be locally culture friendly.

8.4.2 Challenges of Teaching CSEE in SHS

Participants recounted several challenges when teaching CSEE in SHS. These are discussed in the following sections.

8.4.2.1 Stigma or Dishonor Linked to CSEE

According to the participants the teaching of their CSEE would most likely be confronted with the stigma that they are archaic especially from people who have been exposed to westernised education or some foreign religions like Christianity and Islam. Some reasons given were that such people might be politically motivated or generally not interested in cultural activities because of their background (see section 7.1.5.1). The Zulu participants indicated that their Zulu cultural values and knowledge regarding the natural environment are stigmatised in various ways. For instance, some perceptions regarding water-bodies, trees, animals, lands etcetera are considered colloquial and superstitious; herbal medicines are not bought and prioritised like that of the pharmaceutical companies; feelings of shame are associated with visiting sangomas and inyangas; looking down on the different cultural practices and values; and IKS not being considered as a science but just worldviews (see section 7.2.5.1). These and many challenges would be aggravated if participants propose that the teaching of their CSEE should involve bringing the IK-holders of the culture to the classroom.

Semali and Kincheloe (1999) indicate that through colonialist oppressive rule, AIKS of the indigenous people has been grossly disdained. Maurial (1999) asserts that IK has been denigrated as unscientific, irrelevant and old-fashioned. Castagno and Brayboy (2008) buttress Cobern and Loving (2001) and Hountondji (2002) concerns that Westernised science has no recognition for other epistemologies like IK. Semali and Kincheloe (1999) and Odora Hoppers (2006) indicate that, colonialist rule misconstrued AIKS practices. Anwar (2011) attests that the black Africans were enslaved with Western education by making those with formal education stigmatise their own cultural knowledge, helping to propagate that their own culture is benighted and grossly primitive.

8.4.2.2 Request to Prove and Experiment CSEE Claims

The Akan and Zulu participants reiterated possibility of students/learners demanding for proof of some of their CSEE practices and perception. They would likely demand that teachers conduct some form of experiment to prove some of the CSEE claims and practices (see section 7.1.5.2 and 7.2.5.4 for Akan and Zulu participants' views).

Although, the aspect of the CSEE likely to stir up such questions, are those linked to spiritual perceptions and their attachment to nature. Corsiglia and Snively (2001b) indicate that scientist refuse to admit and recognise the authenticity of indigenous knowledge as science on grounds that they have spiritual basis and connotations. It is obvious that scientific processes could be tangibly conducted, since they are linked to at least one of five senses unlike the spiritual.

8.4.2.3 Prioritising Native/Indigenous Language in the Schools

Generally, the Akan and Zulu participants view prevalence of foreign language (especially English language) in the schools to likely pose a bigger challenge to the teaching of their CSEE. One reason is that the deep-seated knowledge and in-depth wisdoms of the CSEE is embedded within their local language (see section 7.1.5.3). Consequently, English language will not be able to convey the deep thoughts IK-holders would want to pass across. Besides, proverbial sayings in the local language might not be easily translated into English language and might even become watered down losing their meaning. The English language has gained preeminence within academia that, a person may feel proud to speak, 'good' English as opposed to speaking, 'good' local language which would be a big stumbling block to the teaching process. Dei Ofori-Attah (2006) found that, using only foreign language (English) to train scholars is one major reason for failure of many African curricula. Similar views are shared by (Odora Hoppers, 2002b; Semali & Kincheloe, 1999).

8.4.2.4 Contemporary Education

According to the participants, formal education and modernity would pose as a challenge, since there is the tendency for students/learners and other members of the community to think that the CSEE is local and not modern as what is already taught in their schools (see section 7.1.5.4). Probably, the cultural dimension compared to the present societal values and standards might threaten the survival of the CSEE. Besides the current formal education environment that is more Westernized would hamper the teaching of the CSEE as its examples given are usually foreign. Barab and Luehmann (2003) and Gervedink-Nijhuis *et al.* (2013) assert that many well-structured curricula are usually stripped of distinctly thoughtful implementation that takes the local context into consideration and therefore not culturally sensitive.

8.4.2.5 Watering-Down of Reverence for Gods and Spirits in Nature

The Akan participants indicated that there is an apparent loss of fear for the gods and spirit in natural resources like lands, forest, rivers and other water-bodies which would likely pose a challenge to the teaching of their CSEE in schools, especially when it comes to practicality (see section 7.1.5.5). This loss of fear for the spirits in nature is what participants are claiming to be one major cause of the alarming loss of natural resources. Awuah-Nyamekye (2009) notes that the deific backings of the various taboos which guide indigenous people's actions towards the natural resources are threatened by Christianity and modernity.

8.4.2.6 Fading Away of Communal Sense

The Zulu participants stated the apparent loss of the communal sense as one key challenge to the teaching of the Zulu CSEE, since the solidarity and oneness that existed in times past is gradually been eroded (see section 7.2.5.2 for details). Selfishness, political inclination, poverty, and disrespect for traditional leaders are basic reasons for this apparent loss of communal thinking. Thus, this gradual loss of the communal thinking is the cause for gross environmental problems.

8.4.2.7 Insignificance of Sociocultural Belief

The Akan participants who are teachers indicated that the Akan CSEE may be perceived as a sociocultural belief that has outlived its significance (see section 7.1.5.6). These teachers bring in their Western interpretation of the CSEE. This resonates with Ntiamoa-Baidu (1995) and Wiredu (1997) observation that any attempt to infuse indigenous knowledge into the curriculum would be confronted with socio-political biases. In addition, traditional thoughts and worldviews are considered inferior to the worldviews of the Western world and therefore subdued.

8.4.2.8 A Centralised Curriculum

The Akan teacher participants shared that, the current curriculum which is centralised in the country would pose a substantial challenge to the teaching of the Akan CSEE and feasibility of making it practical, except it becomes decentralised (see section 7.1.5.7). Dei Ofori-Attah (2006) posits that Ghana's formal education system is predominantly western; therefore, to infuse traditions and indigenous culture into curriculum would be very challenging.

8.4.2.9 Political Stances

The matter of democracy and political biases is also viewed by participants to likely pose a challenge in teaching of the CSEE and its feasibility. Reasons given include that even when a new government assumes position, the curriculum could change which may not favor the teaching of CSEE in the science curriculum (see section 7.1.5.8). Besides, other issues of democracy and human rights may provoke some people who are generally not interested in CSEE. The Zulu participants shared several concerns regarding politics, human rights, and democracy that could pose a challenge to the teaching of Zulu CSEE as many political biases, indifferences and struggles to maintain democracy may hinder the progress of CSEE (see section 7.2.5.5). Dei (2000b) points out that to integrate indigenous knowledge into a curriculum would not be a smooth process but would be confronted with socio-political biases.

8.5 Models of Akans' and Zulus' CSEE

The two models represent the Akan and Zulu cultural groups' version of the AEE according to this study's participants. It should be noted that, there is no specific line of demarcation between the different themes for each quadrant – the understanding, practices, communication, and perception. This is on the basis that each of the themes could inform the other both clockwise and anticlockwise. For instance, an understanding could inform a practice and practice could inform an understanding. An understanding could inform a perception and vice versa. The perception could inform a communication and a communication could inform a perception and practice. The practice could inform a communication and vice versa. Because of such interconnectedness, each of the four main themes is inextricably interconnected to the other three themes and each of them informs the other. But in all the cases however, responses of the participants indicated that the understanding and practices captured similar subthemes and could be separated from the perceptions in a certain sense because perceptions were those with spiritual connotations from the participants perspectives (see details captured in sections 5.3 and 6.3). This research was not intended to be a comparative study, so each model is presented separately with respect to each cultural group and the aspects peculiar to each group are highlighted.

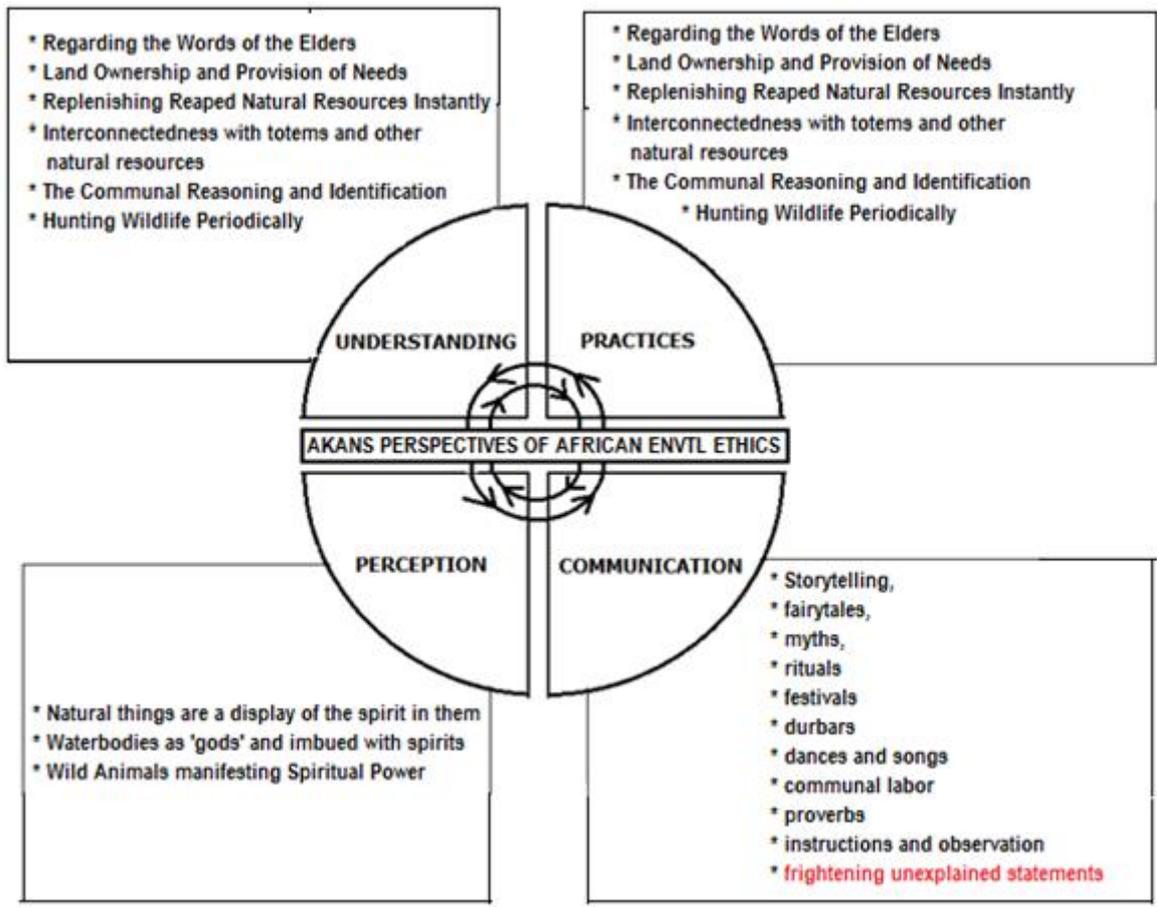


Figure 8.1: A Model on Akans' Perspectives of African Environmental Ethics

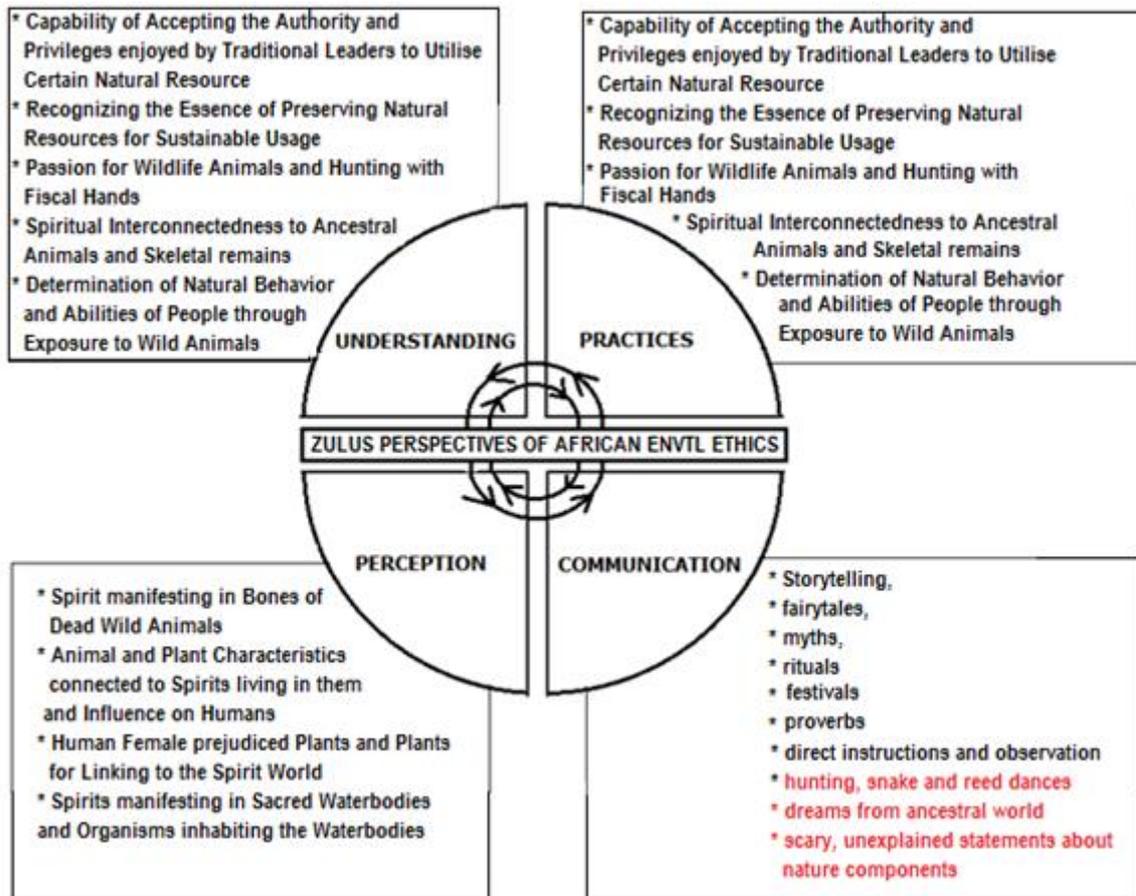


Figure 8.2: A Model of Zulus’ Perspectives of African Environmental Ethics

The new elements that participants added in the findings are highlighted. Dreams were not mentioned by Akan people.

8.6 Model for Teaching CSEE in SHS

In the quest to contribute to knowledge of how CSEE or IKS or IKS-related content could be taught in the classroom and or IKS-related content in SHS B/LS, this study found a few ways that could be adopted by teachers and or curriculum developers. A model has been developed from the study findings, analysis and discussions.

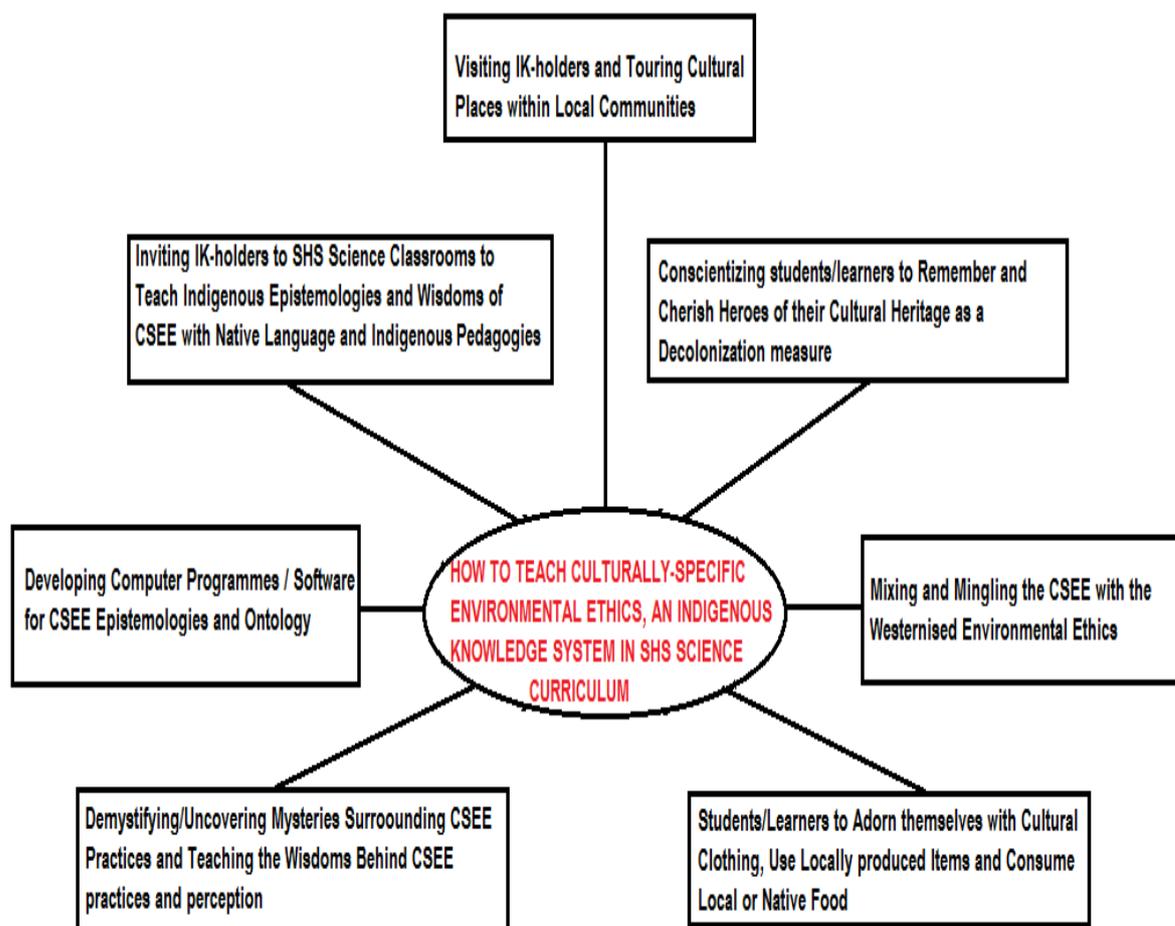


Figure 8.3: A Model for teaching CSEE and other IKS-related topics in SHS Biology/Life Sciences Curricula in Ghana and South Africa

The above models shown in Figures 8.1, 8.2 and 8.3 are presented by the researcher as a contribution to knowledge to the teaching of the CSEE (an indigenous knowledge aspect of environmental studies) and how the CSEE could be taught in SHS science classrooms in Ghana and South Africa. The models are self-explanatory and there are details of it in the preceding sections and a general conclusion in section 8.5 that summarizes the entire findings of the study which has been presented in the model. The teaching should be contextualized to enhance the access to knowledge of the students/learners. The cultural places of the local communities should be toured and help teachers, students/learners interact with local community members. When teachers interact with their students/learners, the teachers should remind them to cherish the heroes of their cultural heritage and legends who through their toil, wisdom and knowledge have been able to keep their cultural values and care for nature resilient from colonial days till date.

Furthermore, in a form of cultural exchange, the IK-holders would have to be brought into the formal science classroom to teach both the teachers and their students/learners particular CSEE or IKS topics where the elders would use their own teaching strategies uninterrupted. The IK-holders' teaching should be done within their cultural/natural setting. The students/learners should be encouraged to come to school wearing their cultural clothing during such teaching. In cases where the formal science classroom teachers happen to be the ones teaching, the teachers may have to intersperse indigenous or cultural knowledge of the topic with that of the existing westernised epistemology that students/learners might have been taught in school previously.

Efforts should be made to clarify diverse mysteries linked to the cultural values and care for nature most especially, those that have spiritual connotations and to ensure that the wisdom behind the practices are taught. In cases where the formal science classroom teacher is deficient with the CSEE, IK-holders would have to be consulted and brought to the classroom to clarify information. The teachers and students/learners could visit the IK-holders for further teaching in their local context in such cases. In the teaching, the teachers would have to consciously employ computer programmes and most importantly use presentations and computers to teach indigenous content knowledge, creating a computer-based interactive learning and assessment experience for the students/learner. This would not only boost the interest of the students/learners but would also make them recognize the contemporariness of the CSEE or appreciate their CSEE as being contemporary .

8.7 General Conclusions

This research exploration of the understandings, perceptions, practices of culturally-specific environmental ethics (CSEE) of the Akans cultural group discussed in section 8.2.1 reflected the following understanding and practices: regarding the words of the elders as wisdom and carrying power for their wellbeing when heeded; the recognition of land to provide the basic needs and the lands not directly their possession but for future generations; consciously replenishing harvested/reaped natural resources promptly; recognition of being interconnected with totems (animals, plants) and other natural resources; having communal reasoning and identification; hunting of wildlife periodically and not on daily basis. The general perception for the Akan CSEE included considering natural things to be manifesting the spirit in them; seeing waterbodies as 'gods' and imbued with spirits and recognising wild animals to be manifesting spiritual power.

The main modes of communication of the Akan CSEE were recounted by participants to include storytelling, fairytales, myths, rituals, festivals, durbars, dances, communal labor, proverbs, traditional songs, direct or deliberate instructions and direct observation and using frightful, scary unexplained sayings about natural components and their utilization. It was evident from the responses of the participants that the understandings, practices, perceptions and communication of the Akan CSEE are inextricably interwoven in that they all inform each other in a form of a cyclical manner. The responses of the participants regarding their perceptions about natural components generally reflected more spiritual descriptions and explanations. A model for the Akan CSEE perspectives is presented in Figure 8.1.

The exploration of the understanding, perceptions, practices of Culturally-Specific Environmental Ethics (CSEE) of the Zulu cultural group discussed in section 8.2.2 generally reflected the following understanding and practices: the capability of members of the community accepting the authority and privileges enjoyed by certain traditional leaders to utilize certain natural resource; recognition of the essence of preserving natural resources for sustainable utilization; having passion for wildlife animals and hunting with fiscal hands. The perceptions for the Zulu CSEE included the sense of having spiritual interconnectedness to ancestral animals and skeletal remains of certain animals; conscientiously determining natural behavior and abilities of people through exposure to animals; perception of spirits manifesting in bones of dead wild animals; animals and plants characteristics and behavior as expressions of the kind of spirit inhabiting them which influence the peoples actions towards them; perception of some plants as being human female prejudiced plants and some plants perceived to be used for linking to the spirit realm; perception of spirits manifesting in sacred water-bodies and in the organisms inhabiting the waterbodies. The means of communicating the Zulu CSEE as participants indicated, includes the use of stories, myths, fairytales, dreams and dances like the snake dance, hunting dance, and reed dance. All the understandings, perceptions, practices and communication of the the Zulu CSEE are complexly interwoven that each of informs the other and therefore appear more cyclical in nature. However, the perceptions narrated were broadly spiritual connotations with natural components. A model for the Zulu CSEE has been presented in Figure 8.2.

The general findings on how the Akan and Zulu CSEE could be taught in SHS Biology/Life Sciences curriculum were discussed together in section 8.3 and a model was developed for how the teaching could be done is shown in Figure 8.3 and discussed in section 8.6. The findings were as follows: Visiting IK-holders and touring cultural places in local communities; inviting IK-holders to SHS Science Classrooms to teach indigenous epistemology, ontology and wisdoms of CSEE with native language and indigenous pedagogies; reminding students/learners to cherish heroes of their cultural heritage as a decolonisation measure; demystifying or uncovering mysteries surrounding CSEE practices and teaching the wisdom behind CSEE Practices and Perceptions; students adorning themselves with cultural clothing, use locally produced items and consume local or native food; mixing the CSEE with Westernised Environmental Ethics (WEE); creating or developing computer programmes or software for CSEE epistemologies and ontology. The findings on the implication (prospects and challenges) of teaching the Akan and Zulu CSEE in SHS Biology/Life Sciences curriculum included the following:

The prospects of teaching the CSEE from the perspectives of the participants which have been duly discussed in section 8.4.1 included the creation of environmental consciousness; enhancing the expression of the African learners' intellectual capacity; reverence of African cultural values by the world; improve purchase of locally manufactured drugs/herbal medicines; bringing all-round comfort to indigenous/local people, elders and the ancestors; creation of sound relationship with local community members and higher probability of achieving excellence in related CSEE exams.

The challenges of teaching the CSEE from the perspectives of the participants which have been discussed in details in section 8.4.2 included the stigma or dishonor linked to CSEE; the tendency of students/learners to request teachers/IK-holders to prove and conduct experiment for the CSEE claims especially those with spiritual connotation; prioritizing foreign language (English) over native/indigenous language in the schools; contemporary education with more contemporary technologies and westernised perspectives; the progressive watering-down of reverence for 'gods' and spirits in nature; fading away of the communal sense; perceiving the CSEE as insignificant of sociocultural belief; the existence of centralised curriculum and different political stances.

8.8 Recommendations

Recommendations to education departments and higher education institutions, including policy makers are presented below. Teachers and education officials require extensive interactions with the environmental ethics from an indigenous knowledge perspective through working with IKS holders who have the wisdom and the willingness to share their knowledge. Higher Education institutions need to decolonize their curricular by recognizing, valuing and teaching the culturally specific environmental ethics in all fields/disciplines. While the curricular and programmes in schools and higher education, respectively have included the integration of IKS, it has not fully recognized the culturally specific environmental ethics, this needs to be addressed.

8.9 Further research

This study suggests that further studies be conducted on the culture-specific perceptions, practices and understanding on plants, animals, lands, waterbodies and other natural resources among the different cultural groups in both countries (Ghana and South Africa) and in other African countries. Implementation of the Culturally Specific Environmental Ethics knowledge in school and higher education settings. Researching the development of resource materials for the respective cultural groups, and the use of these materials in their respective settings. Furthermore, the model on how to teach CSEE could be made practical in different geographical and cultural contexts in diverse science classrooms to explore the implication of adapting the model in teaching IK-related topics at different levels of formal education – primary, secondary and tertiary. The IK-holders could be brought into particular science classrooms to observe how they use their indigenous pedagogical skills to teach and the impact of their teaching on students'/learners' performance in class. Observations of the of the teaching of the IK-holders could be video-recorded and recordings given to different experts in teaching and curriculum developers to analyse and write their reflections on the teaching skills or pedagogies or experiences of the IK-holders. Students/learners who would be taught by the IK-holders could also be asked to write their own reflections regarding their experience with the IK-holders and their indigenous pedagogical skills. Moreover, teachers could embark on specific teaching of IK-related topics on CSEE that involve spiritual connotations and explore the implication of such teaching on students/learners.

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LIST OF APPENDICES

APPENDIX 1: NATURE RELATED NARRATIVE ANALYSIS OF THE AKAN CHIEF

Appendix 1a: The Akan Chief's Narrative on the Cultural Group's Understanding of CSEE

When the Akan chief was asked about the understanding of the Akan cultural group's value and care for nature, He narrated that: ...As God the almighty is the one who made all of us (humans) and created the lands, forests, animals and plants to accompany us, these entities also have the same spirit of God in them as it is in us too therefore we respect them and everyone must also respect and know that we will account for them one day. Because, they may look different in physical way just like how even we humans look different and we have females and males and tall and short, hairy and no hairs and so on but it is the same spirit in all of us because spirit can be anything in the physical, it can even become like a stone or tree or animal or anything in the physical. We should stop spoiling them! if the water-bodies (rivers, lakes, streams) are not there or they are spoilt what will we do if any of our people is tired and thirsty when coming back from the farm. The water-bodies and all the vegetation surrounding them are so vital to human life that we can't afford to destroy them. Even the leaves that have fallen into the rivers and streams and many times you see that they've turned the colour a little brownish red, these leaves have put medicine in them so that when you even drink them, you will not fall sick easily. We therefore have to protect all the water-bodies because they are very essential to our lives. You know, in the times past we were very respectful unlike what we see today, in fact we never questioned our parents or even any elderly person for that matter...and there were lots of things we didn't even attempt to do. For instance, even entering the chief palace or pointing our finger there, we didn't dare try it, eish, we were afraid. We also did obey instructions, for instance when we were told not to go the river on Wednesday or go to farm everybody in the community just obeyed but now, I think that, the democracy and the politics is making the children and adults see life differently...in fact we were afraid of the instructions given about all these lands, forests, water-bodies and wild animals that they told us not to even eat. And truly, if we respect our ancestors we will take care of what they have bequeathed to us (the lands, forests, water-bodies) and also follow their instructions...and just like how I was privileged to inherit my uncles throne and all the lands and the wealth on it which belongs to this royal family, I also have to ensure that before I leave the throne the people of this

community will still be having lands to farm on and places where they can build for the future of our children., ...Everybody in this community is forbidden to kill their own, 'akrabo' (totem)...for instance this family is Oyoko clan and our, 'akrabo' (totem) is hawk and most of the kumasi towns and places like Asaaman, Nsuta, Dwaben, Mamponteng, Bekwae etcetera are likely to have majority of Oyoko clans although things have changed now and you can find some members of the different clans represented in every town or village and communities. So for us, like this nobody will ever hunt a hawk or throw stones at them because we see them very special and you can see that the chief staff here has a symbol of hawk on it. Infact all the other clans like Agona (Parrot), Bretuo (Leopard), Asakyiri (Vulture), Asona (Crow), Asenie (Bat), Aduana (Dog), Ekuona (Buffalo) all do the same for their, 'akrabo' (totem) in terms of respect for it and chief linguist staff. Things are changing all the same and I hear now some people when they move to other towns where their clan members are not close, they hunt or even eat their akrabo (totem). They have no understanding and do not know what they are doing to themselves and their children's children. However if the person doesn't know it is acceptable but if they intentionally do it, then the repercussions would come on them".

Appendix 1b: The Akan Chief's Narrative on Cultural Group's Perception of CSEE

When the Akan chief was asked about the Perception of the Akan cultural group's value and care for nature, He narrated that:

'We the Akan cultural group see it that, all things were created by God and if so the same spirit that is in God, that He put into humans is the same spirit in all the creation too because it was God's spirit that He breathed into everything in nature...because of that all the things in creation can sense something, if you cut a tree for instance, it pains it even if you touch or try to kill any of the wild animals they can sense that you want to kill them , that is why they can fight you back or run away. This is because they also have a spirit in them like us and know things and so are the rivers, lands and other forms of creation...for instance you cannot cross this river in our town if you have stolen items on you or have shed blood...it will drown you or something terrible will happen to you when you try to cross it ...we know that in this community by what our elders who first settled here told us, that two of the rivers in this town are very kind and that they are females or mother that's why they are that kind...the other river is a male water-body, very wicked that you dare not offend it or allow anyone you offend to call your name and curse you with him(the water body) because you will not survive...you will die at all cost except some serious rituals are done on your behalf to intervene...also usually, when you realise that there is some form of serious flooding in our communities, someone or some people may have committed a heinous crimes and the river god flood the town to wash off the evil and may drown the culprits or their family member... One other thing is that you know trees from those deep forests that people are usually prevented from entering especially from the places where only the chiefs and some strong traditional people like the herbalists, traditional priest or priestesses and elders from the chiefs palace and so on, majority of those trees are very effective for healing all kinds of ailment both physical and spiritual and those that no medicine has been able to heal them...for instance if someone is on the verge of dying of a very deadly disease and even a small branch of those trees or plant attached to leaves are cut from some of these usually most feared deep dark forest and brought and even just thrown on this person just to make contact with the patient and he/she doesn't get healed and able to rise up then that person is really destined to die from that condition and nothing can be done to help such a person...I want you to also understand that our fathers were purely idol worshippers and many of them hid their gods in the forest during the time of

war and some got missing but you should know that majority of the Akan houses have smaller gods (idols) there. The only thing however is that we do not know whether people stole them or some animals carried them elsewhere...all the same some of the gods (idols) actually are believed to have been swallowed by some wild animals that is why those wild animals may be violent or some do cast some kind of spell and haunt you at night or even during the day when you kill them. For many of them hunters usually find some of these strange objects in their intestine which are usually most of these gods and retrieve some strange elements from their intestinal tract or stomach that are usually some of these gods. There are also situations where, when some of these wild animals who swallowed some of these idols or gods reproduced or gave birth to offspring that have same or similar powers transmitted to the offspring. Also, some of some of those wild animals that did not survive but died eventually got decomposed into the soil with the powers of the gods or idols and were absorbed by the plants that grew nearby and were also infused with the same spiritual power. As you may be aware, our elders do most of the rituals in the deep forests that is why they have been reserved in the first place. Our ancestors live in such sacred places and if you are not permitted to enter such places, you don't have to go there because you will see what you are not supposed to see and it may affect you spiritually. Besides it will be a disobedience to go to places where elders of the community have told you not to go. Yes, most of the time when the traditional priest and herbalist who do or perform rituals are allowed to enter such forest reserves by the chiefs because they are trusted not to destroy anything there because they are seen to know the value of such resources as they revere them and may use such places for only religious activities...they may only take a few leaves here and there to make medicine to help some of the community members...I do know that lands are for the entire community even though we as royalty are the IK-holders and I know we will make account of it to the ancestors so I am cautious of how some of the lands are used or transferred to other people and you should also know that land itself is not for any particular individual, we are all caretakers to ensure the next generation does not struggle in life. Again, there are some other perception that we have as Akans, that whatever an elderly person says has enough power to make and unmake people because sometimes an elder may say somethings and give instructions or some injunction and we have to realise that even if it is not like that, as long as the Elders have spoken it with their mouth, it will happen exactly as they have said it...!"

Appendix 1c: The Akan Chief's Narrative on Cultural Group's Practices for CSEE

When the Akan chief was asked about the practices of the Akan cultural group's value and care for nature, the chief narrated that:

The first thing I want you to know about the practices of Akans is that settling by the riverside was our forefathers' priority because they saw water as life. You can see that most Akan towns are named after water-bodies. Our elders didn't only see the river as their source of life but as gods and in reality the rivers and many other water-bodies are gods that protect our towns and villages and therefore we revere them (the rivers/water-bodies) and anyone who treats the river anyhow without any form of reverence is brought to the chiefs palace and he or she has to buy a sheep for us to go and pacify the river. Also, you don't just cross the river without asking for its permission first and you have to put some of your farm produce into the river whenever you are crossing it to come home. We have places that are only meant for our elders. For example that forest area you crossed before coming to this town is a special place where we can go and perform various rituals and purification and pacification for the people of the town. For some of the practices, we came to meet our grandparents do it and for instance we were told never to cut the trees there nor farm there...there are streams in there and it is just like the normal forest with all that is in them only that if you go there without permission and purification the spirits will deal with you and you can easily get missing in there or be taken by fairies. The people in some of the communities who are not wise will always take from the natural resource and not replace forgetting that we are jeopardizing the future of our children...everything we take from the earth we must replace it...if our fathers did not always think of the future – you can see that people do lots of senseless things destroying the forest for instance by setting fire in it just because they are chasing a rat but because of politics people don't even bother when called to royal palace to come and answer questions of misdeed but not in my town. In our town we do not have much restrictions on what wildlife animal you eat or not to eat, it is up to you but you cannot hunt in the forest that we say nobody should enter...that one if you do, you will be brought before the elders in the palace and you will be fined a large sum of money and at the same time you would have to pacify the gods with a white sheep. Apart from this practice, there are also same time that when it is getting to Christmas time we do not allow anybody to go for hunting. For instance years ago we used to hunt occasionally without using a gun in the community, and in such cases the whole

community could enter the forest and run after certain wild animals with shouts and mobbing actions that confuses these wild animals but this was not practiced on wild animals like or the ones that are like tigers but those like the antelopes... ”.

Appendix 1d: The Akan Chief's Narrative of Cultural Group's Communication of CSEE

When the Akan chief was asked about the communication of the knowledge of the cultural groups' value and care for nature, the chief narrated that:

We teach people and especially the young ones to learn our knowledge through many means: for instance when we hold durbars and festivals we teach them (members of our cultural groups) and we do teach about lots of things happening in the community, a greater part of which is connected to nature and usually every month too there is a meeting for the whole community where we do teach about lots of things, our traditions and various practices and at the same time as well, we address people's concerns and our working together. When it comes to issues of stories, we only tell stories to toddlers but for adults we tell them proverbs because they can think and would not take those, 'kwaku ananse' stories. Some other mean we also teach or communicate the knowledge of our cultural group's value and care for nature is through what we call, 'Evil or Bad Days' which vary from community to community in terms of which day(s) they (community members) are not supposed to either go into the river to fetch water, go the farm, or harvest even food stuff behind their own backyard or pick firewood from the forest. We came to meet this, my uncle from whom I inherited this throne also said he came to meet the elders doing this and these are our traditions that we practice. Sometimes too we have some places that we have reserved purposefully and we do not allow members of community to go there unless we authorize them or send them but usually is elders and traditional people like the chief priest and the herbalist. The places reserved are to be treated with respect because our ancestors live there and need to rest from their labour and there are evils spirit there even though that we bury the chief in the cemetery inside it. And as I said earlier, the spoken words of our elders, their instructions are all ways of communicating our knowledge. And some of the things (sayings and the associated consequences), even if it was not so because our elders and ancestors kept saying it became as it is. Know that, there is so much power in the mouth of the elders. In my own case for example, before I ascended the throne there were things already set in place that we should follow and let the community members follow as well. I do follow them even when I was not enstooled as yet but I was trained to not ask any silly question from the elderly because it is said that if you want an excuse to disregard authority you keep asking, 'why nots' that has the intention of opposing the

authority of leaders. Another means that is common in every home and in every community is the fact that every one of us learns or learnt by observation. As you see your parents or other elderly person do certain things you take advantage of it as you observe and then you learn for it is said that the back born or the younger learns the footsteps of the first born or the adults. Yes, it is true that it is not everything our elders explained to us, sometimes some of the scariest statements but as young person growing up, I was wise enough not to meddle in the affairs of elders so I just accepted what they kept saying to us. A young person is supposed to respect the elderly and most especially your parents”.

APPENDIX 2: NATURE RELATED NARRATIVE ANALYSIS OF THE AKAN ELDER

Appendix 2a: The Akan Elder's Narrative On Cultural Group's Understanding of CSEE

When the Akan elder was asked on understanding of their cultural group value and care for nature, the elder narrated that:

“We understand that all living things have the same spirit in them only that some may have higher spirit than other and that is why we actually place value for nature and care for it. If animals and plants can grow like myself, then truly we have so many things in common. I can die, and animal too can die too...they can be born like me. surely if humans have spirit in it then these ones also have spirit and they are not different from the spirit in people...that is why some people can even talk to trees and even fire or wind or rain because they can hear as they have same spirit like in us. We (Akans) have an understanding that surely if humans have spirit in them then these ones (other creations – animals, plants, lands, water-bodies, forest etc) also have spirit in them. Even gold that is underground that cannot talk, our elders had to pacify it with blood before they start extracting them or using them. We also have an understanding that all the things in nature are of much value both what we see and those we do not see must all be protected because they are of so much value. if the water-body is not there or it is spoilt what will we do if any of our people are tired and thirsty coming back from the farm. The water from the rivers and streams are so valuable to the extent that even drinking them alone makes you healthy and you don't fall sick that easily. You know the leaves that have fallen into the rivers put medicine in the river, it may even change colour a bit but when you even drink it, you will not fall sick easily because the leaves have medicine in them. Truly we have to protect them as a people, looking at all the values and benefit we get from them including the wild animals and other plants and trees in the forest. We the Akans therefore understand that we have to protect these water-bodies and other aspect of nature because they are very essential to our lives. Take for instance, the air we even breathe. I know that the air we breathe is from the trees so when the wind is blowing the fresh air comes from it. The lands are even more important to us because the people, the animals, the houses, the rivers and all the water-bodies, our forests and our farms they are all situated on the land or part of the land and when we die we are buried in the same land. In fact all these are so important to our lives such that we should therefore endeavor to use them wisely. You know even the leaves of trees around

the rivers, if they drop into the rivers and streams they change the colour, something it looks a little brownish all these show the medicine they put in the river so when you drink the water you don't fall sick easily. We have an understanding also that respecting the elderly and their instructions are very vital to our lives. You know in the olden days we used to live long, you can see me, I am 80 years this year and during our time when I was a young man it could take like 10 years and nobody has been reported dead in this community because we obeyed our elders. We did not question their (elderly peoples) orders, we just heeded it without shaking our heads. When they told us not to go into the rivers or the forest at certain times we just obeyed but now the current generation don't even mind us, that is why now they die very early. Just last week one young man only 25 years died! The other girl also fell unconscious and has not been able to talk because she went into the stream the day they told us not to go there and she went to see something and out of shock she fell unconscious. In our understanding, all the cultural values and care for the things of nature is just so that we can reserve them for the future but if our chief keeps selling the land at the rate he is doing now, there will be no land for our children and that will be a very big problem for us to solve. We cannot leave the children behind without giving them anything. It is not fair because our own elders and forefathers left us vast lands and that is why we have a place to build and farm now. ...the land is for our ancestors and future children...because of my children and other people's children I cannot spoil things like that...even in my farm I have some of the lands I have left that I do not farm on so that my children will use them someday...some people don't have conscience and the government too does not think of the future of our children so they are making people cut all these trees in our forest and selling them...the chiefs too are selling the lands anyhow....”.

Appendix 2b: The Akan Elder's Narrative on Cultural Group's Perception of CSEE

When the Akan elder was asked about the Perception of the Akan cultural group's value and care for nature, the elder narrated that:

"In fact we see all the things nature to be carrying some form of spirit and spiritual powers especially water-bodies and some wild plants and animals. As for water-bodies they are not just carrying spiritual power but they are gods or idols. For instance, if you are carrying stolen goods from another town and you reach the river in our town, you will have to drop them behind or else you will be drown if you attempt to cross the river. The rivers usually may show different sexes and may be either good or bad. The male river (water-body) if you make a mistake and go in into it the day, they said we should not go into it, something very catastrophic will happen to you. In fact any of the rivers that you hear from the community that it is a male river, you have to be cautious how you treat it or relate to it because as for such rivers they have no mercy oh. If someone calls your name and curse you with such rivers, it will not be long before you see all the evil symptoms. Most of the trees are also seen to have some very power spirits residing in them and usually huge tree trees in the deep dark forest with some very unique characteristics may have these spiritual factors. I remember, when I first encountered this popular tree the, 'ahomakyem'. But the, 'Odi' seed that I showed to you it's a real potent medicine. I remember when I accidentally, went to week somewhere and cut this, 'odii', "the way I suddenly fell sick when I came home, Infact I nearly died and I think I was spared because I was ignorant of that species that is why even my life was spared. With regards to wild animals too many of them have spiritual power but usually you have to have a second eye for you to see them. Truly most of the wild animals have spiritual powers and you cannot just kill them without having any power backing you. Sometimes in the forest at night you will see their eyes glowing and they can scare you if you are not fortified as a hunter but the most dangerous thing is that some of the smaller gods or idols live inside some of these wild animals and if you kill them, they can haunt you in your dreams so much you will get tired and fall sick and if you don't seek spiritual help you may die at the end. There are some plants and trees also like that, that are very powerful especially those that grew in places where there are gods buried underground, even some of them our great grandparents' gods or idols that they went to hide in the deep forest during the wars, when they are close to the tree and especially if they dug under that tree to hide the god/idol, those trees get so much power that you cannot

easily cut it without any bad thing happening to you. And even when you use their seeds to plant somewhere too the same power is transferred into them when they germinate and grow up too. Even when an animal eats their parts, some of the power enters them and those animals become more dangerous even when you kill them they will keep haunting you in your dreams even like the one I told you, I went to cut a tree and I fell sick seriously that I nearly died, that tree may definitely be one of them. Another perception that we have as a people is the power in the words of the chief or king and the fact that what he says is the last. This has affected us both positively and negatively. The negative aspect happens when the chief usually doesn't bother about the future of the people and sell the lands anyhow. For instance, our chief has sold all the lands, now we don't have even forests again, even all the areas that are waterlogged he's selling all. He does not think about the future of all these children. At least If he reserves some of the land, who knows when one day a government may come in this country who may want to build a factory and could build it in this town with some of those lands so our children would get some work to do, hmmm! But we have nothing to say. He's the chief and his words are final".

Appendix 2c: The Akan Elder's Narrative Of The Cultural Group's Practices for CSEE

When the Akan Elder was asked about Practices of Akan cultural groups' value and care for nature, the elder narrated that:

“When I came to meet our elders and grandparent we were told that our grandparents always settled by river banks and named the towns after the water-body many times because they saw it (water body) as a god that needed to be revered and to be consulted in times of need and for protection they (water-bodies) were so respected that for many of the water-bodies even periodically they (the community members) were sending food usually made for royals among the Akans i.e. mashed ripe plantain with eggs and palm nut oil and groundnut paste and onion leaves. We the Akans perform rituals to pacify the water-body if we or others offend him (male water-body) or her (female water-body). I have lived in this town since childhood, I have lived in this town for more than 50 years now even by then the chief who is on the throne now had not been born yet. I know everything in this town and almost everybody knows me in this town. Even though I help solve matters in the palace, I still respect our elders I came to meet. Usually, if not that we need to do something very important that I will enter that forest (you crossed before coming here) and get to that river that flows inside of it, I never enter by my own accord because I know the spirit of our fathers would not spare me. And as you may already know, the children learn the footsteps of the elders so I am careful how I live so I can also advise them. The clan I belong to is Bretuo clan and our akraboa (totem) is leopard and my wife's own is Asona and their own is crow and we take care of these wild animals by ensuring that they are not harmed or used by anybody as it is an insult to us because we have a lot of things in common with these animals as they help our great great grandparents. But there are lots of issues that I don't even understand these days. We do not know what is wrong with the chain saw operators. They have no conscience and just log the trees without planting new ones, nor even think of what happens to the younger trees and end up destroying all other trees. But this has only been possible because they are politically supported so we can't even talk. The person who will stop these chain saw operators are the same people who may have contracted them because they are in power. One other thing that is also done in this place and even in the region is when they give an instruction that there should not be hunting or any of such things. For instance, there were times that they report that we are not supposed to kill this animal or that e.g. grass cutter, there was a period set that we were told not to kill them

until that period is over. We didn't even have to pick up our guns. There were times we went for group hunting where all the men in the community line up in a warlike manner then some young men will make loud noise behind us and as the animals come out, we hunt them or we run after it in a kind of a mob action and hunt the animal down".

Appendix 2d: The Akan Elder's Narrative On Cultural Group's Communication of CSEE

When the Akan Elder was asked about the communication of the knowledge of the cultural value and care for nature, the elder narrated that:

“We use several means to let other people know about for instance I tell the children what I was also taught and I ensure they follow us when we meet at the chief palace where the elders gather and share their minds and the youth could also ask questions that bothers their mind. I think we all learn a lot of things from such places. When they tell us about times we should not hunt or not to do certain things that are linked to the wild animals or plants or even the water-bodies and lands, all such instructions are way of teaching some of the cultural values and our practices. There is non-hunting seasons when our people are not allowed to even pick their guns nor enter the forest. In addition to this, there are various wild animals that we are forbidden to hunt either because they are perceived to bring evil on community or on the people who hunt them. Also, that wild animals may happen to be the totem of one the seven clans of the Akans. I also see that we also pass our knowledge to others by some of the things we have already done in the community and the young people learn things about them with time. For instance when as a child you see a place (large forest) that has been specially left by the elders of the town and as you pass by many times, you are learning lessons gradually to also keep something for future because you will realise that the elders are thinking about tomorrow that is why they have left something like that, that people are not allowed to touch and destroy. The only bigger problem I always our elders never tell the reason behind some of these injunctions not to do this or that and even if they do they did not tell us the detail but they just attach dangerous gods to certain places and certain wild life resources. This has kept most of the community members in fear, even me I fear many times to do certain things because truly too when you disobey you see lots of evil consequences, if not on you, you would see it in your family and for that reason, they do not touch some of those resources just because they are afraid of the evil repercussions. The reason why our elders never told us many of their reasons for doing certain things is very difficult to understand but we just obey. Another thing also is what you the child see us do you automatically learn and follow us the adults”.

APPENDIX 3: NATURE RELATED NARRATIVE ANALYSIS OF THE AKAN TRADITIONAL PRIEST

Appendix 3a: The Akan Traditional Priest's Narrative on the Cultural Group's Understanding of CSEE

When the Akan traditional priest was asked about the understanding of their cultural group's value and care for nature, the traditional priest narrated that:

“Truly there are spirits in water-bodies and the water-bodies themselves are gods and that the same power almighty God put into humans is not different from those in other things He has created. A spirit can appear in any form or shape it likes, it can even look like an animal or even water-body it doesn't matter how it looks on the outside. It is the same spirit as it is in us. Besides even the land is a spirit and a god too that is why we pour libation on it and talk to it. We cannot treat them anyhow then because of this. Everything we need to make us alive and live healthy are all in nature – in the plants and animals we get our food, we get water to quench our thirst from the rivers and streams, there is gold and other minerals in the lands that can give us the money we need. Because of these benefits we must see them as very important and we must not destroy these components of nature. We understand that if you value and care for something then it means you give it some respect. But now children even don't take us for anything. To them our words are useless until something bad has happened to them but it was not like that in the years gone by because I know that I was afraid very much of my parents and the elderly people around. Maybe that is why they have blessed my family with this gift that makes a lot of people come for consultation for me to help them. And God being so good I have gotten a lot money to be building my house and taking care of my children for being a traditional priestess. I actually do respect the things in nature for instance, I never dared crossed a river or stepped into any without removing my slippers and asking it for permission because our elders told us to and I did take it very seriously. I don't even joke with leaves of plant because they are for healing people. We will have a lot to answer our ancestors if we keep destroying things like the lands and all the things on land and not protect them for the future generations and keep selling them anyhow. But for me I am doing my part, I go to the river where I have created my small oracle that I go to do my rituals for the river, I sweep around, remove things that block the flow, you saw it when you went there that the place is very neat. If I fail to keep it well, I know that the river will visit me at night to come and warn me...I do not know why some people are not afraid even to farm near the river

and some even dare use water pumps to siphon some the river and sometimes almost all. No wonder they have sicknesses in their homes that they do not know it came from but above all the future of the children is the most paramount so we should all help take care of what God and our ancestors have given to us”.

Appendix 3b: The Akan Traditional Priest's Narrative on the Cultural Group's Perception of CSEE

When the Akan traditional priest was asked about the perception of the cultural group's value and care for nature, the traditional priest narrated that:

“There are spirits in the things we see in this world and you can even see the river which I told you that it is a god and in this place for instance you cannot cross the river if you have stolen items on you or have shed blood. And the river also has senses to hear like humans that why you can pray to it and say certain things and it will do it for you. For instance, if you need a child and you go and stand by the river and ask it for children you would soon become pregnant because it can hear you and help you and besides it has so much power inside it. It is the reason why even Christians baptize in it so they can even get power because there is also power in water-bodies as well. Have you noticed that the names of many towns and villages of the Akans have names of rivers? In fact most Akan communities named their towns and villages after water-bodies and also when they use expressions as the, ‘head of the water’ and, ‘the river has left this town to another town’, going to beg or pacify the water-body if you offend it or when someone uses it to curse you’, people seeing the physical manifestation or bodily form of the water-body at certain times especially when you go into it at dead of night; or when you meet it by the way at night in the forest or lonely place somewhere in the night or even during the day when you go there on the day that you are not forbidden to go there into the water-body as directed by the traditional authorities. Also when water-bodies are given descriptions like being a, ‘motherly’ water-body or being talked about as a woman (female) or a man (male) they may have characteristics that comes as form of temperament whether they are kind or unkind or even neutral. Actually, there are three types of water-bodies with regards to their temperament as, ‘nsu fitaa (white water), nsu kokoo (red water-body) and nsu brafoo (very temperamental water-body). Nsu braafoo are water-bodies perceived to be very wicked. For some plants too when you approach them to come cut or pluck leaves for making medicine they react to you in different ways for instance the plant would just suddenly frown and others tell you they are tired because they travelled the previous night and so it is not everybody who can take plants and make potent medicines. Some would take it but you see that it is not effective because of these things I am saying. That is, it is not every person who can just pluck leaves and cut twigs for making medicines or concoctions for curing diseases because of these instances. If one flouts these or fail to have the ability to sense such communication, the

individual intended to be healed would never get healed and would eventually die. Great healing power is actually embedded in some parts of trees and small tree branches with its leaves when harvested from deep forests and usually from the most feared forests (evil forests) especially those where kings and chiefs are buried and where there are oracles or shrines. Such plants are actually potent for healing serious ailments like madness, epilepsy or some other incurable diseases.

if you said if someone is on the verge of dying a very deadly disease and a small branch of a tree or plant with leaves on are able to be harvested from the most feared forest and brought to just make contact with the patient and he/she doesn't get healed and able to rise up then that person is really destined to die from that condition. There are trees that are able to fly at night and at day time and those that are able to make people get lost in the forest if they accidentally pass under it because they are known to have fairies living on them. Others are also perceived to be able to cause death, or some strange ailment or sudden evils when a person hewn them or harvest even some parts of them without doing the necessary rituals. Some of the trees when you get close to it, it frowns its face at you and some jeeringly wink the eye telling you to leave it. And in such cases if you are not powerful, you cannot cut and others too while you make attempt to now go and cut it in the forest, the tree suddenly vanishes from its location while others fly in the night to do their own things. Also some of the plants when you are about to pluck it, it suddenly frowns at you and other wink, while others also tell directly not to pluck them because they are tired. Some wild animals are also very powerful because majority of them swallowed the Akan gods/idols during the time of war because they were trying to hide them in the forest and escape. so many of these gods are usually in the belly of some of these wild animals. For instance, my own god/idol that I am working with, I actually got from one of those wild animals in their intestines. Mine was in an antelope. You know what I was telling you earlier, our fore fathers when there used to be a lot of wars that our warriors had to go into the deep dark forest to go and fortify themselves so that when you shoot them the bullets would fall to the ground, most of them hid their god/idol in the forest and many of the gods sometimes were dug out by some animals and others swallowed them. There are still a lot like that in those deep, deep forests that people are told not to go there and especially where they say no one should enter. Those wild animals retain the gods in their body and become very powerful and sometimes when hunters kill them and take them out you can see these powerful gods, like the one I am working with now even trees that grow around those places

get the powers of the gods entering them too. And usually you can't cut them that easily unless you speak to them and perform some rituals. Even me the smaller god I am working with now, I got it from the gut of antelope a wild animal that a hunter identified and showed it to me. In those deep and dark evil forest too, they have trees and plants of high medicinal values and plants species that has the ability to heal spiritual sicknesses like madness and epilepsy. The spirit of our ancestors are in the deep darkest forest (kwaeberentuo mu) and that is where we usually bury some of the chiefs even though it is not in every forest but most of those forest that you will hear that it is very scary and dangerous to enter, I tell you it is truly dangerous and when you walk through you will meet a lot things – strange animals and strange human beings and spirits but the nicest and good thing about those places is that if someone is very sick that even doctors have given up on that individual and we go get just a small branch of tree with fresh leaves and even drop on the person, the person would rise up. And in fact, if this doesn't happen then the person is bound to die no matter what. Another thing we Akan perceive is that we all know that the lands and all that is on it whether forests or minerals, all belong to the chief and they choose to either sell it or develop it. As for animals God actually created them as companions of humans so we leave them in the forest to live peacefully and we also stay closer by building not far from the forest so they will not go away from us”.

Appendix 3c: The Akan Traditional Priest's Narrative on Cultural Group's Practices for CSEE

When the Akan traditional priest was asked about practices for Akan cultural group's value and care for nature, the traditional priestess narrated that:

“As I said earlier, I do make sure that the riverbank is very neat and this is done by all good traditional Akan people in our community who understand the value of all these creations. See, you saw how the place (the riverbank where I do the pacification for the river) was when you went there, yeah I send gifts to the river very often for helping to make thing work very well for me and my husband living here. I treat the river too very well even more because the river here is a good one, it's a mother and I told you she came to visit me when I first came here and gave me a word to tell the chief and the queen mother...but the chief is not heeding what she (the river) said she doesn't want (for instance like allowing some cattle to step into it is an abomination and that is why there are too many bad things happening in this town. I know there is much power in the river here, I know that and as I said earlier the river has visited me at night before that is why I still go there and do my purification and rituals there you see my, 'asonnee' and how I keep the areas around the river clean that shows how much I reverence the river and other water-bodies. Also there are places which have very thick forests that the chiefs and elders of this town have reserved and people are not permitted to enter because they bury people from the royal family there. There are a lot of dangerous spirits there and when you enter and take anything from there the gods and spirits there will deal with you unless the chief gives you permission and even that one they have to do some rituals for you before you can go and even get a leaf or bark of tree for making medicine. We don't also hunt for animals in those places. We have our own akraboa (totem) for the Agona clan I come from which is parrot and nobody kills parrot in my clan, we respect them very well. Our chiefs have their symbols all over their palaces and other clans also do same for their own akraboa (totem). And as for us, we believe that if we fail to replace what we harvested immediately for example all the root crops, then we don't want to harvest anymore and we are starving mother Earth and our own family because we are not thinking of tomorrow. In fact everything you harvest you have to replace it as soon as possible, for instance when I go to harvest plants for medicine it is not everything I bring home and some of the plants we grow them and others are done (deposited or spread) by some animals especially like the elephant whose feces has seeds of every type of tree. Also, some wild animals are very dangerous to hunt, and you dare not

hunt them with a gun because mostly when you shoot they can either vanish or turn into a family member or someone in the community and you would be arrested for killing human being when you know you were shooting an animal...but usually there are several times of the year that people are not allowed to hunt wild animals or even pick their guns to the forest. We therefore do not hunt anyhow and many times we are banned from hunting because the animals may be pregnant”.

Appendix 3d: The Akan Traditional Priest's Narrative on Cultural Group's Communication of CSEE

When the Akan traditional priest was asked about the communication of the knowledge of Akan cultural group's value and care for nature, the traditional priest narrated that:

“People learn a lot of things by what we do here, if we do rituals, all the people that come there learn something as they observe us perform some of these practices. Now telling stories are becoming outmoded because the children watch TV and learn some stories in school but which adult will be hearing stories now except they hear things like rumours of certain places that sounds scary, fearful and much dangerous they (adults) rarely take what you say seriously. In terms of hunting too we communicate to people by being prevented from hunting certain animals. For instance, people are not forbidden from hunting other clan's totem. They may only refrain from hunting them based on their own respect for their neighbours who have that animal as their totem. Places in nature left and not used like a forest reserve are also ways of teaching our cultural values and care for nature. Such places have rich sources of plant and animal species but they do not desire resources from there especially where kings are buried. Again, deep spiritual baths and incantations and initiation into becoming a chief or traditional priest are performed in such places. Usually, people who are disobedient and make entry to such places (forest reserves) and or eat fishes from banned rivers either get strange sicknesses, get haunted by evil spirits, become lunatic and usually come to stay by those water-bodies to serve a period of term for their disobedience. One other way, is to let people become cautious and sometimes stir up some kind of fear because if you don't have fear as a person you will not live long they say. I am not saying when you see something and you get frightened, I mean having some kind of reverential fear for instructions and especially caution. I am saying this because I remember once when we went into a deep forest at the time the one who gave me more powers to do my work was taking me through some initiations, one day we were cutting some tree when someone came out of the tree and shouted they (people) don't cut me. In fact I urinated on myself out of shock and myself and my mentor took to our heels and ran bare footed out of the forest. In fact, that day it wasn't easy and you wouldn't believe it that when I came home in the night the tree followed me and I could hear the sound of strong wind blowing through a tree. It's really scary and this experience has made me know that truly there is something in this world. Even me myself I do not understand why things are like that and that is why I said there is something in this world...so maybe that is why our

elders didn't go deep to tell us everything but would only say do this, don't touch this or that...those who obey are always safe. We also teach and learn from other as Akans some of the cultural values and care for nature for instance, this job I do (i.e. being consulted as traditional priest for spiritual matters) before I started I was sent to stay with someone who has done a lot in it to learn and do as she does, so I just copied what I saw there".

APPENDIX 4: NATURE RELATED NARRATIVE ANALYSIS OF THE AKAN HERBALIST

Appendix 4a: The Akan Herbalist's Narrative on the Cultural Group's Understanding of CSEE

When the Akan herbalist was questioned about the understanding of the cultural group's value and care for nature, the herbalist narrated that:

“Plants and forests actually have spirits in them and that is why not any person can just go and pick leaves and put them together to form medicines. Even when it is time to take portions of them you follow procedures that show your respect for them if not the medicine cannot be effective. Do you know that plants can even help to heal us because of the spirit that is in them? Remember, that the spirit in plant is similar to the one in us what you can see on the outside like a tree, a land, animal, a rock can all be spirit that have turned into that. But truly, our general life is dependent on trees and waters and if there is no tree or plant or any of these none of us would survive. Our food we get from trees, our medicine we get from trees and many more. When even tree leaves fall into rivers it makes it have medicine inside them and when you drink them you become really strong and therefore we cannot afford to be cutting them anyhow, No! Never! Every tree is important. As for me I know that God created all these because of us. For instance the food you and I eat, the medicine we use when you and I are sick, the water you and I drink, the clothes you and I wear, the houses everything are all from nature for us to benefit from them so I must take care of them and not destroy them, that is why even in my farm I don't fell down the trees that are near the river so that the river will not dry. And as I said earlier, even when the leaves fall inside them (rivers) and you drink the water it makes you strong so I must protect them. Also I must leave some land for my children too as our forefathers did and today we have lands to live on, build on and eat from when we farm or even go to the forest to get food and some wild animals as delicacies. This is how the whole Akan culture is that is why we have a lot of forest reserves for future generations although it is for the use of the royalty and other elders in the community. My father who taught me how to identify plants and trees that has high medicinal value was really strict on his instructions because he used to tell me that it is a work you are doing to take care of a human being. If you do not following instructions and hear it clearly and miss out, it may be disaster for you and so my dad kept telling me to respect the elderly and he ensured I did that. And he scolded me whenever I

did otherwise and kept emphasizing the value of plants, forest and water-bodies and in fact all the other elements of creation and the instructions given to protect them, he told me that they must be heeded. When you get certain wild animal body parts especially from animals that hunters usually discover very strange, strange object inside their stomach which are mostly powerful smaller gods and when body parts of such wild animals are mixed with medicinal plants it produces very potent and powerful medicine that is able to heal not only physical sicknesses but also especially if the disease is a spiritual one and it even heals the disease instantly. Some powerful plants are the plants that grow in places that had certain smaller gods buried or dead and decomposed carcasses of animals that swallowed these gods into their stomach and intestines. If you have eyes you will see them and usually plants that cure strange diseases and spiritual diseases have these powers in them...when we were growing up our fathers made us understand that land is for our ancestors and that we are only taking care of it for our children's children future, so you only farm on it and eat on it and cannot sell it unless you ask the ancestors and pour libation to them...you know, in the olden times the chiefs did not even sell land, they only gave it as gift for a family to farm on it and build small structures on them for shelter and comfort...and all the plants on land too are very important because we get our medicine and food from plant, that is why spraying chemicals on plant is very dangerous and it is the reason people keep getting sick because it is the same plants and soils that we grow our food that we eat and when the rain falls too it washes the chemicals into the rivers and the spirit of our fathers and ancestors even hate it when we do that. What we have to do is that we have to weed and allow it to dry and burn. The chainsaw people too they should arrest them when they such things”.

Appendix 4b: The Akan Herbalist's Narrative on the Cultural Group's Perception of CSEE

When the Akan herbalist was asked about the perception of the cultural group's value and care for nature, the herbalist narrated that:

"Nobody is afraid when you say may God punish you and would even dare repudiate you the more but the same individuals would suddenly start panicking and would consult any revered or respect person in the community or even go the chief to report the incident for the matter to be settled if the person called one of the Akan community water-bodies or a combination of these to curse the individual even if they are sure they have not committed the crime he/she has been accused of. Sometimes you hear statements like, 'head of the water', 'the river has left this town to another town' or that this is a, 'motherly' water-body or usually being talked about in the community as a woman (female) or a man (male). These are some perceptions of some of the things in nature. The female water-body are very kind and would take a lot of provocations before bringing its repercussions meanwhile the male water-bodies are very wicked when offended or and in matters where they are used to curse someone, it happens to give instant justice, having no mercy. I believe there are spirits in water-bodies that is why when you want to curse somebody who has offended you or have gone to lie against you to bring you shame, you call the name of rivers in your hometown to curse them and within a short time their stomach become bigger and they have to go beg the river and confess their wrongs. You know something strange happened to me years ago when we were in the forest cutting parts of the tree, the tree spoke and said, they don't cut me like that. If someone is dying of a very deadly disease and small branch of a tree and its leaves are taken from the deepest of dark forests that people are not supposed to go there anyhow and brought to touch that sick person, he or she will be healed instantly and if doesn't happen that person has no more life left on earth. Trees talk, I can hear their voice when I approach them and many people like me can actually see and hear. In fact every tree has their own sounds; the door frames talk as well. Some tell you what you can do to them and what you can't do to them. Also when you get certain animal parts especially those that hunter discover things inside their bodies and use those body parts with plants used for making medicines, the medicine is now very potent and heals instantly especially if the disease is a spiritual one. Many rituals have to be done before you can enter certain forests to pluck medicine and during such times you really have to be attentive to the spirits

as these plants and trees speak when you get to them. Some tell you they can't help others smile and welcome you to pluck leaves and cut some twigs and remove some bark. But truly if we get medicine from such forest they are very powerful and quick in action. We always have to get permission from the chief of our town in order to enter the forest. It is God who created everything but on the earth here it is the chief and palace people that own them".

Appendix 4c: The Akan Herbalist's Narrative on Cultural Group's Practices for CSEE

When the Akan herbalist was asked about practices for Akan cultural groups' value and care for nature, the herbalist narrated that:

“Plants and trees that are near rivers and streams are really healthy ones because the rivers and stream protect them with their spirit. As you can see, they are always fresh and can at all times be used to make medicines. In fact the trees also help the rivers or stream to become cool. In every stream and river or any water-body near places where I harvest my herbal product, I do the necessary rituals. This is because I know it is because of the river or stream that the tree and plants around are very healthy and because the water-body is a god and has other spirits around it I show them respect by talking to them and giving them sacrifices before taking anything around them or from them. The land around is also very rich for farming. The forefathers were very wise and so people have to be obedient to their instructions and should also know that it is not every person who can walk into a bush or forest to pluck any leave or cut anything and use as medicine if that person has not be initiated or called for that purpose. They should have eyes (spiritual eyes) and the spirits of the fathers should know him/her. There are places I can enter and you the researcher you cannot unless you receive a spiritual bath and some of the forest areas that have been reserved in our villages and towns. And some of the forest areas you can't just enter and come back without any proper ritual and survive in peace, you will definitely be affected one way or the other. If we go to a tree to pluck medicine, we don't have to remove the whole bark of tree at a go, so it could grow back nicely. Besides when we remove the whole (circumference) bark it is an abomination and the medicine will not work properly. We don't also have to cut all the roots of one plant, you only take portions at a time so they will remain to grow for future use. It is not all plants we put money under but if you have to put money under some of them or when you have to put white eggs and all of that and also supposed to do some rituals and you fail to do it, the medicine itself will not even work properly. And if you really want to know whether some plants have great potential to heal and to know whether they can be consumed without falling down dead, the simplest way is to check which wild animals eat it and usually get the content (chime) of their stomach you don't hunt certain wild animals anyhow because sometimes they are the ones that direct you to a very effective medicine, besides there are several seasons you are not allowed or even supposed to hunt wild animals as they may be breeding...”

Appendix 4d: The Akan Herbalist's Narrative of the Cultural Group's Communication of CSEE

When the Akan herbalist was asked about the communication of the knowledge of cultural group's value and care for nature, the herbalist narrated that:

"I usually tell my children some of the histories about how certain things happened in our family from my great grandparents that made me also become a herbalist. Members of our cultural group do the same thing. I tell them how certain plants came to be called their names and powers that are in certain plants and animals and in deep forest because of my job and they learn a lot from my conversation. They (the sayings) are all true all the same. As I told you earlier, it is an abomination to remove the whole bark of a tree but you can take portions at a time if not evil will befall you and the medicine will not work again the next instances you come to another. Climbing trees and trimming it before using axe or chainsaw to hewn or log it is a lesson that is learnt but people now flout it. The places reserved are to be treated with respect because our ancestors live there and need to rest from their labour. Such places have rich source of plant and animal species but they do not harvest medicinal resources from there especially where kings are buried. Mainly, deep spiritual baths and incantations and initiation into becoming herbalist is done before you can practice the herbalist job. All these incantations are ways we communicate to people in our culture. if you are not bold you cannot do my type of job because things you see in the world physically like that are not all physical like that. If you don't have eyes, you take things for granted and that is why things happen to people (with no eyes) unawares and sometimes someone dies suddenly or get attacked with some strange sickness. You don't just touch or go the forest and just touch anything (trees, water-bodies, animals) anyhow like that oh. There are lots of spiritual forces in creation that is why they can hear you when you talk to them. Even some parts of the land we walk on so don't forget that when you call a river to curse someone, whether they are aware or not something evil happens to them so it means the river has senses, just the same way, the earth too can sense things. we came to meet some of things and we also followed, it is not everything you will understand because it not everything our elders explained to us'

When I used to see my father pick the leaves, I kept in my head because sometimes he doesn't even say anything and when he is mixing things at home he would call me to come and see what he's doing and many times he would hardly say anything. But that is how I

kept learning and many people too in our culture learn the same way by looking at what the elderly people are doing”.

APPENDIX 5: NATURE RELATED NARRATIVE ANALYSIS OF THE AKAN YOUTH

Appendix 5a: The Akan Youth's Narrative on Cultural Group's Understanding of CSEE

When the Akan youth was asked about the understanding of cultural group's value and care for nature, the youth narrated that:

"I actually have respect for creation because I believe from what I was taught that God created all things and he breathed into it and His spirit was moving over the earth so almost everything have some spirit in it, only that some may have bigger spirit than the others. From the things I have been told by my parents and the many things I have been studying in school about the importance of vegetation cover, the water-bodies and the wild animals, I am more than convinced that no plant or animal should be harmed by anybody but it is not everybody who understand like I may know. I think that if you want to live long you have to obey the instructions of the elderly people my parents always advised me and told me stories of people who through disobedience of the elderly people have brought a lot of evil upon themselves. Also, I have heard that people died and some used for ritual sacrifices in some of the forests that people are told not to enter and I think that if you have ethics for creation it means you will also respect instructions related to the components of nature like the lands, water-bodies, wild animals, forests and others elements of creation. But as for me I am afraid of what our elders say oo, I don't want trouble so I am not disobedient to them. I do not go to the river if they say we should not go there because I have heard some people fallen unconscious and later die when they went there. When it comes to caring about the earth, lands, water-bodies, wild animals, forest, plants and things in nature I have an understanding that we have to protect all these because our life depends on them and that of the generations to come, I also learned some in school too...for instance I was told that land does not belong to anybody but even the chief is not supposed to care for it but has power to give to some people or sell some but it still belong to ancestors..."

Appendix 5b: The Akan Youth's Narrative on the Cultural Group's Perception of CSEE

When the Akan youth was asked about the perception of the cultural group's value and care for nature, the youth narrated that:

"In our village, I am told some of the rivers are good and some are very wicked and that some can even make a car get accident when it crossing it on a bridge made over it and the car fails to blow a horn or signal that it wants to cross. I have heard also that some trees are powerful like the, 'homakyem' that they said blood comes from it when you cut it. They said it is very scary but I have never seen any of it and I wouldn't want to see it either because I don't need it. Also I do hear people say in our community and in my village that some animals in the bush are most of the time very dangerous because dangerous powers are in them and it takes people who have eyes (spiritual eyes) to see them. Truly, I can't tell if I believe it or not but since there are such thing in horror movies maybe they are true as they tell us., ...I do hear people say in our community and in our village that some wild animals in the forests are very dangerous because dangerous powers are in them and it takes people who have eyes to see them. My uncle told me one time that in the olden times when the Akan people were going to war, they would go into deep forests for spiritual bathing and usually when the war starts many hide their smaller god or idol in the forest which sometimes animals pick up and swallow and this makes those animals very powerful that you can't easily kill them and that if you do kill them too, those powers in them would haunt you unless you seek for other spiritual help from traditional priest. I can't tell if I believe it or not but since there are such thing in horror movies maybe they are true as they tell us. I also heard that there are plants that have powerful powers in them that you have to be very powerful to cut them because there are some gods that entered them many years ago. The land that my father had was very big, a very vast area that has not been farmed on before but when recently, the chief re-demarcated the land and my father now has just a small area because they said it is the previous chief who gave all that land to my father but it is for them so sometimes if you are not able to work on them they can take them back. As for me I am afraid of going into those forests that are kept by the community that we are told not to go there because you can easily meet some spirits that will kill you because it is the spiritually strong people who can easily stay. But I am told that no matter how sick a person is if they get anything from those forest for them, they will get well".

Appendix 5c: The Akan Youth's Narrative on the Cultural Group's Practices for CSEE

When the Akan youth was asked about the practices for cultural group's value and care for nature, the youth narrated that:

"We are aware that rivers and other water-bodies may be very powerful bodies, that is why our forefather always wanted to settle by it and people call upon it as a judge to make the truth become a reality. Whenever a person offend the water-body or when the Akan person say he/she will call a river or water-body to curse you, people actually start shivering. I am very afraid when it comes to certain things even though I go to church. I have been told we do not eat fish from the river in that thick forest. I have seen some mad people in this town that people say they ate fish from the river in our town but I can't tell whether it is true or not and they also say we should not cut any tree or use catapult to hunt any bird or squirrel. I want to be safe besides I don't need anything from there. I only don't go such places because of what the elders have said not really because of anything in particular but I have heard of many people who have been harmed for neglecting thing this simple instruction but I actually don't need anything from there. It is the character of our cultural group people to obey our elders and forefathers. We don't use access the natural resources that we are given instructions about and everyone ensures that they care for the natural resource because we respect such elements of creation. For the forest issues we do not even know what goes on in those places, I for one usually only hear people say it and I have not entered those places to be able to tell but I don't think I have courage to even go into such places. I am okay here. I know that my parents and many parents and elders when you follow them to the farm they tell us that when for instance we harvest something like cassava, yam, cocoyam and many other we are told to either cut the stem or root or bud and replant them immediately and this is a common practice among our cultural group. And we do so with almost all the crops even plantain suckers but I do not know why we have to do it immediately anyway because even in our back yard here the little garden my mother has done, she does the same thing anytime she harvests. There are times we are told not kill or hunt for any bush meat or else we would be sent to the chief's palace. Again, but I have heard a lot about hunting and I hunt myself, though I have never used the gun to go for hunting like real hunters who do this and use the night light but I usually use except trap and catapult...the traps are set in the bush and concealed with strong metallic wires that when entered or step on the animals is trapped till how long, some die before we come

back...my dad showed me how to set the traps. The traps are set in the bush and concealed with strong metallic wires that when entered or step on unknowingly by the wild animals, they get trapped till how long, some die before we come back...my dad showed me how to set the traps but there are times we are told not to kill or hunt for any bush meat or else we would be arraigned before the chief's palace”.

Appendix 5d: The Akan Youth's Narrative on the Cultural Group's Communication of CSEE

When the Akan youth was asked about the communication of the knowledge of the cultural group's value and care for nature, the youth narrated that:

"I also tell my younger brothers some of the things I have been told and I am very strict on them so they behave well in this community for instance I warned them that they should not sit where elderly people sit. We usually heed the instruction for the community because the elders like cursing young people who are disobedient to their instructions. Honestly, the days they say we do not go here or there, I don't do otherwise I'd rather play draft with my friends and chat with my girlfriend. Our elders and the traditional leaders are always putting fear in us about places – fear about: some land somewhere, some water-bodies-rivers, lakes, streams, some forests and wild animals, in fact fear about almost everything in nature. Those animals and plants at home they don't say such fearful things about them. But for the creation in the wild i.e. all the wild animals, plants and all their habitats including the water-bodies all the time they tell us scary things and keep saying don't do this, don't do that but they never explain why they say them and that is the sad part. Can you imagine that even where we Ashantis came from when you ask the elderly people, they would tell you we came from the cave. Our elders really like telling us so many scary things without telling us the details behind them. I do not understand their reason and when you ask why they would even add more scary things and point to this or that person who had this or that problem because they disobeyed the elders somehow, somehow. As I observe what the elders do I learn and teach my kid brothers and sister to look at me and learn from me and this is also a way, I think all of us use to learn things".

APPENDIX 6: NATURE RELATED NARRATIVE ANALYSIS OF THE ZULU CHIEF

Appendix 6a: The Zulu Chief's Narrative on the Cultural Group's Understanding of CSEE

When the Zulu Chief (an Induna) was asked about the understanding of the cultural group's value and care for nature; the Induna or chief narrated that:

“A person should have an understanding that every individual is different and should be distinguished from others in terms of their role. This is because even in the royal house we are not all the same and we have to respect that. What are we leaving for the next generation as our ancestors left these natural things for us is an evidence of our understanding of the cultural values and care for nature as well. Besides we have to make every effort to keep and care very well for the forests, lands and water-bodies in our communities so the future generations will not just suffer for nothing. You know when we (zulus) used to fight lions and ferocious animals with bare hands and sometimes a spear, it was just a way to get the knowledge of how they behave so we could conquer them if we happen to meet them in the wilderness alone or in a jungle somewhere in the future but truly in our culture we loved the wild animals. Besides if you understand the way to care and value nature – the earth, plants, animals, water-bodies you would obey what our traditional leaders tell you to do or not to do about them...”

Appendix 6b: The Zulu Chief's Narrative on the Cultural Group's Perception of CSEE

When the Zulu Chief (an Induna) was asked about the perception of the cultural group's value and care, the chief narrated that:

"The Zulu cultural group have the perception that, it is bravely to kill a lion or leopard with spear and the bare hands and that wearing the skins of leopards show sign of royalty or kingship and therefore the ability to fight them (ferocious animals like lions, leopards etc) with bare hands and spears are the greatest acts of bravely and this can make someone a hero. Mothers were also known to train their male children to be heroes by sternly driving them to face dangers and usually by whipping them with a ropelike disciplinary whip called, 'Isofithiya' not to come back to house but to confront danger when the particular boy(s) make an attempt to run home from dangers. Also, potential ladies to be selected for the prince or other royal family members to marry were exposed to snakes unawares usually the mamba snake just to see how she would react. Moreover, this was also done to check their (the lady's) bravery and at the same time test their respect in their own estimation. There are also perceptions about plant: some plants and some trees are usually harvested by particular group of people and you can't go near, some are aware that it is only male inyanga that can harvest and even those they are training cannot do the harvesting except under their (inyanga) instructions. The presence of the ancestral spirits (amadlozi) manifest themselves in the forms of snakes or mamba snakes and in dreams. Our cultural group have the perception of some animals like monkeys, baboons, owl as evil animals that could bring bad omen and be used for bewitching people so they are not loved by our people especially when they keep coming to the homes. And that we the Zulu cultural group have a dance the, 'UmChwayo', in which those who are dancing actually make snakelike movement in one accord and sing alongside as signs of some perceptions of our relationship and admiration of snakes which are considered as our ancestors. Inyoka (Snake) like the mamba and puff adder are believed not to enter the family or home, if it does then it means there is something wrong happening in the family or home, and i-puff adder has a teeth that is long and takes long to bite and only bite when you step on it. When it has bited you, that is, 'uyabola' because it takes longer to resolve its teeth and the mamba also doesn't enter the family homes but it's also very dangerous. Also during some occasion and mostly in performance of some particular rituals the umhlanga mat, and umhlanga hut are used just for easy connection to the ancestor and this is done usually with guidance of

some diviners like the sangomas and inyanga. The perception being that the ancestral spirits are actually live in these materials. isikhova (Owl) works the same with baboon. It is bird used for witchcraft...when it is making sound on your family it means someone is witchcrafting you. Believed to be sent by someone; It doesn't enter home but always around but when it enters the home then truly sent or bewitching is taking place, and when it enters home, then it is sent by someone. Also the muthi made from ubulawu may be used in different way depending on the purpose and the occasion thus may be ingested, inhaled or used otherwise as directed by the diviner. The sangomas and inyangas uses the sacred water bodies as their main medium through which they liaise or connect to the spirit world for us through some rituals all because we perceive in our culture that there are spirits in water-bodies and that rivers are not dead but have life like humans that is why other animals can live in them and not just die. Again most of our water-bodies are seen as been inhabited by our ancestors and therefore we are careful how we treat all those water-bodies. Because of this all the animals that live in them (water-bodies) are given special treatment because we believe that they are the ones our ancestors send to either give some directions to an oncoming danger, showing medicines for healing some people, guides to riches through communication with more spiritual people”.

Appendix 6c: The Zulu Chief's Narrative on the Cultural Group's Practices for CSEE

When the Zulu Chief (an Induna) was asked about Practices for cultural groups value and care for nature, the chief narrated that:

“The bravery of shaka and his brother were as a result of their ability to kill lions and other ferocious animals like leopards with their bare hands and sometimes with only a spear, they fought and killed strong cattle as they would other non-violent animals. These gave them the position they occupied and were able to lead the whole zulu community to war with western world without military weapons and could still prevail...the kraal they build was military protective manner that housed all the families with. For instance, the kraal they built was in a military protective manner that housed all the families of the builder. One of the main things you will notice in the homes of traditional leaders and many other homes are skulls of some animals and some bone which may be displayed in various places and in different patterns, these are the connections we have with such animals and link with the great spirits that protects the environment. It is part of the practice to display these skulls. Also, we believe as Zulu people that we have some kind of spiritual link with some animals that is why you may either see their skull or bones in our premises or their skins used as various forms of clothing and regalia, as bandannas, anklets or bracelet. And many people show the connections they have with those animals by their surnames as well as their body parts used. All such people in one way or the other have an ancestor who is believed to have been helped or directed by those particular animals (wild animal) again the names speak for themselves for instance. Moreover, in every society that want to live in peace you have to always ensure that the spirit world is not against you because of many wrong doings. Therefore, if we do wrong we do some rituals to ask for forgiveness from the spirits in our water-bodies guided and directed by sangomas and some inyangas”.

Appendix 6d: The Zulu Chief's Narrative on the Cultural Group's Communication of CSEE

When the Zulu Chief (an Induna) was asked about the communication of the knowledge of cultural group's value and care for nature, the chief narrated that:

“When we and our people are doing any cultural performances, they are all not just for entertainment. All you can see there, like the regalia, the poems and the different dances like the hunting and snake dance all teach amaZulu people certain lessons. There was also a time for initiation, during this time boys go for special training in the chiefs palaces and were taught the tenets of the Zulu culture. Other celebrations that the young girls go through like the umhlanga dance ceremony is also a way teenage girls are honoured for keeping their virginity. On several occasions the elderly would tell stories about various species of wild and domestic animals by portraying them as though they are humans in the way they (the animals) talk and interact with other animals. Sharing such knowledge piques the interest of the young ones and makes them to especially aspire to be like them as they notice their cleverness, wisdom, strength, intelligence and what have you. Our ancestors are more precious to us and so we remember them often and make sacrifices to them and the direct blessings are the dreams the ancestors give us to direct us when we are in any form of need”.

APPENDIX 7: NATURE RELATED NARRATIVE ANALYSIS OF THE ZULU ELDER

Appendix 7a: The Zulu Elder's Narrative on the Cultural Group's Understanding of CSEE

When the Zulu Elder (umdala) was asked about the understanding of the cultural group's value and care for nature, the Elder (umdala) narrated that:

“There is so much disrespect presently that people challenge authority with so called I have my right, I have my right. But if you have an understanding of our cultural values and care for nature you will realise that you are not the same class as the king so you cannot be wearing what belongs to the king and royal family. We are not all the same in terms of hierarchy and we must understand that always. Just as there are distinction in the clothing worn by single unmarried women from married women so it is with us and our king. For instance, I know that I am not the king and we are different in terms of our position so I don't know why I should behave like I am the king. I don't even know which people we have now who can even wear the leopard skin and have the guts to ask why can't I wear them...is the king more human than myself? They forget there is a hierarchy. They just hate the king! Different clothes are also worn like ibeshu (protect your back), isinene (protect your front) and injobo (for your waist) all these are different clothes you can wear to make you distinct from the King as they are not made from leopard skin. In our culture we understand that It is only animals we rear at home that we don't protect in terms of killing some for food, I mean we kill some to eat and for this reason we must not misuse what is in the nature (wild species), rather we must protect them and not destroy so that we will not be suffering in the future with our children. We should all know that in our culture the animals are more important to the king as the people and their generation are so very important to him and so animals were not killed like flies and when it comes to the issue of plants, also we ensure that we grow new plants when removed or cut. Interest in wild animals is a priority in our culture so even wild animals that could be a threat to life, we did not attempt to kill them so they do not go extinct. Therefore, even in instances where we had to fight them only spears were used and the men always fought them with spear and bare hands. But even this kind of killing them this was done only to demonstrate bravery and ability to survive with them in the wild because they are animals in the first place and could attack you in the wild without your notice. We loved the wild animals to the extent that there are even some

families who when they even noticed that some of their favorite wild animals had not been seen often or for some time, they would intentionally send men to go hunting for them, not to kill them per se but to only capture and afterwards they released into the wild. Another understanding is that, a mother has the duty to bring up the child to learn to respect the elders of the community and as a young person; you were never supposed to speak except you are being spoken to, even direct eye contact with elderly. And I see that even me I have to obey what our elders tell us, if not we will lose our culture”.

Appendix 7b: The Zulu Elder's Narrative on the cultural Group's Perception of CSEE

When the Zulu Elder (an umdala) was asked about the perception of the cultural group's value and care for nature, the elder (umdala) narrated that:

"We actually have different thinking about several animals but I cannot mention everything, I can help with a few: We have no value for monkeys and baboon, we believe they are used for bewitching people and for the leopard skin only the king is supposed to wear it and those who kill it for the king are considered as brave people and the king honours them as heroes because they kill them with the bare hands although for now things might have changed and they may kill them with other means which I may not know. The python are for training someone to be a sangoma and if you are able to hold it and dive under water with it and bring it back you will qualify and therefore in most sangoma training snakes are very important for determining who a person is and his or her capabilities to do the work. According to our tradition, there are trees that are not to be touched by a woman because if she touches it, it will get withered. I don't have any example in my mind at the moment but there are trees like that. Also there are those trees that have traditional instructions on how and when to harvest them, depending on the season of the year. And some trees there are beliefs that you must talk with them on what you going to use if for before you reap or harvest it, otherwise they will not work effectively. Ufudo (tortoise) can bite you very silently with no sound at all and when you annoy it, it can fart at you and the fart follows you and also in same way when you anger ingungumbane (Porcupine) it shoots its spines in anger especially at dogs that hunt them. We have perceptions also regarding who qualify to be part of royal family usually when it comes to marriage, I mean potential suitors. For instance, when a candidate is able to overcome the ferocious wild animal with the bare hands, that person is crowned and hailed a hero who may also be rewarded with the privilege of marrying the king's daughter. Your bravery as a man to become a hero and also be able to marry the king's daughter is your ability to fight a lion or leopard and kill it with your bare hand. It was done to convince the king and his subjects that you are strong to marry daughter of royal family by your act of bravery and show your ability to look after and protect the woman. And when it comes to women who desires or to become candidate to marry the king or a prince, usually you the lady will be exposed to a venomous snake unawares to see your reactions. Also in our Zulu culture we

are connected spiritually with our ancestors who are seen as our intermediaries who pray to the supreme creator on our behalf. Consequently, we are interconnected with spirits, animals, plants and other wildlife as Zulu people. Also there are some plants that are perceived to be very potent when it comes to connecting with the spirit world and these are the plants believed in our culture to make it easier in connecting with our ancestors. For instance we have this mat that we have used umhlanga (reed) to make that when you sit on it or sleep on it you can easily have directions and dreams from ancestors and when you visit powerful sangomas and inyanga they usually give some muthi that they used ubulawu plant to prepare and it can clean your body and your mind so you have clear dreams from ancestors. You know something our ancestors usually show themselves in the form of snakes and our great ancestor, the amakhosi and, 'inkosazana' the queen from heaven and all the families in the spirit realm are very powerful. We also believe they live under the water-bodies that are very pure and holy and that there is beautiful world under these water-bodies, in fact we believe that everything is there and that those living there are very rich and everything is perfect there. Again, water -creatures - fishes, frogs, snakes, birds in and around sacred water-bodies are all seen to be extraordinary creatures that serve as messengers between the natural world and the spirit world or the ancestral world under water bodies. In such sacred water-bodies all those animals living there are treated with some kind of reverence in that you do not hunt them for food, or do anything that will harm them because the consequences are not pleasant”.

Appendix 7c: The Zulu Elder's Narrative on the Cultural Group's Practices for CSEE

When the Zulu Elder (umdala) was asked about the practices for the cultural group's value and care for nature, the elder (umdala) narrated that:

"Our fathers lived in the kraal and during the time when they wanted to discover who was a hero and can survive in the wild, the way to do so was for someone to be able to kill like a lion or leopard with the bare hand and or a spear only. And when the person was successful he would be rewarded as part of heroism with the king's daughter. Some other people were trained for normal fighting as part of military war purposes; this training was done regularly using a special stick whenever the boys were on the field especially when they take cattle for grazing. Other things that are practices are things that you may have observed as a researcher, that there are usually skeletal parts of some animals on some roofs of many homes. These skulls and the bones on roof top of our buildings are all part of, or an indication of the presence of our ancestral spirits and powers of the gods that brings protection and blessing to us in our homes. It is also a practice to either eat or not to eat certain animals or use their names as surnames. For instance, some clan wouldn't eat some animals or even prepare their meat because it's their ancestor and therefore they respect them as such. And sometimes they don't even use those names as a sign of respect for their ancestor because the ancestor was called by that name. In other instances the particular wild animal might have helped a warrior in the family or something of sort. For instance Ndlovu linked to elephant, Ngwenya linked to crocodile, Bhele linked to leopard, Mfene connected to baboon, Umajola linked to house snake or snakes, Cele connected to zebra, Khumalo connected dassie, the hyrax and Hadebe linked to crab. Sometimes kings and or elders are buried in forest and such forest is said to be sacred and therefore respected. Nobody goes there to fetch even firewood. Such places are called, 'idlinga' ... places that are considered sacred whether water-bodies or forest areas, only the king or traditional healers and insangoma or people considered to have good spirit or righteous are allowed or can access such places without any harm to them. We believe that water-bodies are residents of many benevolent spirits and as I said earlier, the zulu ancestors too live under the water-bodies. Therefore, as part of our practice, when there is need for us to implore them (ancestors in the sacred water-bodies) for blessing for us, we do so with rituals through many traditional leaders and sangomas and inyangas. But apart from the

blessings too they also punish when we do wrong to the water-body and in such circumstances, we go there to pacify them”.

Appendix 7d: The Zulu Elder's Narrative on the Cultural Group's Communication of CSEE

When the Zulu Elder (umdala) was asked about the communication of the knowledge of cultural group's value and care for nature, the elder (umdala) narrated that:

“Special kinds of dancing like the hunting-dance and snake-like dances are all way in which our cultural group passes some kind of knowledge about the natural environment to others. These are actually done to teach people what it takes to hunt for certain wild animals and they also show and teach the kind and level of respect for ancestors for their acts of bravely and wisdom that has kept the cultural group till this time. The common knowledge of our cultural ways of valuing and caring for nature and how to relate to the nature or the natural environment are usually done through several means such as setting of taboos for things considered abomination, telling stories and fairy tales especially to children. One way by which knowledge of how we value and care for nature is transmitted to other members of our cultural group is through the dreams that come from our ancestors. Much information are obtained by many people in our culture through the agency of dream and most especially those that may have direct link with the natural environment for helping members of the cultural group both physically and spiritually and emotionally, such individuals may include the sangomas and inyangas”.

APPENDIX 8: NATURE RELATED NARRATIVE ANALYSIS OF THE ZULU DIVINER-SPIRITUALIST (SANGOMA)

Appendix 8a: The Zulu Diviner-Spiritualist's (Sangoma) Narrative on the Cultural Group's Understanding of CSEE

When the Zulu Diviner-Spiritualist (Sangoma) was asked about the understanding of the cultural group's value and care for nature, the Zulu Diviner-Spiritualist (Sangoma) narrated that:

“In every society there are different positions and the privileges that go with it, it is not everyone who will be allowed to have access to everything and people have to show that respect for those who are higher than them or have more knowledge about certain things than them. If we don't take care of these water-bodies, plants and our lands, our ancestors will not take it kindly with us. We will be punished by them (ancestors) because they left something (lands, forests, water-bodies) for us, that is why we are alive now, if not we wouldn't have survived in the first place. The water-bodies are really beautiful to see as well as the plants around it and that is why even our ancestors and other good spirits stay inside them. We as amazulu, see that obeying your elders means you have understanding. So you have understanding of caring and valuing nature if you obey what the elders and ancestors say to you about the things in nature like the water-bodies, plants and animals”.

Appendix 8b: The Zulu Diviner-Spiritualist's (Sangoma) Narrative on the Cultural Group's Perception of CSEE

When the Zulu Diviner-Spiritualist (Sangoma) was asked about the perception of the cultural group's value and care for nature, the Diviner-Spiritualist (sangoma) narrated that:

“Green snakes are perceived as ancestors and are therefore respected, valued and protected. Pythons are also seen as ancestors and are perceived to be connected to the ancestral world and is therefore used for our sangoma training after going through Ukuthwasa, the initiation for becoming a sangoma and usually your ability to dive with a python under a water and bring it out qualifies you as a sangoma after you have received the call from the ancestors. Also crabs are also perceived to liase between the human world and the spirit world and therefore all such animals and many others. Not every person can harvest or handle certain plants for making traditional medicines or muthi because for some of them a male sangoma has to go for it and others a female sangoma to do if not that medicine would not be effective. We also see that being able to fight dangerous animals like tiger alone without a gun but only your hands, to us as Zulus you show bravely and this was also a way to show that you are stronger and clever than the ferocious animal and that you can survive when thrown among them in the jungle somewhere. We perceive bravely to be one of the best values that a person should have that is even in our (izangoma) training, during the ngoma practice our bravery is very paramount because of the nature of the job and in many cases we are compelled to hold snakes and enter the water-body and come out with the snakes even though it is to check our acceptance into our job. Honestly, snakes are very important to us in this zulu culture therefore as I said earlier snakes like the green snake is respected, and protected as an ancestor. Also pythons are respected as they are connected with ancestors and that is why python is even used in sangoma training and to qualify as a sangoma, you must be able to hold the python and dive with it under a big river or dam. There are some plant we have perception that they are very valuable and have spiritual connections. Ingwenya (Crocodile) when you swallow its body fat it makes you immune to bewitching or food poisoning. In the river too if tasted your blood before, it can follows you and can kill you. Also with ubhejane (Rhino) have wounds below its armpit that is what we believe can heal any wound so it's difficult to get it and the ubhejane (rhino) horn too can to heal cancer. Plants like these plants (umhlanga

and ubulawu) are considered sacred needing just a few rituals to make them very potent for communicating and connecting to the ancestral world and usually this comes through dreams when one sleeps on umhlanga mat or sit on them and or use the ubulawu according to directions. Usually as you approach the sacred water-bodies with the correct rituals which could even be singing with applauds for the spirits, you will see, 'amakhosi', our great ancestor the python and, 'inkosazana', queen of heaven in those rivers at night. The python is the, "amakhosi" that is to say the mightier or the great ancestor. These pythons (amakhosis) and the other water spirits are living under the water with, 'inkosazana' queen of heaven and the place where they are living is like a normal world but this place everything is very perfect and how humans on earth do all things in an organized society that is how their place also is. For that place everything is there just like the world we are living in and everything you need to make you happy in life are also there is just like heaven or comparable to heaven. All the animals and plants in the water-bodies that our ancestors have directed us to come and perform rituals in them are all considered holy things and holy places. In fact everything in the water-body - the snakes, the fish, the frogs, the birds, the crabs found in the water or around the sacred water-body are all sent by our ancestors, our amakhosi (the great ancestor python), and the inkosazana which is the queen of heaven., 'Inkosazana', who can look like female human with long hair, also has a fish tail. All these animals in the water-body that have been sent to us, if our people treat them badly and do not respect them the ancestors will be angry and vacate the place or relocate by making them leave the water-body".

Appendix 8c: The Zulu Diviner-Spiritualist's (Sangoma) Narrative of the Cultural Group's Practices for CSEE

When the Zulu Diviner-Spiritualist (Sangoma) was asked about the practices for cultural group's value and care for nature, the Zulu Diviner-Spiritualist (Sangoma) narrated that: "Years ago, we had lots of heroes but now a lot of our men are cowards because they are disrespecting our ancestors by their actions, so a lot of the men now have no much strength and cannot even stand a wild dog. Only a few men can stand the lion and the leopard or a bear now with their bare hands but if the people take the ancestors seriously and give the necessary sacrifices and rituals and protect their (ancestors') water-bodies, lands, forest they (ancestors) will help them. We are connected to the spirit world through the animals and some plants and when we keep the skull and bones and skins of some of the animals it reminds us of the presence of the ancestors and great spirits that bring protection and also help us to hear when we call the spiritual world. Sometimes antelope was slaughtered to pacify ancestors when there are problems with the weather and lower yield of crop. We amaZulu are connected to some animals as well and ancestral spirits live in those animals that we are connected to. And sometimes the simplest way to show that there is a spiritual connection between the person or family and that particular animal is the family names those people have. For instance, it is in our practice to give certain names to people under some of the situation: example Ndlovu is connected to elephants, Khumalo connected to the, 'imbila' the dassie or hyrax and there are many more, but some people only love the name and are using them. Our ancestors living under the water-bodies are very sensitive about our actions towards them and actions towards our fellow men. And if we misbehave with the emissary or messengers living in the sacred water-bodies, our ancestors will definitely deal with us. For this purpose, if it so happens, members of the community would have to come so we go and perform some rituals to ask for pardon".

Appendix 8d: The Zulu Diviner-Spiritualist's (Sangoma) Narrative on the Cultural Group's Communication of CSEE

When the Zulu Diviner-Spiritualist (Sangoma) was asked about the communication of the knowledge of the cultural group's value and care for nature, the diviner-spiritualist (sangoma) narrated that:

“Singing, praising, clapping hands, different movement of the body, dancing are all ways to tell something and teach other people some lessons. And sometimes it is a message an ancestor is passing across using dancing like the snake dance and in others too it is a spiritual encounter to reveal things. You know when I was a child because of the way my parents used to tell me and my brothers and sisters nice stories about animals in the forest, I fell in love with the animals and always desired to be like them in one way or the other. At other times too, the stories made me realise I got to become careful about some of them especially if those I was hearing their stories happen to be aggressive or ferocious. Also dreams come to us almost every time we close our eyes because our ancestors are always talking to us to help us and other people that we stand for as well as the mat we sit on, the skulls and bones we throw, ubulawu muthi and others makes us get even get very clear and vivid dreams where our ancestors communicate to us about how to take care or use some resources plants and animals and treat them very well”.

APPENDIX 9: NATURE RELATED NARRATIVE ANALYSIS OF THE ZULU DIVINER-HERBALIST

Appendix 9a: The Zulu Diviner-Herbalist's Narrative on the Cultural Group's Understanding of CSEE

When the Zulu Diviner-Herbalist (Inyanga) was asked about the understanding of the cultural group's value and care for nature, the diviner-herbalist (inyanga) narrated that: "There are things that are reserved for only the royal families and even in my job it is not every plant or tree that people who are under me can go and harvest for medicine. If it is for the king or chiefs, it is for them and we have to accept that. I don't have to destroy the little we have in our nature. I must put back the trees that I cut and when I remove the bark of a tree, I don't take the whole circumference of a bark of tree, therefore in our culture we understand that any plant you harvest too you have to plant some back to grow and replace what you have taken away and also not to use all but to leave some for the future. As you can see nature is beautiful, when you see all the vast land with the green vegetation and inside it with different wild animals, the colourful birds and many more. Even see how the rivers go through those forests, are they not very nice? Certain plants are only meant to be used as medicine for people of the royal family and not for ordinary members of the community. And in harvesting it is only the inyanga and in his absence his/her assistant that is allowed to harvest and even in that you (myself or my assistant) have to go through some spiritual initiations processes. And it is like that in all our Zulu culture that we follow these guidelines as inyangas and even sangomas who go to harvest some plants for medicine".

Appendix 9b: The Zulu Diviner-Herbalist's Narrative on the Cultural Group's Perception of CSEE

When the Zulu Diviner- Herbalist (Inyanga) was asked about the perception of the cultural group's value and care for nature, the diviner-herbalist narrated that:

"Some wild plants like, 'umdungamuzi', 'Idumamozi' (isizulu) is perceived to create lot of noise, bring misunderstanding, quarrels and confusion if you take it to your home and you would be crazy if you make firewood out of it. This is just like how we see baboons and monkey and most especially the owl which operates only in the night...they bring evil upon family especially when they have been sent. If you are to harvest some plant for medicine too, as I told you earlier the perception we have which we also practice are that you have to follow certain instructions or it (the medicine) will not work but this is a very deep process. Usually, you tie a bead-like rope around the tree before you can harvest them and you have to request from ancestors before you start-cutting. It is really a deep process and medicine only works well when you respect and follow these procedures. In fact I go through a deep process before I can cut certain tree parts for medicine but am sorry it is not everything I can tell you. When you come for training and I send you to the forest I will teach you some of the deep procedures there. See this anklet of an animal (an elephant tail), I have to be wearing it anytime I go to harvest some of those plants. There are some plants like, 'umahlamba hlale', 'umazwenda', 'umbopha nyamazane', 'isihlahla somdlebe', only men are supposed to harvest them, females are not supposed to touch You should also realise that in the Zulu culture our ancestors actually rewards bravery and heroism. And to do that someone has to demonstrate usually with their ability to fight animals that people fear most in the jungle as being strong and can also kill you like the lions. For this reason acting courageously especially when exposed to dreadful situation like being with a lion or leopard, it is at this point that when you are able to face it fearlessly the ancestors will reward your strength, make you become great man and take your family to a higher rank in the ancestral world. Intibane (warthog) is very sensitive or afraid of thunderstorm and lightning and it gets slim during summer months because of fear of the thunder. Also with animal like Imbabala (bushbuck) too when it scratches you with its horn it is, 'uyabola' (wound would take long to heal) because its horn is very poisonous as it eats too many very different plants. We believe that insinkwe (duiker) is believed to have bile below its eyes (the teary dark or black structural appearance below its eyes the bile is

outside because of the way it run. There are some common plant that the spirit of our ancestors live in them mainly the, 'umhlanga' and, 'ubulawu' plants and when you usually see some other plants around the sacred rivers or sacred water-bodies it means that our ancestors are around. And many times you would encounter the presence of pythons which is a representation of our great ancestor, the, 'amakhosi'. And occasionally at night too, the great queen of the heavens show herself, she is the , 'inkosazana' in those place where the water-bodies is sacred and spiritual significance for either sangoma work or inyanga practice. I want you to know that we amaZulu believe and know that there are spirits in many of the water-bodies and those water-bodies themselves have life in them like the way we also have life in us as human beings and that is why snakes can live in the water and not die because the snakes will not stay in the water that is dead. Just finding a living snake in the water-body tells you that it is a water-body that has life in it like any other living thing like animals and plants because water-bodies also have life. We respect all the spirits, the amakhosi and inkosazana and also we respect where they live that is why the river or water-body where they are is important and very special to us, so we treat them very nicely and with care. These spirits give us all that we need like rain and children when we go to them and perform the necessary rituals they show us what to do, even when we are in trouble and they show us medicine (plants and animal parts) to use. our people should know that the water-bodies that our ancestors live in are very special and should be given the necessary respect as I already telling you because if you have the reverence for the ancestors you will not even be tempted to fish from them (the water-bodies) nor catch the crabs around there, or even kill the snake or the birds that live there, nor even the frogs that croak there because they are the ones that pass message from our ancestors and the spirit world to us and also from us to the spirit world. In fact, all the plants around the water-bodies too you will treat them well as a proper amaZulu”.

Appendix 9c: The Zulu Diviner-Herbalist's Narrative on the Cultural Group's Practices for CSEE

When the Zulu Diviner- Herbalist (Inyanga) was asked about the practices for the cultural group's value and care for nature, the diviner-herbalist (inyanga) narrated that:

“We as amaZulu have great outstanding of histories but things are changing now due to many things – poverty, government, disrespect. But years ago our people had lots of heroes who were able to kill wild animals like leopard, lions with their hands only and killed and skinned them. The bones and skull you (the researcher) can see on the roof of this building and the ones hanged on this tree represent the gods we believe are in this place keeping us, protecting us, helping us and providing for us. They have ancestral spirits in them that is powerful to keep us safe in all we do. There are several animals that are connected with the people and their names are normally used as the surname of those people. All of us have some of such surnames. And the history behind many of such surnames is that some great grandfathers were assisted in one way or the other by those wild animals and has become a part of their family that is why they bear their names as their surnames. There are several names; some are ngwenya connected to crocodile, Hadebe connected to crabs. Sacrifices and rituals for good harvest, fruitfulness and so on are usually performed in, or around farms and usually water-body. We inyanga all work together with sangomas and pray to the spirit of the water-body and when we do wrong we do likewise in putting things correct”.

Appendix 9d: The Zulu Diviner-Herbalist's Narrative on the Cultural Group's Communication of CSEE

When the Zulu Diviner-Herbalist (Inyanga) was asked about the communication of knowledge of the cultural group's value and care for nature, the diviner-herbalist (inyanga) narrated that:

“Everything done in our culture has significance, even just the dancing, like the snake dance which people who are ignorant think they are just entertainment are all means of communication of our care and value of nature to people who come around and see us perform. There are a lot of wisdom in those dances. Myths and stories were very common when it came to us trying to teach younger children to have knowledge of the environment and take care of it or to be careful about certain wild animals. Our ancestors give us dreams as a very common blessing to guide us how to use plants or animals part to heal and therefore we get much knowledge about how to use the plants, animals, water-bodies and lands. And this is also a means of communicating these cultural knowledge and our values and practices to our people especially the young ones. And sometimes too as an inyanga (Zulu diviner-herbalist), myself I get dreams about certain plants and where exactly I can go to find it and that is how come, I have been able to make a lot of potent medicines and have been able to help a lot of people. I built many houses because of this job”.

APPENDIX 10: NATURE RELATED NARRATIVE ANALYSIS OF THE ZULU YOUTH

Appendix 10a: The Zulu Youth's Narrative on the Cultural Group's Understanding of CSEE

When the Zulu Youth (intsha) was asked about the understanding of the cultural group's value and care for nature, the youth narrated that:

“To understand what valuing and caring for nature is, one has to have respect for the things before they can care for them and know which one is used by either the kings, the chief and sub-chiefs, women, the youth and others. And if you have an understanding of caring for the environment you will ensure that every plant or tree that is removed or destroyed must be replaced. This is one of the ways our cultural group understand how to value and care for nature. When you also hunt for wild animals, you don't hunt everything for example babies, females and immature ones so they can reproduce more. Nature is very beautiful to behold. I love the nature and I love to see the animals and the forest reserves like the national parks they are very nice to see. In every society there are people who we can say are wise or have understanding, and those people considered as wise, I believe are the ones who listens to those who are superior to them, so understanding nature care and valuing it will mean you obey the traditional leaders who are directly in touch with the lands, water-bodies, forest and things in the forest and you also take care of these natural resources. Our cultural group also cares for nature – animals, plants, people, lands”.

Appendix 10b: The Zulu Youth's Narrative of the Cultural Group's Perception of CSEE

When the Zulu Youth (intsha) was asked about the perception of the cultural group value and care for nature, the youth narrated that:

"In fact I have not had experiences of these evil plants myself only that I have been told and we have had a few cases reported when I was growing up. But for the snakes I have seen some myself in our home in the village and we were told it is one of our ancestors that have come to visit us and so we were not allowed to kill it. As for me, I have not found myself in a state where I encountered a plant that I remember I was told I cannot cut because I am woman or a man. Intibane (Warthog) fear thunder very much and people are able to use them to tell likelihood of thunder and lightning...I have only heard about such things but I do not know the name of any such plants. There are some few things I witnessed when I grew up in the royal home but they are very long time issues. Now I don't think people are killing leopards, lions, tigers with their bare hands because now I think people are not very bold like those times besides the government does not allow us to kill most of these wild animals probably that is why it is not common as it used to be when I was a kid. As amaZulu we do not kill snakes that come to our homes anyhow and so do my family because we respect them and know that most of them are our ancestors who have come in that form, so you don't kill them like that if you don't know their mission. Learning at home has made me believe in a lot of spiritual and ancestral things as I have used muthi that was very powerful for healing and for giving me certain dreams from our ancestors and the mat too from the umhlanga (reed) is also very powerful when you want to let ancestors speak to you in dreams even if you are sangoma. These are mats we use in our village and rural areas, but you know when you are in the city our people usually don't use them, so it is when we come to our hometown that I either sleep on them or sit on them, it is the mat from the grass we use when girl reach puberty. We are told that there are spirits in water-bodies but not all the water-bodies, rather those that sangomas go and do their things and inyanga take things from those places too. I believe but I have not seen any of the spirit in any water-body before. Honestly for water-bodies what I am told is that there are spirits in some water-bodies, these spirits are our ancestors I am told. And that all the living things both plants and animals in and around it (those special water-bodies) are the ones who our ancestors send to tell us a lot of things and usually when you see a sangoma going to those

places they will be singing and praising the spirits there with reverence, so they would be good to him or her...”.

Appendix 10c: The Zulu Youth's Narrative on the Cultural Group's CSEE Practices

When the Zulu Youth (an intsha) was asked about the cultural group's practices that demonstrate value and care for nature, the youth narrated that:

"I was told an incident that happened in this country that, during the late apartheid times there was a man that some police wild dogs were released to chase and torture him but God being so good, no knowing that, that man was one of the people that had the strength to kill lions before. And so, this man grabbed the wild dog skillfully, held the two jaws open and break them and the wicked police were standing there in a shock but now I don't know if there are still people like that, but I wish I was one anyway. We believe that the skull and bones of an antelope and the water buck sitting on the roof top of this building is a form of protection for our family. We amaZulu have a lot of wild animals that are believed to be our ancestors, but I am told that the surnames we bear indicates which of those animals have relationship with you and the meanings of those surnames are very crucial to them so much so that I love them too and will not want to harm them in anyway. Most of the time, our elders do rituals in forests and most especially in water-bodies with assistance of the spiritual leaders like the sangomas and inyangas".

Appendix 10d: The Zulu Youth's Narrative on the Cultural Group's Communication of CSEE

When the Zulu Youth (intsha) was asked about the communication of knowledge of the cultural group's value and care for nature, the youth narrated that:

"We learn how to dance and there are different dances, all of which I think are ways of teaching members of our community some moral lessons and I know of the reed dance, the snake dance and the hunting-dance that are performed by our cultural group to teach us a lot of things and most especially the hunting dance is much related to the things about nature that we are talking about just now. For now, we hardly hear stories even myself. And I do not use any of these (stories) to teach my younger siblings, these are not popular because they (younger siblings) just want the TV games than me siting them down to tell them stories out of the blue but occasionally they do listen. One way that we get the knowledge of nature – earth, plants, animals, water bodies is through dreams that our ancestors usually reveal themselves to us and teach people you. And even when ancestors visit young people to select them as sangomas, truly they usually fall sick and encounter very unusual circumstances that make them look too strange among their colleagues and family, but all start with dreams".

APPENDIX 11: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN CHIEFS

Appendix 11a: How to Teach Akans' Environmental Ethics in SHS: The Akan Chief's Narrative

When the Akan chief was asked about how the Akan cultural values and care for nature could be taught in school or in SHS Biology Curriculum, the chief narrated that:

“Before you embark on teaching anything whatsoever, you need people that have much knowledge about it before you start the teaching for instance you cannot take somebody from class one and ask to go and teach someone in class five all because the one supposed to teach should have some wealth of knowledge than the one you are going to teach. For instance, we (IK-holders) have the knowledge about these traditional and cultural things, the teachers may know little of what we know and practice. So in their attempt to teach things related to culture like the one we are discussing now, they should let the students come to us and we will teach them a lot of those things and they (teachers) themselves should also come to learn more. Much of the wisdoms of our fathers are shown in our cultural practices. It is the wisdom of our fathers that have kept us up to this time. And although I have gone to school a little, I didn't take and still do not take it that our elders have no wisdom because most of them did not have formal education. My understanding and thinking is that our (IK-holders of the Akan culture) wisdom is what has made our communities good and safe to live in. So when the teachers realise this, they the teachers should invite us occasionally to teach the students the elderly wisdom from the palaces and give the student opportunity to ask any question(s) about our traditional things or cultural things that our fathers were practicing or things they were doing that bothers their (students) mind. And one other important thing has to do with how the teachers will present us in front of their student. If the teachers will let the students know that there is wisdom in what we say and do practice for those cultural values and care for nature, the students will embrace it without much questioning. Moreover, you yourself might have notices that people say there are a lot of mysteries about the various components in nature like water-bodies, forests, lands and other aspects of nature. But they (teachers) should know that if a lot of mysterious things about water-bodies, plants, wild animals forests are mentioned in their teaching, students will be discouraged and not be interested and would rather revolt and say they are superstitious beliefs because they (students) already live in a world where there is a lot of knowledge which does not talk about what we have in our culture. These

aspects that many people see as mysterious are the spiritual aspects of the cultural values and cultural care for nature. So then when it comes to school don't talk about spiritual things too much because they are children and may want to see everything you say and this may bring you problems but when they finish school they will get deeper understanding of certain things and discuss deeper things with the elderly on such matters but I suggest you tell them that if in their community there are some instructions like don't go to this forest or that that river on this or that day they should just obey than thinking it is senseless. It would be better for them to obey and be safe than to put themselves into situations that they may need spiritual intervention. Another very disappointing thing happening presently that has to be dealt with if teachers really want to teach these our cultural values and care for nature in school is to relook at the issues of language. I realise now that we have no respect at all for our local language which we were born and bred with. Even at the political helms of affairs when we meet for certain reasons, we rarely speak our local language and I feel that this too bad and the politics that is making it difficult for us to use our local language should be discarded. It is pathetic that now even at our traditional council meetings; you will notice that traditional leaders are speaking English and when you speak the local language people look at you as if you have never had formal education before.

I wonder what is going on in our minds, hmmm when did you ever hear any English speaking country having a meeting and speaking a Ghanaian language. The other annoying one is when in our schools too they say and write boldly on walls no, "vernacular", and how can this be when we are in our own country and speaking another countries language and students are even punished for speaking their own local language, how can we develop if we throw away our language? So in my view, I think that they should teach the wisdom of our elders that make us able to keep what we have in nature for a long time and when they are teaching too they can use the same way that our elders were teaching us and the communities and then add their own too which they say it's modern. Despite all these I know that a lot of things are changing in our world and there are development projects going on but it doesn't have to take away our own fundamental culture. Yes, a lot of things are changing in our world, even in our palace there are modern things now that are from overseas so when it comes to the classroom teaching they should not teach only the elders way of caring for the environment but also mix with the one that is in their school that the colonial government brought. There is no problem with that, the only problem is when they make things happen as though our culture and what we have, has no value at all except the

one from abroad. In fact, let us not forget the ancient land mark which our fathers have set. This is even in the Bible but how will we not forget this landmark which is basically ours. it would be great if children in school are stired up all the time to remember and ponder over the histories of our forefather who fought to keep our town and villages (some of which have become cities now), intact in terms of the peaceful settling down and keeping our forests, wildlife animals, water-bodies intact through their wisdom and of those who fought in war to ensure we still have these geographical areas that we have. That is, it is no longer whites who are ruling over these but we have our own land and that is why today I can boast of having a town to be the chief there and have all the natural resources at my disposal...infact none of us should ever forget our forefathers who suffered to keep most of the natural resources for us...yes it is true that because of political powers now most of our forest are being cleared and people have opportunity to even spoil some of the water-bodies and go scot free but all in all, our forefathers did so well and we should also withstand for our areas like they did and pass this knowledge to the next generation that they will not be influenced by any foreign traditions that makes people lose their culture. As you can see, this palace still has the things that our great grandfathers left for us and the forest and water-bodies of this town are still there. The teachers should teach the children these things and let the students and the teachers themselves make every effort to uphold our cultural heritage and ensure they also pass it on when we are gone so that we do not lose our culture completely. We can start with some practical things for instances our children should start wearing our traditional wear or clothes for all the occasions including their daily school dresses. Doing this could spur some interest in them about their culture and this will let them fall in love with the culture. In the meantime, because of the current modernization, the government and schools could also employ certain experts in computers that could also develop programmes that contain the various cultural practices of the local people so that the students would see that the cultural values of their local communities about the environment have even crossed the borders of their country”.

Appendix 11b: Prospects of Teaching Akans' Environmental Ethics in SHS: The Akan Chief's Narrative

When the Akan chief was asked about prospects anticipated in the teaching of the cultural values and care for nature in school or in the SHS Biology Curriculum, the chief narrated that:

“Our cultural values have been a great blessing for our communities and the wisdoms in such values have come from our forefathers and the IK-holders of the culture. Thus, if people will learn to listen to us (IK-holders) for instance as chiefs and follow the various ways our forefather set aside for us that we are also implementing to care for our lands, forests, water-bodies and all our natural resource we will be able to keep what we have now and prevent further destruction because the other ways the government ways that they want the people to care for the things in nature is not helping because a lot of the time even government ministers would contract chain saw operators to be felling the timber in some forest reserves and at the same time giving permission to some people and even people from other countries like the Chinese people to be doing ‘galamsey’ (illegal small-scale gold mining in Ghana) in most of the rivers and spoiling and contaminating the rivers and killing the fishes in them as well. Therefore, I believe that by bringing our cultural ways of caring and valuing our environment people would become more conscious of their natural environment and be sensitive to the state of destruction of what we have – the lands, forest, water-bodies and make efforts to protect them. Moreover, when we start teaching these cultural values and care for nature in school, the Western world will start respecting us if we are able to maintain what we have using our own culture practices, eating what we have grown and protecting what we have and above all stop asking them for help from outside world. Just imagine that now we have to pay very expensive amount of money to buy drugs that those who made it came to get the raw materials take from this place all because we respect them better than ourselves and that is why we are suffering. Now our own people think our medicine men are evil people and carrying spirits and have put some evil spirits in their medicine and so people don't want to even buy their drugs unless they make it look like it is coming from abroad by putting foreign stamps on it before people see it to be proper. The hospitals do not even prescribe these drugs for us to take. This is disheartening. Again, there is nothing as painful as seeing what you have, being destroyed and you look on helplessly and truly if things were to back to the previous years where things were intact it would be comforting if we our practices that our forefathers left for us is restored fully

because it I believe it would reduce the rate at which our environment is being destroyed now. I grieve in my heart when I see the careless attitude with which people in our communities now destroy our water resources, forests, lands and other wild life animals because there's no more respect for their elders and traditional leaders instructions and directives. This is, 'disheartening', but I think that when our cultural wisdoms and knowledge of keeping the natural environment is taught in school it would bring a kind of restoration in our inner being. One benefit that teaching these cultural values would do will be the... that when the students can come to the community to come and observe what is going on in here. They (students) will have a new mindset about their environment and as they come to learn wisdom of the elders when they embark on excursion to the communities where they will work and talk to members of the community they will start building good rapport with the different people they meet in the community. The students will respect them (members of the community and IK-holders) as being knowledgeable too and come to realization that it's not only their teachers who are knowledgeable and for this reason they will develop respect for them (community people and IK-holders) as well. Moreover, teaching such cultural values and practices in our schools I believe will bring some form of transformation in the life of the students who are learning. Because I believe that our children usually struggle in school and usually have to do remedial exams because a lot of the things they learn are not from their environment and are from abroad and almost everything they learn are still what the white people brought to the schools, so it would be much more difficult to relate well to things that they (students) are taught. And like I was saying before that sometime even in our traditional council meeting, traditional leaders and other people will be speaking English there. For me this shows that we don't even have respect for our own language and almost everything in this Africa are not loved and appreciated by the Africans themselves. This notwithstanding all I am trying to say is that the students will be able to perform well in their exams if they are taught using things from home and in their communities like what we are now discussing (the Akan cultural values and care for nature) and most especially when they use the local language to teach them and stop telling students not to speak vernacular in their schools as this is total insult to our culture and our integrity".

Appendix 11c: Challenges of Teaching Akan Environmental Ethics In SHS: The Akan Chief's Narrative

When the Akan chief was asked about the challenges anticipated in the event of teaching the Akan cultural values and care for nature in school or in the SHS Biology Curriculum, the chief narrated that:

“Despite the many benefits of using our cultural values and care for nature, there are many problems that teachers and we all would face eventually. For instance in today’s world the children don’t have much respect as we did in the years past and still do have for the elderly and their instructions. We never asked the elderly why when they gave any instruction, neither did we make statements like what shows that what you are saying is true or what shows that for instance a spirit will pounce on me when I go there (i.e. the forest people are forbidden from entering, the rivers they are not fish from or even visit on certain days and other forbidden places). Besides, the outside world and mostly the highly educated do not respect our traditions and our culture presently. They look down on us so our children (who are in school) are not even bold to express their cultural values and care for nature in their schools. The same people keep saying these (our cultural values and care for nature) are age old stuff that must be done away with. But what they don’t realise is that when they keep throwing these away, the more our natural resources are being destroyed and we get more environmental problems. people lately feel that they are living in a democratic world therefore they have a right to everything (natural resources) and use it (natural resource) anyway and anyhow they like so many people now dare ask reason why they cannot do certain things as enshrined in most traditional leaders’ orders and instructions. But if genuinely they want answers to especially some of the aspect that have spiritual things in them, they can come to us for further explanation or we can also come over to help them get answers to some of them. And truly, the so called democracy, has affected us so much so that even something that will be good for the nation like this our cultural ways of valuing and caring for nature to be taught in school, they (political leaders) will remove it and put western things there because they the leaders want to get approval from the outside world. I am concerned that, there is so much politics even in our educational systems. But you tell me, how could we even develop and our culture develop if we should keep using other people’s language for instance. These things we are doing is making is very difficult for the students to capture a lot of deep information and knowledge that can make them think and invent things because even if they get an idea they do not

know how they would express it in words in another language. Our students only keep doing chew, pour pass and forget and pass away. Like I said to you earlier even when we are having traditional council meeting, people will be speaking English and every other thing you do that doesn't look like European or American seems to be of no value. If this is not the case how do you expect us to be speaking English in a traditional leaders meeting all because of the so called modern times lifestyle which is all western lifestyle so full of political gain. All these have contributed to the loss of our cultural values and I am not surprised that at the moment, even the fear that was in us when we were young, now you can't see it again. People don't even mind entering the chief's palace and start touching things meanwhile many, many years ago you could not even point your finger to a chief's palace let alone just enter. It's pathetic but truly people don't even believe there are spirits in the forests and our water-bodies anymore".

APPENDIX 12: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN ELDERS

Appendix 12a: How to Teach Akan Environmental Ethics in SHS: The Akan Elder's Narrative

When the Akan elder was asked about how these cultural values and care for nature could be taught at school or in the SHS Biology Curriculum, the elder narrated that:

“To teach certain thing you must have knowledge about them. The teachers may know nothing about these cultural values and care for nature by our people since many of them attended schools that did not teach them any of these. It is us at home in the community who know a lot of these so they should ask the students to come home and ask us and other elders and we will teach them to go and then narrate to the teachers and ask them to document them. I think that the school should have some respect for us if not they cannot teach things like these properly. They think that we are archaic and we have no wisdom because they (teachers and students) have gone to school. Therefore, you the teacher must teach them very well to know that all that the Elders were saying to us are wise sayings and that the Elders are wise. The students should realise and respect the sayings of the Elders for their future. It will do them a lot of good. For instance the headmasters can hold some kind of open day and ask the elders from the palace to teach their students some of the things that they (students) don't know and if the teachers are able to teach the students the wisdom behind some of the practices in our communities, they will understand better our actions and will let them embrace it so that what we have in our natural environment is not destroyed. You should also know that ‘bagyimi mmere’ the days of dumb, foolish children who wouldn't ask questions or ask why but would just take whatever you say is past and gone so when teaching don't mention things that look mysterious because even though all the spirit, spirit things are very true, when you go to the classroom to teach, you have to remove spiritual part from it. For instance don't say river is a god in the classroom even though it is so because it will raise a lot of questions and you may not be able to, so don't talk about the spiritual part. And one other things is that how can you translate our proverbial saying to English language so well enough that that the students will get the deep meaning of it. Definitely, it will not be that easy and the real meaning may never come out therefore I suggest that they should use the local language when teaching these our cultural values and care for nature or ways of protecting the environment so the student

will get deep understanding. Otherwise if we are not careful our language will be lost but how can we do that to ourselves to lose our own mother tongue. Besides, it is the wisdom that our elders used to take care of the water-bodies, the lands, the forests and the animals and all the natural things in our communities that the teachers should teach or when we get opportunity to come there that is what we will teach...and they should use the same wisdom and skills our elders were using to teach because the way they were teaching us some deep things about some of the wild animals, our forest, our water-bodies and so on made us not to destroy it...so we should use some of their strategies to teach in the school. Also if we keep to only the traditional ways of doing things too we will become stuck to only one thing and not learn more because now computer has come so the teachers should teach both things but make sure that our own practices will be more than the ones from the outside. I also think that to make the students to start valuing these cultural it would be nice if our children start wearing our traditional clothes or costume or regalia and ensure that our local foods are available and made attractive to the students to buy and eat so that their minds will stay on their culture than being on other people's culture. Moreover, since the world is changing so much and there are computers and computer games that are our children now love to use including phones, the things that are in the culture for protecting the environment can be put in a form like a CD or something that you can put on your computer or phone that the students can learn and play with. And at the same time this will let them take it serious., 'yen nfa yen nsa benkum nkyere yen fie kwan' literally meaning, 'we do not point our left finger to show the direction to our homes'. I am saying this to tell you that we must cherish what we have, the kind of strong and dedicated community loving ancestors that the creator of the universe gave us, who went to war and won their battles to keep safe our lands and its people from oppressive rule. We will be big ingrate if we forget what they did for us. This should be the same way we also have to think so that just as our ancestors actually had our future in mind, we too, the teachers and our children in school and their teachers would do whatever lies in our power to preserve and protect the lands they left for us in addition to the natural resources. Moreover, this will ensure that our cultural ways and practices still hold. Therefore, let's keep the spirit that our fathers had. The students should be taught that even if they finish school they should not throw away our beautiful cultural practices but rather do the same and ensure none of our cultural heritage is lost as our ancestors stood up and fought so hard to ensure we do not loose what we have".

Appendix 12b: Prospects of Teaching Akan Environmental Ethics In SHS: The Akan Elder's Narrative

When the Akan elder was asked about prospects anticipated in the teaching of the cultural values and care for nature into SHS Biology Curriculum, the elder narrated that:

“If our cultural values and care for nature are seriously taught in the schools there will not be much destruction to the wild animals, forests and water-bodies as it is happening now therefore our remaining resources would be preserved and our people who have lost their respect for the elders and ancestors guidance on how to care for what we have will realise where they are doing wrong and change their ways. For reasons that people actually respect what is taught in schools are very important and therefore, they take it serious but if it is just in the community, people usually see it as unnecessary. And honestly, we should teach these in schools because if truly the world will respect the African person they would have to see use our own wisdom of doing things than just throwing away everything we have. I am of the view that if we can follow our traditional ways of caring for the lands, forest, trees, water-bodies things will improve because you can see that when we went to take the white man's own ways of doing things a lot of things are spoiling in our environment. Also, if truly we can keep to our wisdom of protecting our resources – the forests, water-bodies and others by teaching our students to make it even better, all the things we need in life we will get from it because we have everything but the foreign ways are making us destroy all we have and even now we are importing everything, including medicine which we have in our forest but we are even destroying all of them. My heart bleeds when I walk around and see how bad our environment is becoming because we do not respect the wisdom of fathers. But I believe that if those who have gone to school (who usually are the one who think the local people don't have any values including their traditions) get a hold of these cultural things and take them serious it would bring joy and peace to our souls because they would help people know we are wise and they themselves too. The school would see our importance when they invite us to come over to teach the knowledge we have in our local community and our traditions that has helped us protect the environment till new things came that is spoiling what we have. But when the students realise that we can also teach them things that are important and those things can come in their exams they will relate with us better and support some of the things done in our communities and not say they are old fashioned as they usually learn from school. If you

teach our children what they see all the time and hear about all the time or even talk about in their local communities, it will not be too difficult for them to learn it or if you give them exams too, I think they would do well because a lot of the things will be familiar to them”.

Appendix 12c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Elder's Narrative

When the Akan elder was asked about the challenges anticipated in the teaching of the cultural values and care for nature into SHS Biology Curriculum, the elder narrated that: "The children we have now are born into the scientific world where they conduct experiments at all times in their schools to prove things or disprove problem(s). Therefore, teaching them some of the conservation ethics of our forefathers which were handed down to us, the children would demand that we conduct some form of experiment to prove some of the claims and this may be very challenging. But if they want more information about some of the spiritual things they can consult the elders to open their eyes to some of the things. Sometimes what is currently going on – current schooling systems and computer age time and the proliferation of churches is making people feel some kind of shame when they talk about their cultural values and practices they use to conserve nature. Honestly, people make them look as though they are not modern people and have been left behind. And as for now, the children who are coming up you can't do anything that they will not ask, 'why' and the most painful aspect of it is that the why they even ask of usually is not that they want to know something important to get some knowledge. But they just want to challenge the reasons why certain categories of people are allowed to utilize or enter certain reserved areas like forests and whatever but not them (the children). But you something, everything is politics now, school, hospital, workplace even church and I think that even if some people help for the government to make them teach our cultural values in the school so well that the traditional leaders could be able to work well to protect our resources, another government will come who will not be in agreement and this will make it very difficult to continue it. The school curriculum would have to be decentralized to make this feasible but as it stands now it is centralized and this to me will also pose a challenge because I have been a teacher before. The value and standard of the language is even being lost and until we make use of the local language in our schools the values in it will be lost completely and when that happens all the meaning embedded in our proverbs and wise saying would all be lost completely. The way people see the world now and especially because of what they learn in school, which are all white man's things it will make the teaching of our cultural things for the lands, water-bodies and forest very difficult for the teachers because people don't respect what we have. The Christian prayers have removed the fear that there are spirits in forests, water-bodies, some wild animals and

plants. They are not afraid to go to the places we tell them not to even go because they tell us there is no spirit there. one of the ways people and most especially in our educational system where they've looked down on our culture and just embracing foreign cultures is the aspect where they label our cultural practices as sociocultural beliefs and because of that many don't respect some of the beliefs and practices for which the traditional people take care and value nature".

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APPENDIX 13: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN TRADITIONAL PRIESTS

Appendix 13a: How to Teach Akan Environmental Ethics in SHS: The Akan Traditional Priest's Narrative

When the Akan traditional priest was asked about how these cultural values and care for nature (CSEE) could be taught at school or into the SHS Biology Curriculum, the traditional priestess narrated that:

“It is not everything that a teacher knows because we have school knowledge and home knowledge that only the parents and the elders can teach and explain about our culture and traditions. They (teachers) should book appointments and we will be glad to teach them and their students. Just see what is happening to our water-bodies now and our forest! Everything is being destroyed so fast now because these children do not see the wisdom in what we (elderly and IK-holders) say and they go to school and don't respect what we tell them. The school should invite us to come and teach the students, they could even hold forums and all of us the experts will come and to teach them the difference between culture and rituals. They have mixed them and that is why people have problems with our culture. They do not know the difference that is why people say those things about us. We will explain everything to them when we come. In fact both the teachers and students do not see the wisdom in what we do, they think they are evil practices and so they repudiate them but if the teachers would make some effort to explain the sense behind what we do to them, it would help them to take it much serious. Also despite the fact that the world is dangerous and scary as there are a lot of spiritual things like as I told you, even in my own experiences, it will therefore be better not to tell the students a lot of the things that will bring fear into their heart but all the same tell them to be careful and not do what the elders tell them not to because usually students do not see the wisdom in what we do, they think they are evil practices and so they repudiate them but if the teachers would make some effort to explain the sense behind what we do it would help them to take it serious. It is true that there are spiritual aspect linked to the water-bodies, wild plants and wild animals but because our children attend these modern schools where they use foreign ways to teach them they will not believe immediately so tell them the benefits of the things we have in nature and our value and care for nature but instead, once in a while you can mention some of the spiritual aspects. The teachers should stop all this English and white man's language and speak their own language in our schools, that's why we are not developing because they use big

English that we don't even understand and, when they are teaching too they should not use only the white people's way of teaching, they should use some of our own way of teaching our children at home too so they will respect us and also ensure that the same things we teach our children and people in the community, they should teach them the same things. Again, because the white people also have people who do spiritual things like us and they are able to do a lot of things that are helping our world that if you don't have eyes you cannot do, I think that the schools should not teach our children only what we teach them from our culture, they should also learn the ones that the white people also have and mix them together so that they will know a lot of things even if they finish school and want to go abroad to study. Even my place here, last time some white people came and entered where my oracle is and were taking pictures and asking me a lot of questions that I know they are sending abroad to go and learn something from it. Therefore, we should also not throw their (foreign) own away completely but the ones that will help us that does not insult our culture we should teach the children those ones too. Again, we should use things that are from our culture – the clothes we wear should all portray the culture and our children should be encouraged to wear them and use the things made from this place. This phone I am using here has a lot of things it can do and my children play games and different things on it that make them happy so I think that the school could also get people who are knowledgeable about making computer things and work with elders and people like us who know the culture so we can put all on the computer so that they (students) will be interested to know more about it (cultural values and care for nature). if you look back into our history and how our great grandparents suffered to keep even these lands, the forests and water-bodies that we have in this place, that today some chiefs in certain places can just sell the land to some outsiders anyhow to build and destroy large forest and water-bodies, it is very pathetic. Do you know what it means for a legendary royal queen mother like 'obaa Yaa Asantewaa' to go for war and lead a great army from here to ensure that we have all these lands, and forest and the animals in them as well as the water-bodies? Their pain and their blood they shed to ensure that Asanteman will be where it is today should be remembered by all of us. And so when the teachers teach the students about our way of caring and valuing our natural resources, they should do it in such a way that they will all remember our great warriors who were alive centuries ago to ensure we do not disappoint them by destroying what they left for us and our culture too so that nothing would be lost. They the students too should always keep things like this in their heart and tell their younger ones

like I am doing now, even when they also finish school and become teachers they should not forget to do this”.

Appendix 13b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan Traditional Priest's Narrative

When the Akan traditional priest was asked about prospects anticipated in the teaching of the cultural values and care for nature or in the SHS Biology Curriculum, the traditional priest narrated that:

“If our community people will listen to our wisdom and respect our ancestors and the gods of the lands and give them the necessary reverence through keeping the guidelines and follow their instructions about the lands, water-bodies, the forests and other natural resources that we have now, things will change. This is because these things in nature will not be further destroyed because you will even be afraid to throw rubbish into our rivers because you know the gods and spirits will not leave you unpunished. If this gets its proper place in our schools where it is usually difficult because that is where people normally bring up things that make our cultural values for nature look useless and therefore give other people the chance to have no respect for it at because people respect (those who have gone to school as very intelligent and wise and that they feel they know better than anyone else). In my thinking I believe that it is only when these cultural values and care for nature become strong in our schools that, it can get back into our communities because people respect those who have had formal education and would believe them more when they see those who have gone to school upholding such values and teaching them and not talking bad about our culture. In fact, people will come to themselves as to the danger of destroying all that we have in our natural environment. We as Akans also believe that we have a lot of lessons that other people can learn from us. For instance, recently even some white people came to my place here sought permission and were asking me how I do certain things and were taking pictures. I think there are a lot of things that can be learnt from this place but because we don't respect ourselves and our culture and have gone to take what the white people (i.e. who colonized us before) have, it makes us have no respect from them and therefore I think that if we can teach such things in school and other people learn it we will have more respect from abroad. Do you know that all the medicines they bring from abroad to us, we have more potent ones in our forests? The painful thing is that even these people come here to take a lot of those materials used for making these drugs from our own forests, go back to their country and manufacture the drugs and other things and package them nicely and bring them back to us to buy. However, if we can use our own cultural ways of caring and valuing what we have in nature and even in medicine we will not spend so much

money to go and buy them and we will be even more healthier and stronger, so we should be strong in teaching it in our schools. Again, when we are able to bring back to the schools the knowledge of our elders and the respect and fear that made us protect the land in as in the years gone by it will make us sensitive to the environment again and bring comfort to our spirits, soul and bodies. One other things is that because the teachers and students and the school leaders are very far from us and usually don't come to us because they think there is nothing important they can get from us and that to them we have too many traditions which they say is not important except what they see in church, it makes them not to normally respect us because they haven't come near enough to hear what we can offer them but I am sure that when they start inviting us to come and teach some of the wisdoms of the elders and the practices they will start admiring us and we can have good relationship with them and their students. Actually I personally for several reasons, I didn't go to school that much, but I know that the subjects that had cultural things inside, I always did very well because they were not new to me as my home and the town I grew up in, we used to attend a lot of festivals and durbars and funerals where a lot of traditional things are done so it was simple for me to talk about them. I had the knowledge of them without learning much. So I think that if the school will allow our children to learn the way our forefathers were caring for the lands, water-bodies, forest and all the things in nature, because it is already the culture in the place where they live or come from and that they hear those cultural things all the time and see them they would do much better even in their exams and putting them into practice. These are some of the problems we face in school but if they do some of these I am telling you now, a lot of things will change for the better”.

Appendix 13c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Traditional Priest's Narrative

When the Akan traditional priest was asked about the challenges anticipated in the teaching of the Akan cultural values and care for nature or integrating into SHS Biology Curriculum, the traditional priest narrated that:

“Seriously, the way our current young people are very inquisitive it is too much. They want to know everything but many of the things they want to know are not physical for us to explain to them. The children these days are too inquisitive but it is not everything that a child can know and take nor understand because they are too deep for them at their ages. But honestly because some of us have taken it up to do traditional practices, some people make us even feel ashamed of our culture as if we are some evil people when we tell them for example that this water-body doesn't want this kind of treatment and this or that is an abomination of to be done in our forests or even tell people not to kill certain animals, they keep telling us that, that is idol worship and archaic practices. See our children now are getting spoiled because of too much knowledge they don't even respect our orders and would always be asking, 'why' they cannot do this or do that for instance why they cannot go into the river on particular days nor cut some trees. Yes, though some of the questions are legitimate, many times the impudence with which they ask, tells you they already have something at the back of their minds that we are doing something evil by giving such injunctions. all the same I am ready to teach them any of the spiritual things which I think will be the ones that they will ask more questions for you the teacher to show them if these things that we say are true or not...Yes they can come to us with you the teachers or when we even are invited too, they can ask us some of those questions that bother their mind. One interesting thing about what we do, as you know am not the only traditional priest, there are too many of us, and you saw my friend too who's also like me. Hmm, you wouldn't believe that even our job here there is politics in it, in that if the chief of the town doesn't like you, a lot of things you will never get from him to help you work and it is the same thing that will happen in the schools if people don't stop politics if not even the things (cultural things) you want to teach in the school they will not allow you to do it the way it is supposed to be done. One pathetic thing is also about language that I believe would make this teaching of our cultural values and ways of caring for nature quite difficult. Why is it that in many nations they speak their own language and use the same language in school but when you come to Ghana they say that if you cannot speak English then you are dull in

school and they look down on you like you are from some typical village and not educated. All they do in our schools today are white people's lifestyle, they don't do anything that is from here and that is why the children don't respect us and they tell us that our time has passed and they are the modern people. As for now, what is called fear that made people not to touch things (natural resources) in nature anyhow and destroy our water-bodies, forests, lands and even killing certain wild animals is almost lost from people. If not how could someone dare go drain the water in the river down here with the mind of coming to build there. You would have panicked when you even walk to the river area at night but now, no they don't care and that is why evil things happens to them unexpectedly and unexplainably".

APPENDIX 14: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN HERBALISTS

Appendix 14a: How to Teach Akan Environmental Ethics in SHS: The Akan Herbalist's Narrative

When the Akan herbalist was asked about how these cultural values and care for nature could be taught at school or integrated into SHS Biology Curriculum, the herbalist narrated that:

“The teacher could organize their students and come to us so we could teach them and their teachers too, for them to teach others what we only can explain about our work. The teachers should teach the children to know that we are wise and it is that wisdom that made their parents survive and did not die and they have to know including yourself that before white medicine came we were surviving with our medicine therefore the students should be taught to realise that whatever we say, there is wisdom in it. The schools can call us to come and teach their students and their teachers some of the ways our fathers took care of the environment and protected it till today using their traditional knowledge and if a student knows that what their elders are doing is wisdom they would not look down upon it but would rather promote it so the teacher should be strong and skillful to teach them that our practices are very wise and that traditional medicine is good too. Also teachers should know that it is not everything we teach children, they are in school and should just learn the normal things because there are a lot of things that they cannot just understand until they are matured enough there are things that the physical eyes cannot see but they should not be taught those ones. The spiritual aspect of the natural environment should not be added in the school teaching, they should be taught separately especially at the university when they are grown up. I do not know why here our people don't want us to speak our own language and make the teachers teach in our own language like when you go to China, Germany, Arab countries and many other countries and they force us to speak other people's language. I don't think it is helping us. It is not helping us that is why our children normally do not do well in school so even if they want to use English, they should add our local language too. Every time only English why? but as for this one we are talking about since it is not from the white man but from our own elders who have wisdom that made us to protect and use the resources in nature with wisdom, the teachers in the schools should also use the same ways to teach what our elders were teaching and they should not forget to teach what the elders taught us about our lands, water-bodies, forest and the animals in

them and everything that is surrounding us. It will be very great for the teachers to teach the students what our great grandfathers also did to ensure that everything we have in nature are still there. This is because, the world we live in now is trying every means possible to make sure that we here in Africa will not value our culture and what our fathers left taught us. You may be aware that the herbal medicine that I do here for instance, which everybody testify to be so potent, even some of the pharmacies don't allow us to sell them in their shops they have drugs imported from white peoples' countries and they think that, that one is better than our own herbal medicine meanwhile the plants they even use for many of their drugs, they got a lot of them from our forests here. So we should make sure we don't forget what was done for us by the fathers of the land on which we were born in order to ensure we live in harmony and in tranquility. Don't forget also that they fought to ensure that the white people would not take our lands and bring their own culture here when our own is there. Such things should be taught in the classroom as well. We should teach the students to remember these and also ensure they do their best to pass it to others so ensure our culture is not lost. Every knowledge grows, therefore if we stick to only the olden ways that our fathers used to value, care and protect the environment we will become too ignorant of our world and if we follow only what is currently being taught in our schools and neglect completely the wisdoms of our elders and their ethics we will miss a lot and not be successful in our plans. So, we must mix the two. Also, we have to make things that are our culture and make our cultural practices get ingrained in our children. For instance, if the children come to school and you tell them to start wearing our traditional dresses like tying cloth and wearing royal slippers and stuff, then you would gradually be rooting our culture in them. We have to let our children stop eating foods which are from somewhere and let them eat foods like apraprasa, akaw, prekesa etc which are local foods from our culture. Moreover, currently everything can be shown on computers, television, internet and you always see people going to it all the time to watch or learn something and students even do it the most, so I think that if there were people who are very good in creating computer programmes and take the knowledge of the traditional leaders on the wisdom and practices our culture use to take care of the things in nature it will do very well and students would even love it more since they know more about computers”.

Appendix 14b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan Herbalist's Narrative

When the Akan herbalist was asked about prospects anticipated in the teaching of the cultural values and care for nature integrated into SHS Biology Curriculum, the herbalist narrated that:

“You saw what has happened to that area I was showing you, they were all thick forested area and the muddy area was a big river but as people do not see or respect our gods and ancestors because of school and church now they have destroyed all of that for nothing and we are the one who are suffering for it. We will come back to our senses about the dangers of our bad behavior towards the environment. Majority of the medicines that are brought from outside this country were made from things extracted from this country and they go and put them together and come and sell to us and we buy that one more than our own. All because we got no respect for what we have so I believe that if we can keep what we have in our forests and respect what we have we will gain respect from abroad. But these will be possible if we can start teaching them in school for the schools to also accept them. Our great grandfathers who are gone didn't know anything about white people's medicine and yet they were so strong that they could live over hundred years and could still go to the farm and were not even blind but now that we have left all our medicines thinking that they are useless and not even healthy and considered as part of witchcraft, see the problems we are facing! Many people can't even afford the medicines they have to buy because they are foreign and expensive. When I see people cut down trees and spoil rivers with all kinds of dirt my heart breaks because they are destroying what we have and this eventually affects the medicines that we will make because the plants drink the bad water and it spoils all the power inside those trees and this makes the problem worse. If we can really teach our cultural values and care for nature or just teach our traditions where we don't touch and destroy things anyhow because we know that our ancestors will ask us and the creator will punish us, a lot of things will change and this will bring some coolness and rest to us and all our souls, and spirit and our bodies that's why we have to teach it in our schools. If the schools invite us (IK-holders) to come share some the wisdom of the elders we have with them and we keep interacting it will bring some good relationship and the students will not take it that we are not knowledgeable like their teachers so we are not important. They will be glad to consult us too and not only those who have gone to the university. The children will be able to do very well in school and during their exams because a lot of the children

have wisdom to do a lot of things in their mind but the English to put it together is their main problem. In fact even me myself as I do this herbal job, I have attended several programs about herbal medicine that the universities organized to bring us together but when you meet some of the people who are even called professor a lot of the things and medicine we make the professors don't know about them, it is only big big English they use there to make us confused and afraid of them".

Appendix 14c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Herbalist's Narrative

When the Akan herbalist was asked about the challenges anticipated in the teaching of the cultural values and care for nature or integrating into SHS Biology Curriculum, the herbalist narrated that:

“Presently, the children want you to tell them everything and sometimes ask you very irritating question about what we do because of the small things they went to learn in school but they should know that it is not everything you can know as a child. It is so sad that even our own medicines they don't want to accept them in the pharmacy shops, and sometimes even selling them in the street they make you look like you don't know what you are about and truly I bemoaned that when some younger people are told that they cannot enter particular forest reserves and that its only elders who are allowed to go there, they revolt to ask with some kind of impudence, why can't I enter but only elders can go there' are they better than us? Because of democracy even if something will benefit everybody, someone who has more political power and hate such cultural things could fight it so much that they will remove it from schools. As a teacher, I know that because of the school it is not everything, about spiritual things that you know because you don't learn such things in school so if any of the children you are teaching ask deep spiritual questions about the way we do our things and the spirits in plants and forest and so on, you can come for consultation so we teach you more things. The problem I also see is that a lot of our children have wisdom to do certain things but the English language that is compulsory is the problem for them. They are born and bred with their local language and when they go to school they don't use even one of sentence of that language to write one exams or even speak comfortably in it, and it's pathetic that they make us feel shy because we cannot speak good English but me for instance I have made a lot of drugs (traditional medicines) that even professors in universities have not done but they still don't respect us because we cannot speak English very well and this is too bad, something should be done about it. Also there will be a challenge because some people see the way the Akan people do their cultural environmental practices as old-fashioned. For this reason the current schooling system and the way the world is changing with many computer people coming, it will make teaching it in school bigger challenge. Again, people no longer fear as it happen in the past because presently when you say that we don't enter this particular forest no one dares enter because the gods and spirits would definitely arrest in different ways but now people seem

to have no such fears, hmmm no wonder people die early these days and get all kinds of diseases that take all their monies and they don't even realise it is that fear for the spirits and gods and our ancestors that have left them that is causing such things".

APPENDIX 15: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN YOUTHS

Appendix 15a: How to Teach Akan Environmental Ethics in SHS: The Akan Youth's Narrative

When the Akan youth was asked about how these cultural values and care for nature could be taught at school or integrated into SHS Biology Curriculum, the youth narrated that: "The teachers could make their students come to the chief's palace when they are celebrating festivals and doing durbars so they can learn from them about the cultural value and care for nature. I think that our old men and women are very wise than the young teachers so they should let the student know that. Let the teachers organize the students on some days they want to teach those ways of local community for caring and protecting the environment and then invite the those from the area with more knowledge to come and teach. One other thing is that usually we hardly understand our elders many times because some of the things they just tell us not to do without clearly telling us the brain behind them. Therefore, if the teachers teach, they should find out if they can explain reasons behind them so student will take it in good heart. If our elders would explain some of the things to us and to the teachers especially so they will also explain things because there are a lot of things the elders don't explain. They just give the orders so teachers should know how best to teach this. I think they should stop saying things that are scary too about plants, animals and water-bodies and lands and teach it without any fear about the things like the way the white people can go to wildlife park and catch some of the wild animals and keep in their houses. Maybe if they want to teach they should speak the local language so that people can express themselves about some of the things they have heard or know or some of the stories we heard from our communities because some of the things, you may not be able to explain or say it very well in English like some of the proverbs that our parents usually say to us. I also think they can also teach with some of the ways the people who have more of that knowledge teach Again, computer software engineers could develop a special software that has all the cultural practices and the cultural values and care for nature and I believe that this will make the teaching and learning of it more interesting and the students may even participate more. I think one of the things the teachers can also do when they want to teach our cultural ways of caring for nature that the elders teach us in our communities, they should let all students they teach know that the elders in the communities are doing very well so that they will not be taken for granted. This will serve as motivation for

everybody they teach in class and many of them may want to do the same things too just to help keep our environment and the natural resources protected. The teachers should also teach the students to be serious with our culture”.

Appendix 15b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan Youth's Narrative

When the Akan youth was asked about prospects anticipated in the teaching of cultural values and care for nature in schools or integrating it into SHS Biology Curriculum, the youth narrated that:

“I think that if we follow what our elders direct us to do, we will all respect the resources (lands, forest, water-bodies) that God has given to us and they will no longer be destroyed. And probably people's bad attitude towards nature will change because now you see a lot of people throw things anywhere they like, even in the river that is good for all of us they put refuse inside them and sewage too. Also when we teach our cultural ways of taking care of our natural environment in the schools, I think that the world will know that we also have something to offer and not always looking up to outside world. if we don't destroy the environment that we live in we will get all we want from it and I think if something is from here (this country), the price will not be too much for us to buy for instance because even water they put in bottles are more expensive than one full bucket of water we buy in our communities...medicine too is the same. So they should do the teaching more in our schools. Again, everybody will even become happy because our environment will be neat, we will have nice and clean rivers that we can even swim inside and even drink without getting sick and every place will look very nice that we can easily get a nice grass area that you can sit and chat. Moreover, interacting with the IK-holders of the culture will give us more knowledge and remove the wrong thinking we may have about them and about the Akan traditions, in fact we may relate with them better. Also I realise that when you learn things that you already know about it is not difficult to remember whether you are writing a test or exams. I am saying this because the things we are discussing are all part of the local community practices and the elders are always saying things about it and citing a lot of proverbs especially in our villages; therefore it will be easy for anyone to pass an exam on it”.

Appendix 15c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Youth's Narrative

When the Akan youth was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or integrating into SHS Biology Curriculum, the youth narrated that:

“There are a lot of things that are not well explained, we are only told to obey them and we have to obey them and you cannot ask any of the elders to do something to show you whether what they say about some trees and rivers are true or not but in the school, teachers can be asked to do an experiment to prove some of the things which may be difficult for them. And these days people don't want to hear about such things especially when you are in school and you mention certain things like some places are sacred and is only the chief and elders who can go there or talk about some rivers in the community that they are not allowed to eat fish from and so on, they can argue with you and be telling you, you are living in stone age era that's why you are following such things. But this would be a good avenue to ask some of the questions that the elders never tell us, at least in the classroom you can ask your teacher anything and he or she will find an answer for you. using the English language is good but sometimes it looks like it has been used too much to the extent that even if you are science student and you don't pass English you cannot further your education but in this particular case that we are discussing something related to peoples cultural ways of doing things, the local language should be used throughout since a lot of things learnt at home about these things are already in the local language. I can see that now people don't fear our elders and what the elders say that much because they don't respect them but I still fear those spiritual things because I have seen mad people that I was told ate fish from one of the rivers that they said no one should eat from”.

APPENDIX 16: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN BIOLOGY TEACHER 1S

Appendix 16a: How to Teach Akan Environmental Ethics in SHS: The Akan Biology Teacher's 1s Narrative

When the Akan SHS Biology Teacher 1 was asked about how these cultural values and care for nature could be taught in SHS Biology Curriculum, teacher 1 narrated that:

“Students whose parents or family have more knowledge on such cultural things could gather more information from home and their community and bring to school to enhance the teaching. I grew up in a village but the little experiences I have had in life shows that our fore fathers and elders were very wise. Just note many of their proverbs and the consequences of not heeding; it's enough to reveal their wisdoms that we should take seriously. I think we can invite those who are well versed in the cultural knowledge of such ethics to our schools as resource persons, doing this I believe would also enhance the teaching of the cultural values and care for nature. You may notice that many of the environmental practices of our local community seem to be only on belief so sometimes it's difficult to see the wisdom behind them. So maybe when the elders come over they will show us their reasoning for some practices. This is also one reason, I suggest we invite them over to come and teach. Generally, many of the practices look mysterious but I think if we are to teach it, those mysterious aspects should be removed so the student will be convinced to follow them and put into practice. I am of the view that to teach such things that have cultural background, the use of local or native language should be paramount because there are things that may be hidden in the language that may be difficult for someone to even interpret or express clearly and the student would also appreciate and would eventually enhance their understanding because even in examining students you would realise that many of them usually don't do well because they actually didn't understand the English used to convey the knowledge in the text or exams. I am of the view that one of the things that made some of us not to be interested in these cultural values and care for nature is the spiritual aspects because there are no explanations for it but you just have to believe it. How would you even prove some of them? Formal education is making us to stop the use of fairy tales and stories too. Technological advancement is making these useless, therefore I feel that It will be very difficult a task to but if we could mix it with the modern one it will be possible and probably much interesting. I think that the local people ways of teaching could also be brought to the classroom situation to see the impact; after all it is those things

about their own culture that we are going to teach so why not try some of their methods to see how they could work out. It may be nice if on the day that we teach such cultural things students wear their traditional clothes to just conscientise other people about their culture. The relevance of computer and ICT in general cannot be overemphasised. The present teaching demands that ICT be used in teaching and therefore, in my view, even though it may be quite challenging to develop software like that, that are captured in the local language and sort of interactive it would be beneficial. Also the current communication gadgets that the youth especially are all very much interested could be used as tools to enhance these aspects of the cultural group's value and care and for nature".

Appendix 16b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan Biology Teacher 1's **Narrative**

When the Akan SHS Biology Teacher 1 was asked about prospects anticipated in the teaching of these cultural values and care for nature in schools or integrating it into SHS Biology Curriculum, biology teacher 1 narrated that:

"I believe that people were doing far better in the protection and caring for the natural resources when they had reverence for our traditional leaders' instructions and sanctions as compared to what goes on today. So when our cultural ways are brought back through the school system I believe that the little resources we have would be preserved. Students and the people in our community would probably begin to have a new mindset about the natural environment around them and endeavor to protect them. Besides a lot of the things we teach here are more foreign oriented and westernized, therefore if we can perfectly put our own (cultural) perspectives into the school and things are running it will bring us to the limelight and we will be respected by the world. We have very rich resources and we only mention them in books but in actual sense they are all being lost because we have no respect for our resources because sometimes even people who have gone to schools could do lots of nonsense polluting our water-bodies with all kinds of stuff but I think that if we could mix the traditional wisdom that made people protect what we have in our environment it would protect us from even importing things anyhow. In fact, I believe in our traditional medicine because my mother for instance used to boil some in a pot for us and we were always free from all kinds of fever and flu and were always strong. In fact we rarely got sick and I believe that if we will take this aspect of the culture that serious we may not need to buy drugs from outside. The teaching of the cultural way of caring and putting value on nature should be encouraged. There would be some sort of fulfilment if you realise that after introducing such things in schools and it has in the long run brought environmental sanity. Community engagement is very essential for nation building and development and this starts when we (teachers and students) get involved with the local community, and I am of the view that when there is continuous interaction with community through they (the community members) being used as resource persons for the aspects of traditional ways of caring for the environment, my view is that we will develop very good rapport with the traditional leadership and local community members and this solidarity will be very helpful for addressing environmental challenges. it's unfortunate that in the

schools most of our histories are gradually being cut out of the curriculum. And if it continues like that it would be a problem because we will get to a stage where we would have no idea what are roots are and how things came to be and by forgetting especially our cultural heritage other nations could so easily possess what we have using their ideologies and work their way through political avenues but we should rise up against such things and remember great legends of our culture like okomfo anokye, obiri yeboa, yaa Asantewaa, nana osei tutu and many more who stood against invaders of our lands and our cultural heritage and fought to keep the asante kingdom and all the natural resources. When such consciousness is created in the classroom about the cultural ways of keeping our environment, it will spur up love and passion for them in the heart of the students and they would adopt it and pass to others. And as part of the skills to teach, you teach from what the students know and then you add on any new thing that you want to teach and in this case it will be much simple for the majority of the students especially those from the township and villages to grasp the content and make more contributions to the lessons. This will definitely enhance their understanding of the content and help them pass their exams at the long run”.

Appendix 16c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Biology Teacher 1's Narrative

When the Akan SHS Biology Teacher 1 was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or integrating these into SHS Biology Curriculum, teacher 1 narrated that:

“One of the major challenges I perceive about our traditional environmental ethics is that most of the guiding principles have spiritual connotations that cannot be easily proven but our students are living in a scientific and would want an experiment to prove almost everything but how would you prove the spirit aspect. Honestly sometimes in our current world it is difficult to convince people with these kinds of cultural stuff because people feel that you are not modern and don't even know what computers are about that's why you mention things (cultural value and care for nature) like that. Honestly, ethics is becoming a challenge for our community now and looking at the way the current generation are grappling for some form of equality even in situation where hierarchical issues have to be in place, people would be asking the reasons why they cannot have access to certain places (reserved forests) or allowed to fish in certain rivers or even kill certain wild animals. Besides they have been changing the school curriculum every time there is a new government but this is pathetic, it's like there's no national goal, it's all political goals. Therefore, for this teaching of cultural values and care for nature by the cultural group to be possible we would have to decentralize the curriculum and then we could bring those aspects into them. Also, I am of the view that using the local language during the teaching of such cultural values and practices and care for nature would make it more interesting as the proverbs and many of the details and names used for certain aspects of nature by the local people could be easily understood besides the elders or the IK-holders who may be invited as resource persons would feel comfortable and would be able to communicate their deep thoughts and lessons without much hindrance. However, I perceive that teachers who don't know the local language well will make it challenging to teach such cultural stuff. Although, I have been through formal education or school, I was trained in a very traditional home but I have noticed that we usually don't have respect for things that are from our own culture and it is worse in the school and in attitude of most formally educated people. For instance, when I was growing up I used to fear certain places because of what I told but honestly I still fear entry of deep forest especially those in the typical villages

because I think there are a lot of dangers there as compared to the urban centers. But generally because these students fear nothing these days, those aspects of the cultural values and care for nature that are associated with spirits will even be the ones that will bring a lot of questions which will most likely be difficult to answer. Moreover, the Akan cultural practices they use in protecting the environment are seen as a sociocultural belief in many quarters and is classified as superstitions. Also such sociocultural beliefs are seen to have outlived its importance these same opposition that denigrate it. If we really want to put it in there, it may be for only a small group of people somewhere but the practicality will be difficult in this day and age”.

APPENDIX 17: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN BIOLOGY TEACHER 2

Appendix 17a: How to Teach Akan Environmental Ethics in SHS: The Akan Biology Teacher 2's Narrative

When the Akan SHS Biology Teacher 2 was asked about how these cultural values and care for nature could be taught at school or integrated into the SHS Biology Curriculum, teacher 2 narrated that:

“Students could learn lots of such cultural values and care for nature from their community by asking indigenous people or people well versed in cultural things about some of the stories and myths and taboos and come to school with such information and teach them. No one can dispute the wisdom of the elderly who helped to keep the environment using their own indigenous wisdoms and traditions. As you may be aware many resources were kept intact by these traditional leaders who through their unique indigenous teaching could make the ordinary person in the society become careful about their resource even though many of them had never had a formal education. Meanwhile now that there is much formal education, this is the time we have more issues related to environmental pollution. Our current school system rarely says anything about such local environmental practices for caring for nature. But we could throw an open invitation to experts from our local communities to come and brief us more on them. Nevertheless, I myself have to understand some of the reasoning behind some of the local or traditional practices for caring and valuing nature because some don't have scientific basis. Besides a lot of the things done already have no clearer meanings and elders rarely tell you their motives but to make it easier in teaching, there should be some level of clarity. In this day and age, you can't just be telling these students there is spirit in this or that component of nature and expect them to just believe without further questions, meanwhile you may not be able to answer so it will be better on some occasions to just concentrate on the benefit and consequence of destruction of the natural resource instead. Again, using the local language would also make the true meaning of some of the cultural values and care for nature come out clearly since our elders have deep proverbial sayings and many others that would be better understood in the local language. And if this is to be done, obviously, we should also resort to using the local knowledge of the IK-holders as well as local strategies of teaching as well since many of our teaching strategies are westernized almost all the time. We should teach the modern and earlier time conservation together and it should not be one sided but

at least well balanced to address all the necessary aspects. Our tradition goes on as we do not throw away traditions just like that so we could let the students wear their cultural dresses on certain occasions. Moreover, we are living in an information age where the computer and ICT tools are trending with things that has left our cultural practices because many of these are practically from the western world but I am of the view that, the government and curriculum developers could contract experts in the field of software engineering who would work together with language experts from our country and knowledge holder to develop computer programmes about these cultural groups value and care for nature and this will boost the interest of the students and remove the gross disregard for the wisdom of the elders. We should all learn to emulate the tenacity and strength of the great grandfathers of the culture who through boldness and readiness to save and serve their people went to every extent to ensure that not only were the lands kept intact but also our culture was preserved...such things are worth emulating and we should all remember their dedication when they struggled to get us the peace we are enjoying now and teach the students same things in the classroom”.

Appendix 17b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan Biology Teacher 2's **Narrative**

When the Akan SHS Biology Teacher 2 was asked about prospects anticipated in the teaching of the cultural values and care for nature or teaching into SHS Biology Curriculum, teacher 2 narrated that:

“I am optimistic that if we can restore our local and traditional ways of doing things, the rate at which things are being destroyed would come down and the resource (lands, forests, water-bodies, wild animals) we have now will be kept from further harm and destruction. I believe that self-realization is the most important thing that make people begin to do the right things so by teaching these traditional ways of caring for the environment people may come to this point in their lives and make them care more for the natural environment. By teaching this (cultural environmental ethics) in schools I am of the view that this country and Africa in general will start getting recognition as being self-sufficient and this would earn us some commendations and respects. We should teach these cultural ways of taking care of natural resource in our schools. If we really realised the potential of our resources and the rich biodiversity in this part of the world, we would have done everything possible to protect them which I think using our local ways of protecting as well as the current western ones could make it much easier and by this we will get to a stage where a very common thing like drugs mostly made from plants could be easily manufacture and sold at cheaper prices compared to the foreign ones. There nothing like achieving results, after putting in much effort to teach with the mind of changing our world. Therefore, if we are able to introduce and mix perfectly these cultural values and care for nature, it is hoped to influence our society and environment positively and when this happens in the long run we would feel at rest, have fulfillment and a sense of comfort in our souls and within our bodies as well. Reaching out to the local communities, touring and visiting sacred sites and actually engaging in community activities would develop a very good friendly atmosphere that will bring mutual benefits. Students will respect the knowledge and wisdoms of the traditional leaders and IK-holders and at the same time become sensitive to the real state of the local community as they interact with them. Also the best way to impart knowledge is to communicate in a language or gestures that the other persons can grasp with total comprehension and for this purpose, I am of the view that as a lot of the things would be purely the local cultural way of doing things, most of which students would be familiar with, it could help the students to excel in exams”.

Appendix 17c: Challenges of Teaching Akans' Environmental Ethics in SHS: The Akan Biology Teacher 2 Narrative

When the Akan SHS Biology Teacher 2 was asked about the challenges anticipated in the teaching of the cultural values and care for nature in school or teaching into SHS Biology Curriculum, teacher 2 narrated that:

“Many of the cultural values and care for nature will be difficult to prove in the lab or on the truth table and the demand for proof and experiment from students about such cultural practices would be a big challenge to handle. You will not believe it that even now Ashanti history and all of those cultural values and care of nature, they are phasing them out of our curricula at the basic and secondary schools because of the western inclination of our political people. Therefore, the cultural values and care for nature like we are talking about is most likely going to be looked down upon by people. It is interesting how there is such a sharp contrast between the current generation and the previous one even just over 30 years down the line the children now have no respect for the elderly and are not even patient and humble to ask questions about certain cultural things politely so they could learn and many times you hear them say that the elderly people’s time and culture are old-fashioned. And as I said earlier even now Ashanti (Akan) histories are being removed from school text books as though it is no longer important but how can we progress if we are going throw away everything about our culture. In fact, how can we move forward if we throw away our own culture and go to take another country’s culture. It is only politics that can cause this and the same will be for what we are discussing about teaching our cultural ways of valuing and caring for nature. Also putting cultural practices, values and care for nature into school curriculum could only be feasible in small communities mostly in the rural areas not the urbanized schools because our curriculum is centralized and inclined more to the western curriculum patters. It would be very interesting to teach such cultural values and care for nature with the local language if not the import of it would even be lost because the names and expressions of the elders all have their distinct meanings. Otherwise, there would be a language barrier. And although our cultural values and care for nature are very essential to the wellbeing of our country and its natural resources, the effect of the modern technology and westernized education system poses a threat to its survival. Also currently people don’t have fear like the old times because now even these young students can go the cemetery, go and watch dead corpses laid in state in the night and are still able

to walk home unafraid of any spirit meeting them or even coming to torment them in their dreams, honestly things have change and fear is completely lost. Moreover, most of the practices of the Akans are currently seen as sociocultural belief and people think that such things are superstitious beliefs and if so then they are of no significance in contemporary times”.

APPENDIX 18: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN BIOLOGY TEACHER 3

Appendix 18a: How to Teach Akan Environmental Ethics in SHS: The Akan Biology Teacher 3 Narrative

When the Akan SHS Biology Teacher 3 was asked about how these cultural values and care for nature could be taught at school or integrated into the SHS Biology Curriculum, the teacher 3 narrated that:

“Many of the students are from traditional home and areas where a lot of cultural things are practiced, they could get more proverbial peoples from such towns. Honestly, no one can dispute the wisdom of the elderly but because most of them were not in formal education people sometimes think they don’t know much. All the same if there is anything to go by, it would be the chiefs, elders, traditional priests, herbalist and the traditional leaders who would have expert knowledge of such cultural practices about the values and care for nature and I think we could bring them to our schools for orientation and teaching us teachers too. There is much wisdom behind what our elders used to do and even now, I think the students should only get to know the wisdom backing some of the cultural values and care for nature and it will let them fall in love with it. Also I believe that if most of the unexplained aspects of these environmental ethics are given proper explanation, it would make the teaching of it exciting. As you know, we live in a modern world where science is prominent so things that have spiritual connotation would be difficult to be taught in a classroom context, therefore it will do a lot of good when the local language and the local ways of communicating and teaching local people their own way of care and preservation of the natural environment are used during the teaching segment as this will make the class interesting. Again it would be much better if there a complete mixture of the different environmental conservation methods from local traditions and what is in the text books now. It is quite interesting to note that, almost every person forgets what was done for him or her as years and years go by. This may continue until a time come, when we are prompted to show our gratitude we have for such persons who stood for us and this sense am referring to the great grandfathers of the Akans culture who fought battle to conquer these territories...but am of the view that, in our quest to teach the cultural ways of valuing and caring for nature, we could reenergize the desire for cultural things in our students through such teaching in class. It’s beautiful to be an African when we could make our

culture appealing to people by just consistently wearing our local or cultural costumes. our generation has almost everybody trying to learn something about computers and not only those in formal education in schools, therefore in my opinion, one of the fundamental things I suggest to be done is the development of computer programs solely for these indigenous aspects of valuing and caring for the natural environment in the present age because people are moving towards computer and ICT to the detriment of important cultural values about their environment that must be sustained for future generations”.

Appendix 18b: Prospects of Teaching Akan's Environmental Ethics In SHS: The Akan Biology Teacher 3 Narrative

When the Akan SHS Biology Teacher 3 was asked about prospects anticipated in the teaching of the cultural values and care for nature or integrating these into the SHS Biology Curriculum, the teacher 3 narrated that:

“By going back to what (traditional ways of caring and valuing the environment) was working before but has been replaced by what is not very effective for our communities, I am of the view that when we are able to reintroduce the older and implement it, the environment will be kept intact again as in earlier times. I usually think that when someone feels something is foreign to them they don't usually see the reason to be committed to them but I think that when our people begin to realise that even the students are learning about such cultural things, their mindset will change about them and they will rise up to support with the entire community to help protect the remaining resources and truly people would become more conscious of the environment and sensitive to the way things are destroyed in nature. If proper measures are put in place to teach these cultural ways of caring for nature and to instill our own environmental ethics and to instill our own cultural values and care for nature into our people and it is totally embraced it will easily get back into our communities as people normally give attention to people who have gone to school and soon enough our local community will revive what they already have that they thought was of no value now because people are looking down upon it. By virtue of the fact that our local people have survived throughout the years and you can still have the men and women who have lived very long in the villages compared to people who live in the urban areas we can be sure of this that our local traditions could probably be of more help to us than the foreign ways of doing things. When it comes to matter like drugs and certain natural products, It may be cheaper for us with our own than our own being repackaged back to us at higher prices because they are indigenous. And every endeavor made by man is for the sole purpose of a solving problems of the world and keeping safe and possibly living as long on earth as you desire. For this reason if such cultural values and care for nature of the local people are put into school and it takes its proper place, it would yield great benefits to us as a people and this would bring joy and a sense of accomplishment to us as well. I must say also that there are things we usually do see nor understand until we come close to interact with the elders who fought to bring us where we are, and I am of the view that as we go to the communities and even invite IK-holders of our culture to come talk and

teach certain things we would be able to get a deeper relationship with them and understand them and also take cognizance of what really goes on in the communities and the way we can work together to help sustain the natural environment we live in presently. We will at the end of the day develop a very good relationship with the local communities and the membership. Again, students are more likely to do well in any exams related to aspects like these on the cultural values and practices for caring for nature and its resources because none of the content would be far-fetched. More so, they would even be able to contribute far better and add extra information that may be relevant for documentation purposes”.

Appendix 18c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Biology Teacher 3 Narrative

When the Akan SHS Biology Teacher 3 was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or integrating these into SHS Biology Curriculum, the teacher 3 narrated that:

“Students and especially as science students have deep inquiry minds and would ask many, many questions till they get to the roots but there are several aspects of these cultural practices of our environmental ethics which students would specifically demand that we make some experiments to prove them and this will be very challenging. If there is anything that you can easily feel like you are getting outmoded about it, it is our culture now, see how students can feel that things have so changed that everything should look like what they see on TV in Hollywood movies and South American soap operas. The present day students are prone to ask questions for clarifications about many of our cultural environmental practices but I perceive many of them asking questions of the why the chief and elders could use a place for rituals but the community cannot only has a tone of disrespect and a feeling of inequality in the rights and privileges of individuals. I only hope that even something like this (cultural ways of caring and placing value on nature) could be sustained looking at the fast pace at which new governments come and each keep changing the curriculum. Also the major issue with the curriculum now is the fact that it is centralized and this will make it challenging in teaching the cultural environmental conservation aspects because of the diversities of cultures in the country but it could be possible if efforts are made to decentralize the curriculum. Another aspect is with the issue of language. Language will be a bigger challenge in teaching such ethics in schools because currently most of the teachers don’t even know and understand some of the deep words and proverbial sayings in the local language meanwhile a lot of the rich wisdom and knowledge of the culture is in the local language. Weighing the traditions and cultural things as against our modern schooling system and the way people love to look and behave as westernized people, this will pose a big threat to the teaching of such cultural environmental ways of conservation. A bigger challenge to these cultural environmental conservation practices will be the issue of students and people in general throwing away the fear aspect, meanwhile many of the issues related in the cultural values and care for nature have spiritual connotations that make people have some kind of fear for destroying any natural resource -water-bodies, forests, wild animals, lands etc. But the beliefs and

most practices of our cultural groups are being castigated as sociocultural beliefs that have outlived their relevance because of the westernized type of education and this thinking also poses a challenge”.

APPENDIX 19: SCHOOL RELATED NARRATIVE ANALYSIS OF THE AKAN BIOLOGY TEACHER 4

Appendix 19a: How to Teach Akan Environmental Ethics in SHS: The Akan Biology Teacher 4 Narrative

When the Akan SHS Biology Teacher 4 was asked about how these cultural values and care could be taught at school or integrated into SHS Biology Curriculum, teacher 4 narrated that:

“The students could actually interact with people in the community and usually the elders who have a wealth of knowledge about these cultural values and practices and gather as much information as possible because I believe there may be a lot that people have no idea of and how they (forefathers) were able to put to the whole community and natural environment stable. My grandparents had enough wisdom to build houses and keep large farms and maintained their production cycle, selling their cocoa and yet keeping their environment intact, even the air in the villages are very fresh. And those who have lived in the palaces of our local communities have expert knowledge about such ethics and should be invited as resource persons. There are depths of wisdom behind everything that the elders were doing and this should be at the back of our minds always. They (elders, forefathers or ancestors) thought very deep before they made certain injunctions and sanctions. We cannot throw their practices away just like that, we should teach their wisdom and almost every practice of our traditional people have some mysteries behind them. That is the one aspect of it that is quite challenging to deal with. I don't think teaching students with such mysteries would do justice. We have to remove those aspects that look too puzzling. The world is becoming sophisticated so spiritual aspects of conservation may hardly work on students. It has to be thrown away somehow. And it would be better if we teach something like that in the local language so that we can explain things better and that is why I think we should bring some of the elders as resource persons to the schools. But come to think of it what sense will it make if you do not use their own ways of teaching to teach their own type of knowledge? I am referring to their teaching strategies and their depths of knowledge and wisdom about the natural environment...that is what and how it should be taught. Also a mixture of the different environmental ethics from the more western one taught in our school plus our own cultural ones will be the best option than just teaching something that all foreign. In my view, one of the things I think could enhance

this teaching and also bring the minds of the students on their culture and restore the respect for the traditions and the sayings of the elders would be that they should frequently wear the traditional attire of the Akans instead of the foreign ones, by so doing they will become conscious of their identity. In fact presently, there can be connection with the world and crossing borders without a deep knowledge in ICT will be a big handicap for people, and that is why almost every school and department is getting deeply involved to train its people with ICT. But my suggestion is that the aspect of the cultural groups practices that the elders used to take care of the natural environment, could be developed into a kind of a computer software that would be used in schools and could even be downloaded and used at home on phones to sensitize people again. This is because there is enough evidence that the earlier ways of conserving the environment using the indigenous knowledge of our forefathers was much more better for the African people than the current westernize conservation method for the natural environment. Let's say that I go the classroom dressed like one of our legendary warriors, all the students would be amazed and start asking lots of questions and this will spark the teaching of the cultural way of valuing and caring for nature as I would link the struggle of the legend I have dressed like for students to see and by so doing I could pique their interest in what I am teaching. Moreover, they would be sort of motivated to be like such legends who fought to conquer many large land for us”.

Appendix 19b: Prospects of Teaching Akan Environmental Ethics in SHS: The Akan's Biology Teacher 4 Views in a **Narrative**

When the Akan SHS Biology Teacher 4 was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching into SHS Biology Curriculum, teacher 4 narrated that:

“The traditional ways seems to be more adaptable to the people than the modernized way because now people can destroy a water-body without any sense of fear but previously no one would dare do such a thing. I think if we are able to bring the traditional ways back a lot of things will change and the remaining resources would be kept intact. Being conscious of one's wrong attitude towards their own natural environment is very pertinent and probably teaching this cultural values and care for nature would be the only means people would start realizing their wrongs. If we can embrace what we have that is our culture, it will be easier to keep and maintain, we will become and look more responsible for our own lives from the rest of the world. We could make life better for our people if our own things become very valuable to us so teaching it in our school would bring this benefit too. Therefore, I am of the view that if the cultural environmental ethics of our people can find its way in our schools it would get a higher prominence and basic benefits like potent drugs and rich healthy food resources could be harvested at lower cost than to be imported at higher cost that make life burdensome to our own people. Meanwhile my greatest dream is to see me teach students to help change our world for the better and for this reason if such traditional or cultural values of caring for nature are well teaching and mixed with current conservation ethics taught in our schools it is hoped to achieve better results than what is happening presently because in earlier times things were better in terms of rate of environmental degradation. And I believe all of us would feel some sense of comfort and sense of achievement as well as peace in our souls and spirits when you start witnessing such notable results. Also through continual interaction with the IK-holders and local community leadership we will learn a lot I believe and then we ourselves as teachers and the students too would become very broadminded in a diverse aspect of learning and this will augur well for a good relationship that with the communities and at the same time bring beneficial relationship. Also, students would be confident to respond to things you ask them and they could easily think through an answer on aspect that have local bearing as compared to those with terminologies that they have to memorize them and this makes them stand the chance of doing well in related exams”.

Appendix 19c: Challenges of Teaching Akan Environmental Ethics in SHS: The Akan Biology Teacher 4 Narrative

When the Akan SHS Biology Teacher 4 was asked about the challenges anticipated in the teaching of the cultural values and care for nature or integration into SHS Biology Curriculum, the teacher 4 narrated that:

“You should know that this is science and science goes with either field or laboratory practical so surely students would ask us to prove what we teach and this where there will be some difficulty because some of the practices have spiritual meanings and how would we prove them. When I walk around and see water-bodies that have been polluted and still being polluted, forests been cleared anyhow in many places, my heart bleeds but the sad part is that it may be getting worse because people still feel that the cultural practices for conservation by our forefathers which kept the environment is now looked down upon with gross impunity but hope of restoring such is not lost. Our children are living in the information age and would have many deep questions to ask regarding such cultural values and care for nature but I just hope they (students) wouldn’t be challenging these cultural values and care for nature looking at how different it is from the western perspectives in which they’ve schooled from the foundation phase of education. It is sometimes disheartening when we keep changing something like a curriculum including the number of years to complete such curriculum every time a new government takes office, truly we are just going back and forth. But on a more serious note our democracy and political biases are not helping us achieve a common national goal and this I think will pose a challenge in this new wave in an attempt to teach cultural values and care for nature in schools. Also the centralized curriculum will pose a challenge in an attempt to fully teaching such cultural values and care for nature and most especially because most of the aspect of it have spiritual connotations. The local language is even stigmatized meanwhile that is the best language for teaching such cultural values and care for nature but we hardly value students who even speak the depths of the local language as compared to those who speak the English language, which is a foreign language. Technological advancement and the way every Ghanaian seem to think that anything from abroad (Europe, Asia and America) is the best, will be a big challenge in the effort to teaching such cultural values and care for nature. Fear for the gods and the spirits are being lost from people lately so it makes them (people even spoil things more but this loss of fear will be a bigger challenge

to instilling or implementing our cultural values and care for nature into the people. The beliefs and most practices of our cultural groups are being castigated as sociocultural beliefs that have outlived their relevance because of the westernized type of education and this thinking also poses a challenge”.

APPENDIX 20: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU CHIEFS

Appendix 20a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Chief's Narrative

When the Zulu Chief (an Induna) was asked about how these cultural values and care for nature could be taught at school or in SHS Life Sciences Curriculum, the chief (induna) narrated that:

“Local knowledge holders should be exposed to the learners by calling upon them to come to the schools regularly to teach them lots of these practices that helped us keep our environment. When the learners are always with teachers who don't know much about the cultural stuff and they keep teaching the foreign things, the learners would definitely lose interest in their cultural stuff. The teachers and their learners can also decide to pay us a visit in the places where they can easily interact with the knowledge holders and this will also let the learners appreciate their cultural values and easily embrace them. There are several cultural villages and rural areas where they can see lots of these cultures that will let them see the way we value and care for nature. When the teachers are to teach this, they should be in a position to be able to convince the learners that their culture is their culture and that they cannot throw away their culture and take other people's culture...they should therefore love, cherish, appreciate what is their own...and always remember what their elders and ancestors have done for them to still have their culture intact and their natural resources (the lands, forests, water-bodies) available for them and protected. Also, the mindset of black Zulu learners should be changed so that they can embrace their culture and their practices boldly. Again the thinking that some of them (amaZulu) have that they are inferior to some white people should totally be removed from their thinking if not anything that has something to do with culture of the Zulu people will be difficult for them to learn. It is not everything that you the teacher can tell the learners because they are young and some of the things are spiritual, so when teaching these cultural values and care for nature you can tell them there are spiritual aspects of those things but you will need the wisdom of the elders to be able to explain things like that to them in the school. And in so doing the learners will become conscious of some of these spiritual aspects related to these cultural values and care for nature and consequently seek to see these further. I do not mean you should put fear in them that spirits that they are afraid are found in many of the

natural things in nature like some water-bodies, forests, wild animals per se but rather when it comes to those aspects you must consult elders or invite them to come and teach the learners. The generation we are in now people love electronic things and mainly computers and things that you can use with the computer like the phones because of this I will suggest that the schools find ways of developing special computer program that the learners can use to study the traditional people's values and care for nature which was placed on the lands, water-bodies, forest and other things in nature. Because of politics we cannot use only our local language, isiZulu in our schools but I believe that this aspect of teaching we are discussing now are all of cultural things therefore our local language should be used to teach it...and when they teach it too, they should teach the way we were taught by our elders and ancestors or better still they should come to us to teach them how to teach it in school or call us to do it for them in their school. Remember that when our elders used to teach us things about our culture and how to care and value nature, they used their own styles and strategies that would make both children and adults understand and sometimes they would even just be telling you in a dream they had or someone had, sometimes deep proverbs and riddles that you have to sit down and think to get answers but all in all they made sure that every part of your life was impacted by their teaching in terms of your morality, attitude to others, the feeling in your spirit and in your heart and your normal daily physical life”.

Appendix 20b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Chief's Narrative

When the Zulu Chief (an Induna) was asked about prospects anticipated in the teaching of the cultural values and care for nature or the teaching in SHS Life Sciences Curriculum, the chief (induna) narrated that:

“If our own cultural ways of taking care of the environment is to be taught in school our children would be much more interested in it and would likely get involved in it and this will help us protect the remaining natural resources for the future. The learners can learn from home and from the community where they reside and feel confident about it (cultural values and care for nature) that what they know at home and in their community, is relevant for school and this will make them love to be involved in any meaningful community labour and make it easy to mix in class. The learner will think from their own African mind and this will make them greater than always trying to be somebody somewhere because of what they see on TV and learn in school. I am of the view that respect for traditional authorities and knowledge holders of our culture will be restored if the schools, the teachers and learners will all begin to realize the depths of wisdom of the elders especially when they are called upon as resource persons during such teaching of cultural values for nature. One of the benefits of teaching this in school is that it will bring everybody on board to help take good care of our natural environment just like our ancestors did and when we do that we ourselves will be at peace in our souls and spirits and our ancestors would be happy with us. Besides teaching our cultural groups way of preserving the environment will make the learners capture deep knowledge that will also be recorded in school books that will help preserve and protect the deep knowledge and wisdom that the traditional people have. Usually, the school environment seems to be so different from the local community that, the learners usually don't even interact properly with the community members who are not in school or are just working but I am optimistic that when such cultural values and practices for caring for nature are given good place in the schools and there is continuous interaction, it will create very good relationship between the community and the schools. Also, the invitation and consultation of people who have the cultural knowledge of our values and practices would make them (cultural knowledge holders) feel important and the learners would also sense and become conscious of the various challenges that goes on in the community. Also, when learners are taught things that they can get more information

about from their homes, communities, during occasions and festivals they are more likely to do well with it in school and because the things studied will come from their culture they (learners) stand the greater chance of performing better in school and in exams. Besides, things which will have their culture in it would be better understood than aspects that are more foreign to them”.

Appendix 20c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Chief's Narrative

When the Zulu Chief (an Induna) was asked about the challenges anticipated in the teaching of these cultural values and care for nature or teaching in SHS Life Sciences Curriculum, the chief (induna) narrated that:

“The democracy and the effects of apartheid are making a lot of people in the community look to themselves and only their nuclear family. I am saying this because the sense of communal living where members of the community used to care for other people’s children and were even able to even correct them outside their home is almost gone now because of many political reasons. I believe that we would be powerful thinkers if we took our indigenous knowledge serious but colonial people made us disrespect our knowledge. But the surprising thing is that the same colonial people themselves now have picked up our indigenous knowledge that they made us to look down upon and are researching into various aspects of it and turning them back to us at a price. But this is the extent to which our cultural practices and values have and is being stigmatized by certain segments of society. A challenge like this would confront the teaching of cultural ways of valuing and caring for the nature. When the colonialist labelled our cultural practices as, ‘barbaric’ and saw it as, ‘superstitious’ it makes the current generations also to grossly disdain and disregard everything African and see all African perspective as useless and of no value. This is pathetic and to me these will make it a great challenge to teach. As you are aware, many people see the cultural ways of doing things in Africa as primitive and archaic and this will be a challenge during the teaching as well and this is the part I think the teachers should rise up against. Again, I believe we can teach the cultural ways that our people of our cultural group used to conserve the natural environment but the rate at which people leave their culture for other foreign cultures now cannot be reversed. It can be taught alright in school, but I think the practicality or learners and other people practicing it will be a challenge. I mean the teaching can be done but practicalising it. In fact, presently, the culture people have picked up now will be very difficult to reverse. What is even worse is our children who go to the multiracial schools, some of them even don’t want to mingle with certain class of learner. There is so much politics and people demanding their rights that even if they disrespect a traditional leader they can even see it, but they are protected by politicians. Truly, we really have a new breed of people in our present generation. Can

you imagine that even very young people can question you in way that you can see that politics and democracy has spoilt them and it is evidently clear that there is less respect for traditional leaders and our instructions because now everybody feels they have the same right with you. In our time, we never asked further questions from our elders as a way to challenge their intelligence when we were young, but things are changing now, and I am of the view that the learners would be asking you to prove to them why they cannot wear even the leopard skin. The learners would probably even ask for an experiment to show what will happen if they wear it and are not the king or chief”.

APPENDIX 21: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU ELDERS

Appendix 21a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Elder's Narrative

When the Zulu Elder (an umdala) was asked about how these cultural values and care for nature could be taught at school or teaching into SHS Life Sciences Curriculum, the elder narrated that:

“When we invite the elders and IK-holders who have in depth knowledge about our culture most especially if such persons also have high formal academic background, it would boost the interest of the learners. When learners are conscientised about their culture to know the value that their culture holds and how the ancestors have fought to keep the culture, it helps them to rid their mind of the wrong mentality some of the learners have about their culture. for instance there are many times learners of the black community who go to multiracial schools even feel they are better off than their colleagues in other schools because of the different culture of the other races. And this also because the system is purely westernized and so nothing of ours (our culture) is of any pride to these learners. You can't imagine that our children go to school and come back and still feel like the white child is better than them. They cannot see that just as they (children of our culture) can fail or do well in exams the other races also do likewise. The teachers themselves should be the first people to show this to the learners and help decolonize their own minds and that of the learners that they are not inferior to other people in anyway including their culture. Another thing I want to talk about is that we grew up to come and see and hear our elders say a lot of things about nature that are spiritual, some were scary but they were here before we came, so we had to obey them and continue with whatever we came to meet. This is because I believe that if they were not good, it couldn't have sustained our society up till this time. In our time, we were very obedient to them for instance, we didn't go where they said we shouldn't go, we didn't eat fish from some water-bodies they said we shouldn't eat, we did not do any bad thing to any water-body they said we shouldn't go to. And our only reason was that we had the respect for them (our elders) and therefore did all our best to obey them without asking further questions but if the teachers are going to teach, they should teach the learners the aspect they the teachers understand and the spiritual part that they don't know, they can consult or invite the elders and knowledge holders. if the

teachers could teach the learners the wisdom of our ancestors on how we protect the nature, and use the isizulu language, it will make the learners love the cultural things you teach them and they will understand it better and especially when they teach like the elders used stories, dreams, observing things and so on. They should also remember that when the elders teach you they talk about physical and spiritual things that can touch your heart too at the same time you will be learning a lot of wisdom to live in peace with your elders and with nature and fellow human beings. Besides, the learners should learn to dress more of the cultural way. Besides they will even understand it better and in addition the learners should learn to dress more of the cultural way more often. Again, in my thinking the learners are more interested in computer and phones than our traditions at the moment and this may be the reason why they are not respecting the wisdom of the elders, therefore in my view, some computer programmes should be made that contains the wisdoms, practices, values and our cultural ways of caring for our natural environment. I mean especially those that we (the elderly people) came to meet our forefathers and ancestors do that was making the environment protected. By doing this, I think that the learners would realise that what the traditional leaders also teach are very wise and important that is why they are even on computers or being made as computer programs and they would respect it all the more. Beside the communities too, could have similar programmes on their phones”.

Appendix 21b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Elder's Narrative

When the Zulu Elder (an umdala) was asked about prospects anticipated in the teaching of the cultural values and care for nature in schools or teaching in SHS Life Sciences Curriculum, the elder (umdala) narrated that:

“In years gone by the environment was kept intact because people were afraid of the instructions of the elders. I believe learners will get deeper and stronger in the wisdoms and knowledge embedded in cultural ways of preserving nature and this will shift the mindset of people from being so dependent on the western world and begin to think from their own African mind. We will become conscious of ourselves and respect and value constituted authority. Moreover, we will start accepting the fact that leadership is a pyramid and that we are all not equal in terms of position and privileges. Apart from all these nice things, I believe that our ancestors are not happy the way we destroy the forest plants and wild animals in our land and for that matter, if we are able to do the good things to environment and not destroy them, we would be at peace and our ancestors will promote us for doing the good thing for the children that are coming after us. Again, putting our cultural values of caring for nature into the schools will be a great avenue for protecting and preserving the wisdom of the IK-holders and knowledge holder like that of our traditional healers (izinyanga and izangoma). When there is much interaction between the schools and the community, as they come around to learn lots of cultural things and we (IK-holders) are also allowed to participate in some of the school programmes like what we are talking about now (about the cultural value and care for nature), it will create a very good relationship among us the local community and that of the schools as well. They (learners and teachers) will not feel that they are not part of us but will see and share in the problems in the community. Moreover, since learners will be given exams for whatever they learn in school, I am of the view that when they put these our cultural values and practices into the things they learn in school, the learners can easily pass their exams because they will know a lot of the things as it will not be foreign to them. For instance, from home they see, feel, hear and interact with a lot of things but you know that because the things taught in school are usually not related to their everyday life they don't do well in their exams but I think that for this particular one they would be able to do well in their exams because the things would not be too far-fetched”.

Appendix 21c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Elder's Narrative

When the Zulu Elder (an umdala) was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or teaching in SHS Life Science Curriculum, the elder (umdala) narrated that:

“Despite my strong stand for the benefits of these cultural values and care for nature that we are discussing now, I am still of the view that some practices can't fit this generation because people have personal interest and no communal interest so it will not have impact now. People are selfish and have lost the communal sense. Almost all traditional and cultural things that we practice these days are looked down upon by different segments of society as though they are of no value because of computer. You wouldn't believe it that some people even feel shy to do certain things if they are directed by an inyanga or a sangoma regarding practices that even show our value and care for nature. In fact many people shun things given by the inyangas and isangoma and this is just one example of how people stigmatize our cultural values. Some young people even feel it is only their skin colour that makes them black but for them they are already white in heart. This is a problem teachers would face with some learners and their parents when they are teaching our cultural ways of caring for nature. Because colonialism and apartheid tried to remove the oneness we had as Africans, many ill statements and unkind descriptions were given for almost all our African cultural practices as part of the sheer hatred of the colonialist for us and their total disregard for us. Also a challenge that is most likely to be met is the wrong thinking that our cultural values and practices are primitive, old-fashioned or archaic and that is why many people especially the well-educated sometimes feel that they are whites and blacks in the way they think and go about their life. I believe we can actually teach these cultural values and care for nature at school and teach it as part of the curriculum but nobody can reverse the wrong thinking that the people have now. For instance, you can't tell people to no longer wear tiger or leopard skin. They will tell you this is discrimination. This is an indication that we don't understand what this word discrimination even means now! Our new generation in their so-called democracy and having their human rights do not even realise that authority is like a pyramid and the king is at the top of this pyramid and the subjects are definitely more and increases as you go down the pyramid. We have to understand this, all of us have to understand it that there is

a hierarchy and we are not all the same in position and therefore we should honour and respect who we have to. Because of the current attitude of gross disrespect for many people in authority, in the generation we are in, people are always asking questions, sometimes not because they want any sensible answer but just to challenge what elders have said and usually it may come from those who have some kind of education but even now it is wide spread across our communities all because people don't want to cooperate and be obedient like we were, when we were young and just accept anything that came from our elders and traditional leaders without asking them to prove whether what they are saying about that water-body or that forest or that animals is true or not.

APPENDIX 22: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU DIVINER-SPIRITUALIST (SANGOMA)

Appendix 22a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Diviner-Spiritualist's (Sangoma) Narrative

When the Zulu Diviner-Spiritualist (Sangoma) was asked about how these cultural values and care for nature could be taught at school or in SHS Life Sciences Curriculum, the chief narrated that:

“We (IK-holders of the Zulu culture) have the knowledge of our ancestors and they keep talking to us to able to help our community but when people go to school they forget the wisdom we have from our ancestors. The schools can invite us to come and teach the learners some of the things and it will make them more interested in the cultural things that show how we value and care for nature. People normally have wrong perception about our work (as sangoma) when especially they go to school but it is because they usually don't come to see how we do our things properly and even how we initiate someone as sangoma, many of them have no idea it is. So the schools could organize themselves and come to visit us here and we will gladly teach them what our ancestors says about the things we have in nature – about the lands, water-bodies, plants and animals. learners should know the value of their culture so that they will appreciate the IK-holders and ancestors for great work they have done to have fought long and strong battles to keep what we still have in nature now and give them due respect...the teachers are to help them take appropriate decision to keep to their culture instead of following other people's culture. Our children in the school should know that they are also great people and so they should not let other people make them feel everything about their (our children) culture is not important in their school. They should know that we even have a lot of white people who also have been trained to become sangoma's like me so they should remove the wrong thinking in their mind that white people are greater than them. Because of this I think that it is not only things that are from white people that the learners will learn in school. There are lots of things that the teacher will not be able to explain very well in school about our cultural practices unless the ancestors give the teacher the knowledge and wisdom about it because there are a lot of spiritual things that are connected to nature. So the teachers could call upon us (IK-holders or knowledge holders) anytime to come and teach them and their learners but they should not tell them anything that will scare them because our ancestors are not wicked even though

they come from water bodies and manifest in some forms of plants and wild animals. And also very important, we should not throw away our language and go to use other people's language in our schools, and so if they want to teach about our cultural ways of protecting nature, they should use our local language to make it easy and interesting. And our way of teaching is what they should use but they can add their own but make sure they do not remove any of our own ways of teaching our people, they should also use some of the stories and proverbs and the dreams from ancestors to teach their wisdom about nature. And like how they teach us to heal people, they should make sure that touch on the spiritual part of the learners too, just like how we sangomas try to heal people both physical, psychological, spiritually and not just the normal physical things if not they will not take everything serious”.

Appendix 22b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Diviner-Spiritualist's (Sangoma) Narrative

When the Zulu Diviner-Spiritualist (Sangoma) was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, the Zulu diviner-spiritualist (sangoma) narrated that:

“If the schools and the learners take the things we do in our culture serious and learn them in school, the way our ancestors were caring for the water-bodies, forests, lands, animals and have told us to also care for them, we will be able to keep them for children’s children. When the schools take our cultural knowledge and wisdom serious by making our children learn it at school it will make other people also see how important our culture is to us. They will respect the mind that we also have and they will see that we the black people too have a mind that can change the world and protect our natural resources. If people who are in school realise that what we do as traditional people are relevant for school teaching the learners and their teachers will begin to show us some respect and recognize the wisdom that we the elders (knowledge holders of the zulu culture) have. Our ancestors are always making efforts to help us here on earth so we will not suffer much pain and agony that is why the ancestors are always telling what to do about our lands, forests, water-bodies, wild animals so that we will benefit and at the same time keep for generations to come. When everyone (ourselves and the learners in school) get serious with the cultural way of caring the nature we will have great peace of mind and comfort for our soul, spirit and body. Our cultural group’s knowledge that our ancestors have given them will not be lost but we will all help to protect it and keep it well because the school people can put some of the knowledge on the computer and make them into books. Now people believe more in computers, television and phones that it makes life much more easier so they don’t even worry themselves about our culture and what the ancestors say about our water-bodies, plants and animals. Because of this I think that the school can create something with computer about the way our ancestors kept the environment and learners will use it and they will know a lot about importance of our culture and stop following other people’s culture. The learners and their teachers will see the relevance of we the IK-holders of the Zulu culture as they will consult us and invite us to the schools to teach their learners. This will also create a beautiful relationship and friendship between us. We will understand the problems of the schools and they will also know the problems in our communities because

they would come here to visit the learners and their teachers will find it easy to do the teach and learn things that are from their own culture. When they go to school and then they decide to throw away their culture and stop respecting their elders who have the wisdom for their communities that will not be good so I know that we you teach these cultural values and care for nature in school it will help bring what is lost. Also because these things they will learn in school, they will also learn more from the home and the community they will understand the things better and will do well in their learning and in their exams in school”.

Appendix 22c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Diviner-Spiritualist's (Sangoma) Narrative

When the Zulu Diviner-Spiritualist (Sangoma) was asked about the challenges anticipated in the teaching of the cultural values and care for nature in school or teaching into SHS Life Sciences Curriculum, the Zulu diviner-spiritualist (sangoma) narrated that:

“The love we used to have for each other and each other’s family is fading away and this making is difficult for us to work together to protect our water-bodies, forests, animals and lands because everybody feels he or she should do everything to survive so even if what they will do will destroy the nature and affect other people they don’t care. That’s why some people can throw rubbish in our rivers and don’t even mind what happens after. Teachers are likely to face a lot of problem when they try to teach our cultural practices for protecting nature in their schools because even publicly people make us feel bad or stigmatize us and they wouldn’t want to even have anything to do with us and our medicine nor with our practices. Many people wouldn’t even want to take our products and sell in the shops or use it. For instance, if you pull out your traditional thing in public people raise eye brows. Sometimes people can just look down on our cultural practices because this apartheid came with the way to take away our strength. The colonial people saw that they could not defeat us the black man with our beliefs so they came up with statements like, ‘this practice is superstitious and barbaric to the west’. Truly, the respect for our culture is almost gone because some people think that, it is not modern and that what is modern is what people from abroad (Europe and America) do. And so they will be saying that these cultural ways of doing things are archaic so they should throw them away. As I said before, already people look down on the cultural practices of our people because they feel that the things we do are all past and gone and now useless or archaic. There is politics in everything we do now so I think that because of politics some people will fight you and not allow you to teach these cultural things in school. Some learners can even say they don’t like to study things like that and it will even bring more problems. The children in school will ask a lot of questions to show them some of the things you will be teaching but some of them you cannot answer if the ancestors don’t tell you so you can bring them for visits to our places so we will teach you all the things you don’t know”.

APPENDIX 23: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU DIVINER-HERBALISTS

Appendix 23a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Diviner-Herbalist's Narrative

When the Zulu Diviner- Herbalist (Inyanga) was asked about how these cultural values and care for nature could be taught at school or teaching in SHS Life Sciences Curriculum, the Zulu diviner-herbalist narrated that:

“You have to use experts in everything you do so you can get the best results. The teachers can organize regular programs and call us who have more knowledge in the traditional and cultural things to teach the learners. It is important that the learners get to know what we do so that when they are in school or finish school and work in the offices they will not say things bad about us that they do not know to the extent that they feel ashamed of us to even identify with us. I think therefore that, the teachers and their learners could organize themselves on a planned visit to meet us here so we teach them what we actually do and the knowledge about our job and our cultural group value and care for the environment that they will not hear in school. teachers and learners should all become conscious of the fact that their culture is their culture and their traditional leaders are their leaders and they cannot throw away their culture and these people who are their leaders away...beside they should realise that the ancestors have done great deal of work both emotionally, spiritually and physically to ensure that both the culture and the little lands and all that are contained on it like the forests, the water-bodies, the wild animals are belong act and them away. They cannot relegate the elders to the background because nor put them away for nothing because in the near future they will need them. If the teaching of our cultural group's way of caring and valuing of nature is going to be successful, the learners should first of all start clearing their minds from any mentality that the white man is greater than them and therefore learning anything that African is inferior. There are a lot of spiritual things attached to the things in nature that when young people hear they can be scared and become afraid but it is not everything you can explain in school. For instance some of the plant used for normal physical things can also be used for other spiritual things. The teachers should therefore teach the physical aspect and benefits that they know and invite us when it comes to the spiritual aspects. How can you teach someone a cultural practice without using their own language that they speak? And if not it will make the teaching

difficult because some of the natural things like most plants, animals we do not even know their English names too the things you teach too must be the things we teach in our culture to our own people, I mean our own knowledge and wisdom that we came to hear our elders teach. And if you are to teach our knowledge too, then you will do it better by teaching it the same way we also do our teaching here, like how we use something like proverbs to make you think deep and become wise so you will not destroy our natural environment for us. People who use computers to do things are accepted more in these days than those who are not using computers for their work and that is why sometimes, some people think that traditional things or our traditional healing is not good because we are not using computers to heal and check the body of people. So since the learners are always in school where they use computers, it will be better if government and the school leaders could create some computer programme for developing all the knowledge and wisdom of our ancestors that show the way we care and value the nature and which the learners can use to study about their culture and this will help them to see that our cultural things are also very important since they are also on the computers”.

Appendix 23b: Prospects of Teaching Zulu’s Environmental Ethics in SHS: The Zulu Diviner-Herbalist’s Narrative

When the Zulu Diviner-Herbalist (Inyanga) was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching in SHS Life Sciences Curriculum, the Zulu diviner-herbalist (inyanga) narrated that:

“The wisdom of our ancestors that they have left for us, people who go to school normally don’t take care of it (the wisdoms) and many times feel ashamed to be associated with it. But I believe that if we can teach them (the wisdoms) very well in our schools, the learners will start loving the wisdom of our elders that help to protect the lands, forest, water-bodies, animals we will all be able to protect what is left for future. There is so much wisdom in Africa that even our own people cannot see because they have been made to feel inferior because of apartheid. For instance our medicine can heal both physical and spiritual sicknesses. When the children learn our wisdom very well in school and apply it the people will begin to see how great we Africans people can think and help solve the problems of the world. When the wisdom and knowledge of the elders are taught in schools and the elders are consulted or invited as resource persons for most of the school programs the respect and reverence for them that is almost lost will be restored. We will all be excited deep down in our spirit if all the schools and other people in the community start following what our elders have been teaching us about our lands, water-bodies, plant and animals. We will have peace within us if we follow the wisdom of our elders with the learners and teachers in the school. We should all know that before there was any form of medicine found in pharmaceutical shops today, our people were taken care of with the medicine of their traditional healers because the traditional healers are endowed with a wealth of knowledge and wisdom about giving wholesome healing to different kinds of ailments and sicknesses. Such knowledge we have can be preserved and protected when the schools allow our wisdom and knowledge to be taught and recorded for the learners to learn what we teach. We would be able show some oneness among us in the community and the school people who usually feel that they don’t really need us when they the school visit us and we also are invited by them to come to the school to teach certain thing. There will be nice relationship and we can interact very well especially when they (learners and teachers) come for some community engagement programmes. We (knowledge holders and IK-holders) would also see that we are relevant to the school because they would consult us

and also invite us for programs. Moreover, much as going to school is very important, meanwhile when it comes to learning and passing exams it is also a different thing. But I think it is because most of the things taught in school has no bearing on what goes on in the local community or in the learners' experiences. All the same I am of the view that this particular thing (cultural values and care for nature) we are talking about will not be too different for the learners when they will now be learning it in school and they will also have the opportunity of communicating in their local language and this will even enhance the teaching and learning of it and make them (learners) pass their exams on it very well".

Appendix 23c: Challenges of Teaching Zulu's Environmental Ethics in SHS: The Zulu Diviner-Herbalist's Narrative

When the Zulu Diviner- Herbalist (Inyanga) was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or teaching in SHS Life Sciences Curriculum, the Zulu diviner-herbalist (inyanga) narrated that:

“The days when we could correct someone else’s child in our community is being lost completely in our society and this makes it a great challenge to work together towards a common goal of say keeping, protecting and preserving our natural resources for future generations. Many people (especially high-ranking people in society) look down upon the knowledge of traditional people and their practices and those of us traditional healers and our practices are looked down upon too but in the night, some of them secretly come to us. Meanwhile in public the same people wouldn’t want anybody see them to be associated with us. Nobody feels ashamed to walk into a pharmacy to purchase a drug, but many people would rarely come out that boldly to buy drugs from traditional healers. Even the government build clinics for the others who use western medicine but do not build traditional healers’ clinic and special pharmacies for us. But if they give us the opportunity, we can educate the public. Unfortunately, they just stigmatize our culture and the wisdom that our ancestors have given us. Despite the many bad statement used to label our cultural practices such as being, ‘barbaric’, ‘superstitious’ and what have you, the paradox is that they (those who castigate us) do not label our rich natural resources which is part of us, with similar words as being, “barbaric resources’ and, ‘superstitious resource’ meanwhile all the natural resources are connected to the people who have used their, ‘barbaric’ and, ‘superstitious’ practices to protect and preserve the environment. You can clearly see they utterly love our natural resources but hate the people and their tradition but we and our resources are inseparable – our mineral resources, our rich biodiversity but not the people...this is an unfortunate situation. If you don’t like us and if you look down on us and our practices then you better look down on our natural resources because we are associated with them. Many people see the cultural ways of doing things in Africa as primitive and archaic and this will be a challenge during the teaching as well. And already people look down on the cultural practices of our people because they feel that the things we do are all past and gone practices and are now useless or archaic. But besides all of these there is politics in schools, offices, hospitals, everywhere and even my job, the only

reason why they are not building any clinic for us but only clinics for white medicine are all because of politics. I think that politics can also be a challenge in the school if you want to teach these cultural values and care for nature as we have been discussing. Our children want to know the details of everything but some things are hidden to the mind of a child because it is not everything they can understand or take it in at certain stages of their so truly it is not everything you can teach the learners or be able to answer them because I know many of them will tell you to do some experiment to see for instance if there is a spirit in a particular river but you should know that as for the spiritual aspects you cannot teach, that is why you have to invite us to the schools to teach certain aspect. As I indicated earlier some things are very deep and they are connected with spirits, as a result you will never know even if you are own children because we cannot tell you as you may not be able to take it and will never know about them unless probably you are going under training to be a herbalist like myself”.

APPENDIX 24: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU YOUTH

Appendix 24a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Youth's Narrative

When the Zulu Youth (intssha) was asked about how these cultural values and care for nature could be taught at school or teaching in SHS Life Sciences Curriculum, the youth narrated that:

“I think that the schools can organize some forums where they will invite the IK-holders like the chiefs, sangomas, inyanga, elder and other traditional leaders to help in teaching the learners the cultural ways of caring and valuing nature. I do think that having an excursion to places and teaching learners at the place will be the best since this aspect has to do with the nature studies of the natural environment. The learners could even visit the cultural villages to appreciate the local knowledge of our people so they will not look down upon them. Everyone in our culture should understand that our ancestors have done a lot for us by ensuring that the white people did not take everything we have and could not remove our culture and we love our culture too...But I am not happy at all when I see people who feel that their cultural practice is inferior to other people's culture and this is wrong mentality, so the teachers should teach the learners to embrace their culture and not look down on it. It will be better if our people in school would be confident of their cultural things and not feel ashamed of it as though they are of no value and that only the lifestyle of the Europeans, America, Asia are the acceptable ways of doing things in our modern world. The old people's habit of stopping you from doing something without telling you the reason behind whatever it is. In addition to their hiding of the knowledge deep down some particular practices and instead keep telling you scary stuff about certain aspects of nature like plants, water-bodies, lands, forests, wildlife, I think this way of dealing with certain matters by our elders should be changed and the main reason be said to the learners. Also I believe that using the isiZulu language of the people to teach during this aspect will be the best and will even make the teaching nice and interesting...I am saying this because sometimes it is even very difficult to tell a nice story our parents taught us in English it is not our mother tongue...and if they teach too they should be taught like how the elders and our parents taught us because you always remember what you learnt in the community, or from your friends or an elder told you but the school one you easily forget it...the elders

they teach you everything whether spiritual things or physical things so that you will be cautious in your actions to the natural environment. As for now almost every one of us in school use computers and internet for the things that are studied. I for one love playing a lot game on my phone with many apps downloaded from google play store and so do many of my friends and even many elderly people too. I therefore think that if some kind of a computer programme is developed that has all the various practices of our culture and how we care and value nature even from the time of the ancestors till now, I believe it can make this teaching very effective. This is because I am sure many of the learners would appreciate it more and even create more school interactions that can make things work well in school teaching”.

Appendix 24b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Youth's Narrative

When the Zulu Youth (intsha) was asked about prospects anticipated in the teaching of these cultural values and care for nature at school or teaching in SHS Life Sciences Curriculum, the youth narrated that:

“People usually take what they learn in school as very important and therefore if our cultural practices for preserving the nature are taught effectively in schools, the learners will take it seriously even when they come home. By so doing we will then be able to protect the natural resources we have for ourselves and the future generations. The histories of the Zulu people show how strong and wise the ancestors were during times of war and so are many African tribes. And I am of the view that if we can put all the different knowledges and wisdoms of the blacks into our school educational system we will see the good and great impact it can have. By so doing, it will bring to bear how we (black Africans) can also reason thing out to help our educational systems and even the whole nation. With this, I believe that how big the African mind is will be revealed to all the world and then the respect for Africa will follow. People will start respecting the knowledge holders of our culture and not think they are archaic if the schools start teaching things that will need their (cultural knowledge holders) contribution. It is disheartening when you see the way some people carelessly destroy our natural resources, therefore I am of the view that if we teach these cultural aspect of caring for nature and learners together with all others in the community we will all have our peace in our soul and within our spirits and our ancestors will not punish us with calamities. When we study things in schools they are usually documented in different ways and because these cultural values and care for nature would be documented it will help to preserve and protect the knowledge of our elders and we and the future generations can study it for the benefit of all members of our society. And in the teaching too the learners will get to know what really goes on in the local communities as they would go there (local communities) on some occasions and learn a lot of things. The elders in the community would also feel important and there will be nice interactions. Learning about your culture would be more interesting than doing subjects that are very different from what you know from home or at least hear about and see regularly. Because of this I am of the view that the things that will be taught will have more of the cultural

aspect and cultural practices. Thus, the learners would easily grasp what will be taught and perform better too when given some test or assignment or exams on it”.

Appendix 24c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Youth's Narrative

When the Zulu Youth (intsha) was asked about the challenges anticipated in the teaching of these cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, the youth narrated that:

“The way the world is changing now it is very difficult for us to work together as one people to fight for a common goal which is to fight environmental conservation problems. Because can you imagine that people sit in taxi's in our communities and towns and would be throwing stuff in the middle a first class roads? People still put rubbish in some of our water-bodies it's unthinkable. One of the main challenges that the teaching of such cultural values and care for nature will be confronted with is the stigma that is attached to the local knowledge associated with it. Do you know that sometimes even people from our culture who seem to have had some kind of exposure feel they don't need these cultural ways that our elders used to care for nature? Our oneness as I was told of is no longer there because I am told there was stronger unity and oneness among our people than we are seeing today. But that the colonialist saw that there was no way to defeat our fore fathers so they started making comments of the cultural practices as being barbaric and superstitious and this made them loose their strength of working together. In many places, they have no respect for African traditions and even our own people who are in school. So, some of the challenges we will face if we want to teach these cultural values and care for nature in school, will be the comment that they are old-fashioned and from primitive minds. Also Politics is in the schools too and some people can decide that they don't want them to include something like that in school. There is a habit of the elderly people in our cultural group, who if they don't want you to do this or that thing because of a hidden knowledge or mystery deep down our interaction with various factors in nature (the lands, water-bodies, forests, wild plants and wild animals) they (elders) will just say something that will make you fear in interacting with that aspect of nature without telling you the honest fact or the hidden thing”.

APPENDIX 25: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU SHS LIFE SCIENCES TEACHER 1

Appendix 25a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 1 Narrative

When the Zulu SHS Life Sciences Teacher 1 was asked about how these cultural values and care for nature could be taught at school or teaching into SHS Life Sciences Curriculum, the Teacher 1 narrated that:

“One of the best pedagogical strategies is to get a resource person in any technical area that you are teaching and this will enhance the teaching and enable free flow of ideas so I suggest the IK-holders of the Zulu culture be invited for such teaching. And I do think that if the schools tour places where there are cultural practices like the ones related to the natural environment that we are discussing now, I am of the view that it will go a long way to enhance the teaching and teaching process. Appreciating one’s culture should also be a key area to consider in the in the teaching process because any form of disinterest in the culture would make learners not be attentive to what will be taught and as much as lie in the power of the teachers and their learner, they should recognize the efforts of the ancestors in ensuring that they have helped to keep their culture and the natural resources. A certain kind of mentality should leave all the learners and we the teachers too about how we sometimes feel as though we are inferior to other races and that we have to throw away every one of our cultural practice to take a foreign one. Many of the cultural ways for the conservation of nature in our cultural group are based upon spiritual connections that sometimes are scary and can cause fear for interacting with nature and therefore in my view those aspects must be well tackled if not completely removed. There was definitely something very sensible that made these our forefathers’ cultural ways of valuing and caring for nature work. Also in teachings like this cultural things, the local language will enhance it and for me I am of the view that much as it is our cultural values and knowledge about nature that we will be teaching, the knowledge holders would have been the best teachers but even in their absence we as teachers should endeavor to learn the way they teach using things like stories, proverbs, fairy tales, dreams, taboos etcetera and also teach deep things that touch all the aspects of human personality but I believe that we as teachers can find a way to refine it and mix it with our own teaching strategies at a point although we will not have to change their content that they teach. Remember, we live in a

dispensation where knowledge has so widely advanced that people are running after computer technology and softwares that enhance teaching. ICT is becoming a must in every classroom teaching and I am of the view that something concrete must be done with, to make teachings of such cultural values attractive to the current generation of learners. This could be done by development of computer softwares related to practically all the traditional or cultural aspects related to the natural environment in addition to the various means that the IK-holders used to care for nature. Also, the various practices that they adopted to keep and preserve natural environment that made them sustainable could all be captured on the software”.

Appendix 25b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 1 Narrative

When the Zulu SHS Life Sciences Teacher 1 was asked about prospects anticipated in the teaching of the cultural values and care for nature into SHS Life Sciences Curriculum, teacher 1 narrated that:

“One of the greatest benefits of people becoming conscious of the natural environment is the fact that they will help preserve for the future generations that is why teaching our cultural ways of caring for nature will be very helpful. The learners would be able to learn at home and make proper association of what they learn in the formal school setting because there would be a link between what they study in school and what they naturally encounter at home. By so doing and in such cases, the African mind of the learner will be given the necessary respect and not look subservient as it seems to be. There is a greater hope of restoration of respect for our culture if our cultural values are upheld in our schooling system. Our traditional leaders and IK-holders of our culture will have their respect restored from the different quarters of educational hierarchy. There’s nothing as comforting as seeing a well-kept natural environment without any single pollutant, you will feel at peace within your spirit and your soul. Teaching these cultural values on nature will definitely come with a curriculum and a text book and this will mean that it will be a great avenue to keep and preserve the knowledge for the benefit of society without being lost. By the interaction with the community leadership and IK-holders, a kind of a mutual relationship will begin to develop in that the learners will actually see that the things about their culture are very relevant. All because the schools may bring on board the IK-holders to teach or interact with them and the IK-holders would also feel that they are really wanted because even the schools are giving them a place to operate. There will be good and relevant relationship at the end of the day. Also, prior knowledge base of learners are very fundamental for building on your new knowledge in the classroom situation. And if it so happens that the learners are already learning in a cultural context, it would not be difficult to pick up what they would be taught in school and they are even more likely to be involved in the lesson in such instances. Understanding the content would eventually lead to passing exams set on such content. Therefore, the learners would most likely do well in their exams if they are taught such cultural things that they are familiar with or at least it would not be far-fetched”.

Appendix 25c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 1 Narrative

When the Zulu SHS Life Sciences Teacher 1 was asked about the challenges anticipated in the teaching of these cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, the teacher narrated that:

“One of the main challenges that will make it difficult in our attempt to restore the care and cultural values placed on nature and natural resources is the loss of communal sense that made our people work together as one. But sad to say, the common adage that says everyone for himself, God for us all, is taking its toll on amaZulu. One of the key challenges to the teaching of these cultural ways of conserving the environment will be the way the current generation stigmatizes the cultural practices of our people. The traditional leaders are not even accorded the needed reverence they deserve in society. Many people feel their position does not count. One other challenge to confront is the general perception that many African cultural practices are barbaric and superstitious. We should be able to defend again this wrong outright statement against African cultures. We will surely be confronted with the statement like, these are all old-fashioned and archaic practices that are irrelevant. Political stance and peoples human rights and all of that can make some key people who could make the teaching of such cultural values and care happen smoothly, even decide he or she is not going to allow it to be done the way it is supposed to be and nothing can be done in such cases. Again, the older people deep down themselves have the knowledge of the thing or reason for telling you (anybody) not to interact in a certain way with this or that component of nature but will not tell you. And rather put fear into your heart and normally when you grow old or mature and they perceive you can understand such mysteries, that is when the elders will tell you things but this should not be the case”.

APPENDIX 26: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU LIFE SCIENCES TEACHER 2

Appendix 26a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 2 Narrative

When the Zulu SHS Life Sciences Teacher 2 was asked about how these cultural values and care for nature could be taught at school or teaching in SHS Life Sciences Curriculum, the teacher 2 narrated that:

“To make things quite simple and interesting, I will suggest that experts in the field, that is IK-holders of the Zulu culture with the knowledge about the natural environment be invited to assist in teaching the learners on such cultural issues. Undertaking tourism and excursion are ways of getting cultural knowledge of a people’s environment, therefore if there is some frequent excursions and tour to some of the places where such cultural things are still relevant, it will boost learners’ interest and they will be able to reflect on a lot of important environmental issue that will help the nation. And one aspect that would have to be looked at will be how learners would be interested in the cultural stuff and therefore effort would have to be made to ensure that learners enjoy what is in their culture by teaching to become cognizant of what their culture holds for them, and has done for them and more especially realizing the effort the ancestors to ensure that irrespective of what they went through during colonialist rule and apartheid, they still did their best protect their culture. Probably, even teachers could ask the learners some of the things they think they could do to make the learning of it interesting. Every culture has to be proud of themselves despite what happened in the past through colonialism and apartheid this because we can’t go back nor reverse the evil that has already happened. We can change the future instead. But I still think the effect is still in the minds of many of our people and even more in the minds of learners who go to certain higher level quintile schools in this place. Notwithstanding, I still feel that many of our people still feel that they don’t match up with people from certain continents like Europe and America and so issues related to their own African culture are usually not upheld. There should be total decolonization of our minds. Our traditional people’s way of caring and placing value on nature are mostly linked to emotions and spiritual attachment. But naturally many of us are afraid of things that has spiritual implication and so for the teaching such in school I suggest that those aspect that can make a person afraid be removed from it and rather we should find out what reasoning the elders had before saying those spiritual things. the indigenous language

of the people have all the deep things (the deep knowledges and wisdom) they want to say and therefore to teach these cultural ways of conserving nature, the peoples (which includes myself) local language, isiZulu must to be the mode of teaching although we can intersperse with English but at least 80 percent of it must be isiZulu. The teaching methods could be a mix between the different types of teaching both the indigenous and regular ones used in our schools. Also, there should some forms of modernized teaching tool that would be engaging the learners, that is some kind of a hands on experience and this could probably come from a particular apps or computer software that has detailed aspects of these our cultural values and care for nature that our learners can be engaged with and made in a such a way that it would have the wisdoms of the elders. This should also capture probably some large vast areas that the elders could have probably preserved with their wisdoms as compared to current state of the environment. I believe doing this and other innovative things may pique the interest of the learners more and more and even for the fact that it would be developed in the local language”.

Appendix 26b: Prospects of Teaching Zulu Culturally-Specific Environmental Ethics in SHS: The Zulu Life Sciences **Teacher 2 Narrative**

When the Zulu SHS Life Sciences Teacher 2 was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, teacher 2 narrated that:

“When learners embrace their own cultural ways of doing things it will make it easy for them and we all be able to take care of what we have without the feeling of compulsion or coercion this this will let us all protect the little precious lands, water-bodies, forests, animals so that the future generations would also come to enjoy. You know when learners are given opportunity to learn in their own cultural perspective, making contributions in school would not be difficult because learners can reason from the cultural setting they grew up in and relate and make associations with what is taught in school. They would be able to make reasonable deductions and contribute to more knowledge and this makes the African mind greater. Teaching our cultural aspects of caring and valuing nature will generally bring our cultural values into the limelight and people will start recognizing it like never before and this will also eventually lead to restoration of the lost respect for our traditional leaders and the IK-holders of our culture. Again, I am of the view that when this is done the learners as well as we the teachers and people in all other sectors may work together with the local community as they see the value and good impact of it on preserving the natural resources. And embarking on such will bring peace of mind and our spirit will no longer fear for the future of our children but rather be at peace. Moreover, through teaching these cultural aspects of environmental conservation, we will eventually preserve and protect the wisdom of the IK-holders of our culture for the benefit of all of us and there will be healthy relationship and rapport between the school and local community as they (IK-holders) may feel that their knowledge is important for the school world too. Again learning in such cultural context would definitely enhance the comprehension of the subject matter by learners and therefore they stand higher chances of excelling in their exams of such subject matter”.

Appendix 26c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 2 Narrative

When the Zulu SHS Life Sciences Teacher 2 was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, teacher 2 narrated that:

“Our generation is going through very challenging times because people are now concerned only about themselves and showing sympathy is even a problem. The cultural ways of conserving the environment will actually need the cooperation of all but now that we are losing our togetherness and care for each other, I am wondering what is going to happen. Besides many people in society now feel it is kind of shameful to practice certain traditions. You imagine a common thing like the use of cow dung to even fertilize farms people are shunning it using the same kind of wrong thinking about our culture. Also stigmatization of the cultural values and care for nature will be one of the main challenges. As you may be aware, people generally look down upon majority of the cultural practices of Africans and that is why even though we are in Africa, many of the things we study in school has nothing to do with us but westernized. Our cultural practices are usually considered to be full of superstitious beliefs and therefore branded as irrelevant to current society and regarded as barbaric. Another challenge will be the disrespectful comment that, what we are trying to teach about our own African perspectives, cultural values and care for nature are archaic and are not needed. Democracy and political affiliation could either allow these to be taught in school or not. Also the present generation is born in a science and technological age and would therefore demand proof and experimentation to explain or justify any claims that will be made by the cultural ways of preserving and conserving nature”.

APPENDIX 27: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU LIFE SCIENCES TEACHER 3

Appendix 27a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 3 Narrative

When the Zulu SHS Life Sciences Teacher 3 was asked about how these cultural values and care for nature could be taught at school or teaching into SHS Life Sciences Curriculum, teacher 3 narrated that:

“You can’t do away with people who have substantial knowledge about a particular area of study and it will be prudent that the schools seek out for people from the community who have wisdom in such area of study to come and engage their learners. Our schools could organize regular excursions to places that are related to such cultural way of caring for the environment and interacting with the knowledge holders. I believe learners would need to fall in love with their cultural practices and know that their culture is their culture and it cannot be relegated to the background...and if nothing at all, the mere fact that the ancestors are remembered in many homes, so should the ancestors and the elders who are ensuring that our culture is still preserved should be commended for what they have done about keep our culture. This will go a long way to enhance this objective. In fact if this teaching would work smoothly and achieve the purported results, there should be complete removal from our minds any colonialist damaging thought about our culture and this applies to both teachers and the learners and I am of the view that doing this will help to uphold our cultural values. I do know a lot of the aspect of our cultural practices for taking care of nature but my concern is that they have too many spiritual implications and this has to be resolved with traditional leaders coming to explain some to us in our schools because sometimes even as adults you can become afraid how much more these young learners. The most significant part will be how to teach the spiritual aspect and device ways of teaching the learners the wisdom behind the actions of the elders. Again, I believe that ICT should be added in very special way with the other suggestions and when this is done, there would be a change in the mentality of the learners and many other educated people who are throwing away their cultural values to embrace only the western ways of doing things. Imagine having a software that is purely in your local language with all the various functionalities sound, responses, quizzes and answers, it would be interesting to deal with, wouldn’t it?. The teaching strategies should take the form of what was and is done by the elders and was practiced by the ancestors whether stories, proverbial sayings, dreams and

the many other ways and in my view, the local language of the learners should be used to teach these aspects as it will bring out the depth of some meanings and enhance understanding of learners and the depths of the indigenous wisdoms should be taught”.

Appendix 27b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 3 Narrative

When the Zulu SHS Life Sciences Teacher 3 was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, teacher 3 narrated that:

“We will be able to preserve what we have in nature now for the future generations as the learners and all of us will have better understanding of the limited resources that we have and will teach many others in their communities. The identity of the learners would not be lost in the process of teaching and being in formal school that is more westernised. Rather they would be able to express themselves freely without any fear and intimidation and make proper contributions to promote learning. Doing this will make them realise the greater capacity of their thinking abilities. We stand a better chance of bringing a kind of a balance in the kind of knowledges that we study in school if for instance the cultural aspects of learners are given the necessary priority. It will also yield an indirect by product which will be the respect for traditionally constituted authority and other knowledge holders of our culture. When teaching these cultural aspects become effective, and many people in the schools embrace them and apply them, we will see a great change in the natural environment. And we will begin to feel comforted as people would naturally care for the environment and its natural resources willingly we will have peace and comfort for our souls and spirit. Again, teaching these cultural aspects of caring and valuing nature in our schools will serve as an avenue for us to preserve and protect the knowledge and wisdom that the previous generation had and current generation have and use it to help the next generation value and care for nature from their cultural way. Moreover, if learners go on tour in the local community, get involved in activities in the local community, their mindset about life and studies will be transformed. And because the IK-holders of the culture would also be invited to come engage with the learners, they would definitely interact well with them and the respect they have for the teachers will be transferred to the IK-holders too. Again, the advantage of teaching contents that has basis on usually day to day life, is the fact that it helps to really make association with what is taught in the classroom to what is known, and I am therefore of the view that, when learners are taught these cultural values and care for nature from their own culture they stand the chance of getting more involved in it. And they will understand things better, besides they would be able to ask relevant

questions and make contributions that would enhance the teaching and at the end of the day they would also do well in their exams”.

Appendix 27c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 3 Narrative

When the Zulu SHS Life Sciences Teacher 3 was asked about the challenges anticipated in the teaching the cultural values and care for nature at school or teaching into SHS Life Sciences Curriculum, teacher 3 narrated that:

“A united force is what builds a nation and with this our forefathers who were living in the community type that cared for each other, respected each other and especially the instructions of traditional leaders a lot was done by them in terms of valuing and caring for nature. But we are seeing a different breed of people now who only look inward; therefore we really need that consciousness or sense of communalism to make this teaching work. Again, we have to anticipate this challenge that the aspects of cultural ways of caring and valuing nature is likely to be seen as part of the superstitious African practices and beliefs which some of the people say have outlived their relevance. This is because people who describe our cultural values and care for nature this way have no respect for African way of doing things. Also there will be challenge coming from the disgusting statements like: these are primitive, old-fashioned and archaic practices for caring for the environment! Political will and human rights may or may not support this worthy cause because it may not be in favor of a particular greedy person who wants to find their own ways of exploiting all our resources and shipping them abroad. Moreover, the current learners are living in an information world where they can access information at the click of a button, therefore to teach certain thing that you cannot do experiment to prove it's phenomena will be very challenging because the learners would definitely ask you to prove to them whatever you teach”.

APPENDIX 28: SCHOOL RELATED NARRATIVE ANALYSIS OF THE ZULU LIFE SCIENCES TEACHER 4

Appendix 28a: How to Teach Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 4 Narrative

When the Zulu SHS Life Sciences Teacher 4 was asked about how these cultural values and care for nature could be taught at school or teaching into SHS Life Sciences Curriculum, the teacher 4 narrated that:

“We would need extra hands in terms of the level of content knowledge in an aspect like this; therefore I am of the view that more knowledgeable people, especially the IK-holders of our culture be called upon to help in teaching the learners these aspects. Also going to visit places like Zulu cultural villages in addition to the classroom teaching will make the studies more interesting and in addition to seeing places which have been kept intact by the cultural practices would make it more appreciable. Cultural values are very paramount if someone would be able to learn things that are based on cultural practices. Learners would have to realise the essence of their culture and make them appreciate their ancestors and elders in order to enjoy related things about their culture. And until the learners and teachers continue to decolonize their minds from the thinking of being inferior to other races, this teaching of our cultural groups’ ways of caring and valuing nature cannot achieve good success. Because every indigenous way of doing things especially of the African people have areas that are related to spiritual things and this has to be looked at from the right perspective of the IK-holders of our culture, else it will be difficult to teach learners about such as aspects. The wisdom of the elders attached to the spiritual aspects of our cultural ways of valuing and caring for nature have to be taught instead of just the spiritual aspects. it will be much interesting to use the local language to teach it as learners will be able to express themselves very well and even narrate and quote proverbs that may be beneficial to the topic being studied...we have to follow the footsteps of the elders and knowledge holders ways they used to teach in the local communities and probably modify it, the only things is that we should not teach things different from what they wanted to pass across to us. Moreover, the present-day learners would want to go with what is trending just like us the teachers. But I think that people in general are losing interest in cultural aspects that we were born into. This is because there’s little or no computer software that are purely on our cultural practices regarding how we (Zulu cultural group) value and

care for nature, thus if we could have something like that it would help a great deal and more importantly restore respect for our traditions”.

Appendix 28b: Prospects of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 4 Narrative

When the Zulu SHS Life Sciences Teacher 4 was asked about prospects anticipated in the teaching of the cultural values and care for nature at school or teaching in SHS Biology Curriculum, teacher 4 narrated that:

“Many times our people who go to school are the ones who are likely to look down upon their own cultural practice that is helpful to their society and natural environment. I wouldn’t do that anyway because I really value my culture and wish that everything we even teach was in our culture. One of the prospects for such teaching would be that the learners would therefore have a new mindset that will make them respect their culture which have proved to be environmentally friendly and therefore motivate them to care for nature and preserve what is there for the next generation. Many of our learners usually feel intimidated when they are in class of mixed culture and many have the mind that people from other races are better than them in terms of their level of intelligence and usually because they cannot express themselves very well in the English language this becomes a limitation, meanwhile the other cultures do not speak our language, why are we tied to the corner and make our learners feel as though it is problem not to be able to speak another person’s language fluently. This is unthinkable! But if these cultural ways of learning about their (our learners) environment and all aspects of it are not so far- fetched the learners will be able to express themselves in ways that will reveal the higher levels of their thinking abilities. Doing this, to me will make the African mind greater. There is also a greater probability of people recognizing the traditional people in our society who are the main sources of our cultural values and when this happen there will be greater reverence for the traditional leaders and other knowledge holders from our culture. Besides there are lots of environmental dangers when you see environmental pollution therefore if we are privileged and the teaching of these cultural ways of caring for the environment get rooted in the learners who will also take it back to their communities, it will drastically reduce the current environmental pollution. And when this happens it will make our souls, spirits and body be at peace and in harmony with our ancestors. We will have a greater opportunity to document and preserve and protect the knowledge of our traditional leaders and IK-holders of the culture. There will be very cordial relationship among the learners and their local community for several reasons in that, the people in the community who would

provide them with some of the cultural values and practices would also admire the fact that they have been consulted by the learners for their wisdom. In addition, the learners will also learn to identify with the problems of the local community and cooperate with them in the attempt to solve such environmental problems. Again, learners are more likely to be interested in topics that has their culture as the basis and for that matter will be more involved in the teaching and learning process. And eventually the interest would make the learning less challenging and for that matter they would very likely pass all exams set on such aspects”.

Appendix 28c: Challenges of Teaching Zulu Environmental Ethics in SHS: The Zulu Life Sciences Teacher 4 Narrative

When the Zulu SHS Life Sciences Teacher 4 was asked about the challenges anticipated in the teaching of the cultural values and care for nature at school or teaching in SHS Life Sciences Curriculum, teacher 4 narrated that:

“Selfishness on the part of many people in our community today is a great devil that must be dealt with else we cannot achieve any environmental goal to preserve the natural resources that is the forest, land, water-bodies, that our forefathers left for us. In fact the gradual erosion and loss of the communal sense will pose a big challenge in this endeavor. We will face the challenge of stigmatisation of our cultural groups’ practices for caring and protecting nature – land, forest, water-bodies, wild animals as people already see most of what is done in our culture as having less value. Another challenge will be the thinking that is already known that the African cultures and practices are superstitious and barbaric, just to discourage people from doing things the African way but rather the Westernised way to make somebody somewhere be at an advantage while we disadvantage ourselves thoughtlessly. Also, the thought of African cultural practices being old-fashioned and of no much value in contemporary times will be one of the major challenges in the plan to teach the cultural values and care for nature by our people. People’s political orientation may or may not allow the smooth running of certain valuable things like this to be taught in school because some may oppose it. And it may also not run smoothly because there could be changes in government whose term of office may or may not favor such cultural values. I am also of the view that learners would demand a proof or an experiment to answer any bothering thought or statements made in the teaching about the cultural practices for conserving the natural environment. The challenge I am anticipating again are that learners would ask you the teacher to prove some of the aspects that are linked most especially, to spirits and other mysterious aspects. This is because the old-time way of telling children things without tell the reasons why you said this or that or many times trying to hide things from them (children) is past and gone because the learners will not take things on surface value”.

APPENDIX 29: CONVERSATIONAL INTERVIEW QUESTIONS

*Ques.1. What is/are you and your **cultural group understandings** with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?*

*Ques.2. What is/are you and your **cultural group perceptions** with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?*

*Ques.3. What is/are you and your **cultural group practices** with regards to how to value and care for nature – the earth, plants, animals, water-bodies ?*

*Ques. 4. **How** do you and your cultural group **communicate (make others aware)** your understandings, perceptions and practices for your value and care for nature (the earth, plants, animals, water-bodies) to other members of your cultural group*

*Ques.5. **How** do you think you and your **cultural group's understandings, perceptions and practices for the value and care for nature** (the earth, plants, animals, water-bodies) and the way you communicate them, should/could be taught at school/secondary school?*

*Ques.6a. **Why** do you have such views (benefits /advantage /prospects) regarding how you think you and your cultural group's understandings, perceptions and practices and the way they are communicated to others could / should be taught at school ?*

*Ques.6b. **Why** do you have such views (challenges /disadvantages) regarding how you think you and your cultural group's understandings, perceptions and practices and the way they are communicated to others could / should be taught at school ?*

APPENDIX 30: LETTER OF PARTICIPATION AND INFORMED CONSENT FORM

Letter of Participation

Dear Participant,

My name is Maxwell Opoku Jnr, I am a PhD student in Science Education at the Edgewood Campus of the University of KwaZulu Natal in Durban, South Africa. I am currently doing my fieldwork for my research in your locality.

My Cell Phone number is: +27 630345655; +233 5423102

E-mail: juniormaxi156@yahoo.com

Supervisor's name: Dr Angela James

Location of Supervisor: CU 139, Main Administration & Tutorial Building

University of KwaZulu-Natal, Edgewood Campus

Supervisor's E-mail: jamesa1@ukzn.ac.za

Tel: +27 (0) 31-2603438

I invite you to take part in my research study titled:

“An Exploration of the Akans’ (Ghana) and the Zulus’ (South Africa) Culturally-Specific Environmental Ethics: Implications for Culturally-Specific Senior High School Biology/Life Sciences Education Curriculum Development”

The study has the following objectives:

- 1) To explore the Akan (Ghana) and the Zulu (South Africa) cultural groups understandings, perceptions and practices for *their* Culturally-Specific Environmental Ethics and establish how these ethics are communicated to other members of their cultural group?

- 2) To explore the views of the Akan (Ghana) and the Zulu (South Africa) cultural groups and Senior High School Biology/Life Sciences Teachers on how to teach their Culturally-Specific Environmental Ethics in Senior High Schools?
- 3) To analyse why the Akan (Ghana) and Zulu (South Africa) cultural groups and the Senior High School Biology/Life Sciences Teachers have the particular views (prospects and challenges) about the teaching of their Culturally-Specific Environmental Ethics in Senior High Schools?

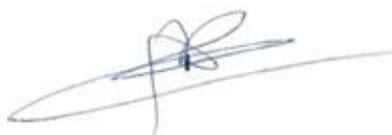
The methods used to meet the objectives of the studies are the following:

1. Conversational Interview
2. Observation of natural places
3. Artifacts collection

The conversational interview will be audio recorded with your consent. I will also make observation of particular places, events, or processes upon your decision and take photographs with your consent. Artifacts will be collected as well and observed or analysed if they are available and upon your consent. All data recordings and transcripts will be stored in a locked safe and used for academic purposes only.

Permission to conduct this research has been obtained from the University of KwaZulu-Natal. Any questions regarding participation and the rights of participants in the study may be directed to: Premlall Mohun of UKZN Humanities and Social Sciences Research Ethics Committee Research Office at mohunp@ukzn.ac.za or call him on 031 260 4557.

Thank you for your co-operation,



Maxwell Opoku Jnr

Informed Consent Form:

“An Exploration of the Akans’ (Ghana) and the Zulus’ (South Africa) Culturally-Specific Environmental Ethics: Implications for Culturally-Specific Senior High School Biology/Life Sciences Education Curriculum Development”

Declaration

I _____ (full names of participant) hereby confirm that I understand the contents of this document and the nature of this research project and I consent to participating in the conversational interview.

I understand that I am at liberty to withdraw from the research at any time, should I so desire.

Additional consent where applicable

	YES	NO
I hereby provide consent to audio-tape my interview		
I hereby provide consent to take photographs		

SIGNATURE OF PARTICIPANT

DATE

IFomu Lokuzibophezela (Iemvume) / Informed Consent Form (isiZulu):

“An Exploration of the Akans’ (Ghana) and the Zulus’ (South Africa) Culturally-Specific Environmental Ethics: Implications for Culturally-Specific Senior High School Biology/Life Sciences Education Curriculum Development”

Ukuzibophezela;

Mina _____ (amagama aphelele alowo obuzwayo) ngiyaqinisekisa ukuthi ngiqonda kahle okubhalwe kulencwadi kanye nobunjalo balolucwaningo futhi ngiyavuma ukubamba iqhaza engxoxweni ngiphendule imibuzo ebuzwayo.

Ngियाqonda ukuthi ngingenkululeko yokuzikhipha noma ngiyeke ukubamba iqhaza noma nini uma ngingasafuni, ngokufisa kwami.

Okunye okuvunyelwana ngakho

	YEBO	CHA
Ngiyavuma ukuthi ingxoxo yami nakho konke engikushoyo engxoxweni iqoshwe ngesiqopha-mazwi.		
Ngiyavuma ukuthathwa kwezithombe zesiqusami noma lokho engikhuluma (ngiphendula) ngakho engxoxweni.		

I-SIGNATURE YOBUZWAYO

USUKU

APPENDIX 31: GATEKEEPER PERMISSION LETTER FOR AKAN INDIGENOUS - KNOWLEDGE HOLDERS GHANA

SCHOOL OF EDUCATION
SCIENCE AND TECHNOLOGY EDUCATION CLUSTER
EDGEWOOD CAMPUS
PRIVATE BAG X03
ASHWOOD, 3605



The Regional Minister,

Ashanti Region

Ghana

Dear Sir,

REQUEST FOR PERMISSION TO CONDUCT RESEARCH WITH CUSTODIANS OF AKAN CULTURE

I am Dr Angela James, the PhD Supervisor of Mr Maxwell Opoku. I am sending this letter on behalf of him:

My name is Maxwell Opoku Jnr., a Doctor of Philosophy (PhD) student in Science Education Discipline at the University of Kwa-Zulu Natal in South Africa. The Title of my research study is “**The Akans’ (Ghana) and the Zulus’ (South Africa) Culturally-Specific Environmental Ethics: Implications for Culturally-Specific Senior High School Life Sciences/Biology Education Curriculum Development**”. The purpose of my studies is to explore the indigenous understanding and perceptions about and practices for Environmental Ethics as well as the underlying meaning the Akans (Ghana) and the Zulus (South Africa) give for Environmental Ethics. The research also seeks to explore the implication of such indigenous Environmental Ethics for developing a culturally-specific Senior High School Biology education curriculum. I hereby seek your permission to conduct this research with some custodians of the Akan culture – chiefs (ahenfo), traditional priest/priestesses (‘akomfoo’), traditional healers (‘adunisifoo’) and elders in the Ashanti Region. Data will be generated through conversational interview to seek their views on the prospects and challenges of integrating culturally-specific environmental ethics into the Senior High School Biology Curriculum.

I guarantee that the information gathered will be used for the purpose of the research only. For further information regarding this research you may contact; my supervisor Dr. Angela James (jamesa1@ukzn.ac.za) who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal or myself Maxwell Opoku Jnr.: +27 (0)63 034 5655/ +233 (0)542 083 102 juniormaxi156@yahoo.com

You may also contact the Research Office through:

Prem. Mohun

HSSREC Research Office,

Tel: 031 260 4557

E-mail: mohunp@ukzn.ac.za

Should you give permission for me to conduct research with custodians of the Akan culture –chiefs, ‘akomfoo’, ‘adunsifoo’ and elders please complete the following declaration.

I, Hon. Kwamso Asubonteng Regional Minister, Ashanti Region, grant permission to Mr. Maxwell Opoku Jnr.....to conduct research with custodians of the Akan culture - chiefs, ‘akomfoo’, ‘adunsifoo’ and elders in the Ashanti Region, Ghana. I understand that he will generate data by the use of conversational interview.

Hon. Kwamso Asubonteng

Name of Regional Minister

Maxwell Opoku Jnr
Signature of Regional Minister
REG. CO-ORD. COUNCIL
P. O. BOX 38
KUMASI

2/2/16

Date

Your cooperation will be appreciated

Yours sincerely

Maxwell Opoku Jnr

Maxwell Opoku Jnr

Thank you for your support and care

Dr Angela James

Dr Angela James (PhD)
Cluster Leader: Science and Technology Education
Senior Lecturer: Science Education
Co-Faculty Advisor: ENACTUS
CU 139, Main Administration & Tutorial Building
University of KwaZulu-Natal
Edgewood Campus
Tel: +27 (0) 31-2603438
Cell: +27 (0) 735114558
E-Mail: jamesa1@ukzn.ac.za

APPENDIX 32: GATEKEEPER PERMISSION LETTER FOR SENIOR HIGH SCHOOL BIOLOGY TEACHERS -GHANA

GHANA EDUCATION SERVICE

*In case of reply the
Number and date of this
Letter should be quoted*

Ref. No./CRDD/G.102/8



REPUBLIC OF GHANA

HEADQUARTERS
P. O. BOX MB.45
ACCRA

15th February 2016

DR. ANGELA JAMES
SCHOOL OF EDUCATION
SCIENCE & TECHNOLOGY EDUCATION CLUSTER
EDGEWOOD CAMPUS
PRIVATE BAG X03
ASHWOOD, 3605

Dear Madam,

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH WITH SENIOR HIGH SCHOOL
BIOLOGY CURRICULUM DEVELOPERS AND SENIOR HIGH SCHOOL BIOLOGY TEACHERS

We acknowledge receipt of your letter with the above-stated heading.

Permission is granted Mr. Maxwell Opoku Jnr. to conduct his research among the stated target population -- curriculum developers and Senior High School Biology teachers.

Mr. Maxwell Opoku Jnr. should let us know his schedule and the schools he intends to collect data in.

Best Regards.

CYNTHIA BOSUMTWI-SAM (MRS.)
DIRECTOR, CRDD
for: DIRECTOR-GENERAL

cc: Mr. Maxwell Opoku Jnr
School of Education
Science & Technology Education Cluster
Edgewood Campus
Private Bag X03
Ashwood, 3605

Curriculum Research & Dev
Division (C R D D)
Ghana Education Service

Despatched
17/2/16

**APPENDIX 33: GATEKEEPER PERMISSION LETTER FOR ZULU
INDIGENOUS - KNOWLEDGE HOLDERS – SOUTH AFRICA**

APPENDIX 34: GATEKEEPER PERMISSION LETTER FOR SENIOR HIGH SCHOOL LIFE SCIENCES TEACHERS – SOUTH AFRICA



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Nomangisi Ngubane

Tel: 033 392 1004

Ref.:2/4/8/730

Mr MJ Opoku
73 Josiah Gumede Road
8 Allislea Court
Pinetown
3610

Dear Mr Opoku

PERMISSION TO CONDUCT RESEARCH IN THE KZN D_oE INSTITUTIONS

Your application to conduct research entitled: “AN EXPLORATION OF AKANS’ (GHANA) AND THE ZULUS’ (SOUTH AFRICANS) CULTURALLY-SPECIFIC ENVIRONMENTAL ETHICS: IMPLICATIONS FOR CULTURALLY-SPECIFIC SENIOR HIGH SCHOOL LIFE SCIENCES/BIOLOGY EDUCATION CURRICULUM DEVELOPMENT”, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 25 February 2016 to 30 June 2017.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Zululand District

Pinetown District

Nkosinathi S.P. Sishi, PhD
Head of Department: Education
Date: 25 February 2016

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa ...dedicated to service and performance

PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004 **beyond the call of duty**

EMAIL ADDRESS: kehologile.connie@kzndoe.gov.za / Nomangisi.Ngubane@kzndoe.gov.za

CALL CENTRE: 0860 596 363; Fax: 033 392 1203 WEBSITE: WWW.kzneducation.gov.za

APPENDIX 35: ETHICAL CLEARANCE CERTIFICATE – UNIVERSITY OF KWAZULU-NATAL HUMANITIES AND SOCIAL SCIENCE RESEARCH



16 May 2017

Mr Maxwell Jnr Opoku (214585807)
School of Education
Edgewood Campus

Dear Mr Opoku,

Protocol reference number: HSS/1836/015D

Project title: An exploration of the Akans' (Ghana) and the Zulus' (South Africa) culturally-specific environmental ethics: Implications for culturally-specific senior high school Life Sciences / Biology education curriculum development

Approval Notification – Expedited Application

In response to your application received on 15 December 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

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

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Angela James
Cc Academic Leader Research: Dr SB Khoza
Cc School Administrator: Ms Tyzer Khumalo

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: ximbap@ukzn.ac.za / snymanm@ukzn.ac.za / mohunp@ukzn.ac.za

Website: www.ukzn.ac.za



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