An Exploration of the Intended, Enacted and Achieved Environmental Education Curriculum within the Social Studies Teacher Education Programme at a Nigerian University

David Toyin Aladejebi

215081776

A thesis submitted in fulfilment of the academic requirements for the degree of Doctor of Philosophy in Education in Environmental Education, School of Education, and University of KwaZulu-Natal

Supervisor: Dr Asheena Singh-Pillay

DECLARATION

I, David Toyin Aladejebi (215081776) declare that:

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

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

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

(iv) This thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other writers. Where other written sources have been quoted, then:

a) The words have been re-written, but the general information attributed to the author(s) has been acknowledged; and

b) Where the exact words have been used, they have been placed within quotation marks, and referenced.

(v) The work described in this thesis was carried out in the School of Education, University of KwaZulu-Natal, from January 2018 to April 2020 under the supervision of Dr Asheena Singh-Pillay (Supervisor).

(vi) Ethical clearance No. HSS/ 1672/018D was granted prior to undertaking the fieldwork.

Signed: _____ Date: _____

As the candidate's supervisor I, Dr Asheena Singh-Pillay, agree to the submission of this thesis.

Signed: A. Singh-Pillay_____ Date: 4-05-2020__

DEDICATION

This thesis is dedicated to the Almighty God, for the grace given to me to achieve this height in my academic journey.

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ABSTRACT

The global environmental crises relating to issues such as climate change and environmental degradation has become a thing of great concern to all nations of the world. In response to the impeding environmental challenges the Nigerian Government established the Federal Environmental Protection Agency that developed the National Policy on Environment Education. This Federal Environment Protection National Agency is responsible for provision of policies and guidelines for the management of the Nigerian environment and for ensuring that the Nigerian population is environmentally literate. However, despite the policy intervention to safeguard the environment and natural resources as well as the Nigerian population's high levels of literacy they are oblivious of the National Policy on Environmental Education goals and continue to degrade the environment. Consequently, the Federal Environmental Protection Agency identified inadequate environmental literacy as the factors responsible for Nigerian citizens degrading the environment.

The National Policy on Environment Education identified teachers of Social Sciences as key role players to promote environmental literacy among learners at schools and the communities within which they work. It is worth noting that the level of environmental knowledge acquired by the teachers will determine what and how they will teach. Therefore, for teachers to effectively play their roles of raising the level of awareness of the Nigerian population about demonstrating environmentally friendly behaviour, the need to acquire adequate knowledge about and understanding of environmental issues cannot be underscored enough. In other words, the teachers have very important roles to play in raising citizens that would take informed decisions aimed at achieving the sustainability of the human environment and its resources for present and future uses.

This qualitative study employs a case study research design within the interpretative paradigm in a bid to explore the intended, enacted and achieved Environmental Education Curriculum within the Social Studies Teacher Education Programme. The study draws on Remillard and Heck's (2014) model of the curriculum policy, design, and enactment system for its theoretical framework. The study was carried out at AA University in Nigeria and seeks to establish how the Pre-service Social Studies teachers are trained to teach EE in schools. Six Social Studies lecturers and twenty-

four pre-service Social Studies teachers were purposively selected for the study. The data generation was done through document analysis of two policy documents (the National Policy on Environment and AA University's SS curriculum/lecture pack) to ascertain the level of alignment between both; other data generation instruments are open-ended questionnaire, individual interviews, focus group interviews and classroom observation, while the data generated from the responses of the participants was analyzed through content analysis.

Findings from the study revealed that there is constructive alignment and convergence between the NPEE and the AA University's Social Studies curriculum in terms of the need being attended to by both policy documents, the targeted audience, the goals of both curricula and the content area covered by both curricula. Furthermore, findings revealed a divergence between the intended SS curriculum and the enacted curriculum due to the fact that chalk and talk/lecture method was predominantly used rather than constructive teaching strategies advocated for the training of the PSSSTs as contained in the SS curriculum. In view of the divergence observed between the intended SS curriculum and the enacted curriculum, it becomes difficult to achieve what was advocated in the SS curriculum/lecture pack used for training the PSSSTs. Additionally, findings revealed that the learning of EE is enhanced by the availability of resources to the SS lecturers, as well as the knowledge of the benefits derivable from EE on the part of the PSSSTs while the learning of EE is constrained by use of inappropriate teaching strategies by the SS lecturers, lack of adequate EE content knowledge (CK) and pedagogical content knowledge (PCK) on the part of the SS lecturers, insufficient EE content in the SS programme, insufficient financial resources as well as inadequate respect for the environment demonstrated by the PSSSTs. The study therefore recommends the use of appropriate teaching strategies (constructive approach) to train the PSSSTs, a review of the SS curriculum to include sufficient EE content, improvement in SS lecturers' EE content knowledge (CK) and pedagogical content knowledge (PCK) and the provision of sufficient financial resources.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAUA	Adekunle Ajasin University Akungba Akoko
CA	Constructive Alignment
CCVI	Climate Change Vulnerability Index
CK	Content knowledge
CGE	Commission on Geography Education
DHET	Department of Higher Education and Training
EE	Environmental Education
EFS	Education for sustainability
ESD	Education for sustainable development
ESE	Environment and Sustainability Education
FEPA	Federal Environmental Protection Agency
FFC	Fundisa For Change
FRN	Federal Republic of Nigeria
GDP	Gross Domestic Product
NAAEE	North American Association for Environmental Education
NERDC	Nigerian Educational Research and Development Council
NGO	Non-Governmental Organizations
NPEE	National Policy on Environmental Education
PCK	Pedagogical content knowledge
PSSSTs	Pre-service Social Studies Teachers
SD	Sustainable Development
SS	Social Studies

UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environmental Development
WEEB	Wisconsin Environmental Education Board.

CHAPTER ONE: INTRODUCTION

1.1 Introduction and Background

Nigeria, like any other country is faced with several environmental challenges which are linked to the rapid increase of Nigeria's population, technological advancement and the increased demand on the available natural resources (Aliyu & Amadu, 2017; Misfud, 2012). According to Masipa (2017) and De Beer, Dreyer and Loubser (2014) the continued demand and exploitation of natural resources is exposing the universe to dangers such as climate change, desertification, global warming and food security issues. In Nigeria, it is observed that despite high levels of literacy amongst the population, it continues to engage in activities which degrade the environment (Ibimilua & Ibimilua, 2014). These activities consequently result in pollution, loss of biodiversity, soil erosion, overfishing, deforestation, illegal panning, land degradation, veld fires, siltation of water bodies of various proportions and decrease in agricultural yield (Robinson, 2013; Saruchera, 2019). The prevailing environmental challenges that Nigeria encounters are indicative of the level of environmental awareness (or lack thereof), knowledge and attitude of the Nigerian population.

Furthermore, regarding the above- mentioned points, it is worth noting that the environmental challenges are caused by man's inhuman activities and uncontrolled use of the natural resources. The United Nations Educational Scientific and Cultural Organization (UNESCO) at Tbilisi conference in 1977 recognized Environmental Education (EE) as leverage to address the worlds' environmental problems. During this conference, a resolution was passed which emphasized the need to include EE into the formal education curriculum at schools and universities. According to Gough (2013), the position undertaken by UNESCO (1978) was in response to the high level of awareness about the dangers associated with the many environmental problems observed globally. Consequently, the education curricula of different nations were construed as a vehicle to raise awareness of and increase environmental literacy about the global environmental challenges.

Nigeria responded to the resolution adopted at the Tbilisi conference, via section 20 of the Constitution of the Federal Republic of Nigeria (1999, p 27) which elaborates that the "State shall protect and improve the environment and safeguard the water, air and land, forest and wild life of Nigeria". In other words, the constitution of the Federal Republic of Nigeria (FRN, 1999) foregrounds the right of every Nigerian to a safe environment as well as ensuring that the nation's natural resources are protected for the present generation and the generations to come. To support the fundamental obligation enshrined in the Nigerian constitution for the protection of the environment, the Nigerian Government has in place the Federal Environmental Protection Agency (FEPA) to address the above-mentioned environmental challenges, the FEPA developed the National Policy on Environment Education (NPEE) in 1989, which was revised in 2016. The FEPA has explicit goals which aim to ***"****raise public awareness and engender a national culture of environmental preservation and promote an understanding of the essential linkages between the environment, social and economic development issue*s"**,** (NPEE, p.12. 2016). In other words, the NPEE aims to promote environmental literacy amongst the Nigerian population via Environmental Education (EE). Environmental Education is seen as a means to develop an environmentally literate citizenry who can make choices that are better for the health of the environment, thereby leading to a more sustainable planet. Carmi and Alkaher (2019, p.2), assert that an environmentally literate person is someone who "makes informed decisions concerning the environment; is willing to act on these decisions and participates in civic life". Furthermore, these scholars argue that Environmental Education (EE) provides the methods and content that can lead to environmental literacy and a more sustainable future. Through EE, people develop questioning, analysis and interpretation skills; knowledge of environmental processes and systems; skills for understanding and addressing environmental issues; and personal and civic responsibility.

The objectives of the NPEE (FEPA, 2016), are to integrate EE in all teaching, learning and training programmes across the formal, non-formal and informal sectors of education in Nigeria. The intention is to raise the Nigerian public's awareness of its responsibility towards the environment, development of knowledge, values, skills and behaviour consistent with sustainable use of natural resources as well as increase their capacity to address environmental issues. The NPEE (FEPA, 2016) envisages Social Studies as a conduit for the inclusion of EE into the curriculum at schools and universities. Social Studies is available across the formal curriculum in Nigeria at school and

university level to provide pupils/students with knowledge on Environmental Education and to inculcate pro environmental behaviour and attitudes in them. The preceding view that Social Studies is a vehicle through which EE can be taught is also supported by the International Geography Union Commission on Geography Education IGU-CGE (1992), UNESCO (1978, 2014) as well as scholars such as Ogunyemi and Ifegbesan (2011); Haubrich, Reinfried, and Schleicher (2008). Similarly, Kanene (2016), contends that Social Studies, ought to play a role in increasing people's knowledge and awareness about the environment and its associated challenges, by developing the necessary skills needed to address environmental challenges as well as foster attitudes, motivation and commitment to make informed decisions and take responsible action towards the environment. Therefore, all curricula on EE developed within the Nigerian context for Social Studies ought to be aligned to the goals of the National Policy on Environment Education (FEPA, 2016).

The FEPA via the National Policy on Environment Education, thus, underscores the role Social Studies teachers and lecturers must play in the teaching and learning of Environmental Education in transforming Nigerian society to be environmentally and ecologically sustainable. Therefore, the means by which Social Studies teachers achieve the goal of teaching learners about the environment and environmental issues are important. However, it is noted that within the Nigerian context 22 years later (that is since the establishment of FEPA), the vision of the FEPA is not being realised. The crisis with regard to increase in pollution, climate change, loss of biodiversity, soil erosion, overfishing, deforestation, illegal panning, land degradation, veld fires, and siltation of water bodies and decrease in agricultural yield still persists and has been exacerbated within the Nigerian context. This means that the envisaged vision of the NPEE to improve the environmental literacy level of the Nigerian population has not been realised even though EE is part of the SS curriculum.

1.2. Purpose and focus of the study

The purpose of this study is to explore how Pre-service Social Studies Teachers (PSSSTs) are being prepared to teach Environmental Education within the Nigerian context. A survey of literature has revealed that there have been studies conducted within the Nigerian context on:

primary school teachers' perception of incorporating Environmental Education in school (Agbor, 2016; Jekayinfa & Yusuf, 2008), the need for Environmental Education in schools (Ogueri, 2004), the impact of Environmental Education on knowledge and attitude of students (Erhabor & Don, 2016), teachers' understanding of EE and teachers' challenges in implementing EE (Akinnuoye and Abd Rahim, 2011). Studies by Akinnuoye and Abd Rahim (2011) reveal that SS teachers have poor understanding of EE and experience challenges in implementing EE at school. Unfortunately, SS teachers' lack of environmental knowledge and competency needed to engage children with a robust Environmental Education (EE) experience. Furthermore, it is inferred that these teachers did not necessarily receive the education they needed to become competent during their teacher preparatory years. While the above studies have focused on schools and teachers, there is no clear picture of how pre-service SS teachers (PSSSTs) in Nigeria are being prepared to teach EE at school. Therefore, it is imperative to pay attention to the SS curriculum and enactment of EE within the SS Teacher Education Programme in Nigeria. Paying attention to the enactment of EE within the Social Studies Teacher Education Programme is a step in the right direction because teachers have significant roles to play in promoting environmental literacy and education among their schools and communities. The central role that teachers play in the teaching and learning of Environmental Education is noted by United Nations (UN, 2015).

This study aims to address the above gap identified in the literature. The training of PSSSTs is a priority for improving EE and environmental literacy in Nigeria. Hence, it is crucial to gain deeper insights into how the EE curriculum is enacted within the Social Studies Teacher Education Programme in the Nigerian context, in order to get a glimpse on how PSSSTs are being prepared to teach EE in Nigeria. The task of preparing high quality *environmentally and sustainably literate* teachers to contribute meaningfully to the collective goals of the NPEE and UNESCO is key. The responsibility of training SS teachers to be "environmentally and sustainably literate" lies with teacher training institutions in Nigeria. Therefore, this study pays attention to the alignment, enactment and assessment of the Environmental Education curriculum within the Social Studies Teacher Education Programme at a Nigerian university to the NPEE document. Examining the process of curriculum enactment and assessment, allows me to have a bird's eye view of a system of curriculum policy (NPEE, teacher training institutional EE curriculum), its alignment, sequencing of topics and enactment decisions at the Nigerian university. In other words, I seek to

gain deeper insights into the EE curriculum, its enactment and how PSSSTs are being trained to teach EE.

1.3 Rationale of the study

The rationale for this study is based on the following:

Firstly, the high incidence of environmental crises witnessed across the country despite the level of literacy among the Nigerian population is a matter of grave concern. According to the Federal Environmental Protection Agency, FEPA (2016), the main environmental problems faced by Nigeria include land degradation, deforestation, and land, water and air pollution, among others. The various levels of pollution have greatly reduced the land available for agricultural practices thereby resulting in a shortage of food to cater for the increasing Nigerian population (FEPA, 2016, p.7). Climate change, which is a global issue is equally causing massive problems in Nigeria in terms of flooding and intense temperature. According to Dalerum (2014) the uncontrolled activities of man on the earth that continuously change the natural setting could result in catastrophes. Dalerum (2014) stressed that the rapid climate change and loss of biodiversity currently witnessed are some of the effects of the uncontrolled human activities.

Another reason for this study centers on FEPA's identification of lack of Environmental Education among the Nigerian citizens. Part of the goals of FEPA (2016. P.12) is to *"raise public awareness and engender a national culture of environmental preservation and promote an understanding of the essential linkages between the environment, social and economic development issue*s". In view of the above goal, FEPA aims to integrate EE in all teaching, learning and training programmes across the formal, non-formal and informal sectors of education, in order to raise public awareness towards environmental issues and to promote sustainable management of the environment in all sectors of the community. Social Studies has been identified as a vehicle through which EE can be taught (UNESCO, 1978, 2014 ; Ogunyemi & Ifegbesan, 2011). This role is therefore the responsibility of the educational institutions. In achieving this, the importance of teachers cannot be underscored enough (United Nations, 2015).

Furthermore, I am ideally positioned to explore the gap alluded to in the literature regarding the training of PSSSTs in Nigeria. Initially I was a teacher of SS at a secondary school, prior to my

appointment as a lecturer at a Nigerian university to train Pre-service Social Studies Teachers (PSSSTs). This experience avails me ample opportunities to understand the responses of students/ teacher trainees to environmental issues. The PSSSTs' responses revealed that either the environmental knowledge or skills impacted on them are inadequate or the strategies of instruction are inappropriate. According to a study by Akinnuoye and Abd Rahim (2011) SS teachers have poor understanding of EE and experience challenges in implementing EE at school, even though students are expected to be provided with knowledge of EE by teachers as well as the inculcation of pro environmental behaviour and attitudes in them. Akinnuoye and Abd Rahim's (2011) position were supported by Reddy (2017) who stresses that owing to inadequate training, teachers do not possess the capability to teach the subject matter of the environment contained in the curriculum. Similarly, Lotz-Sisitka (2011, p. 34) contends that "insufficient understanding of sustainable development is evident among teachers, and this accounts for the teachers' inability to incorporate environmental and sustainable development contents during the teaching/learning endeavor". Without adequate understanding of EE by the teachers coupled with the challenges witnessed in implementing EE in schools as observed by Akinnuoye et al. (2011) , producing learners that are environmentally literate and who could take informed decisions towards the sustainability of the environment will be impossible. In respect of the above reason, I am motivated to explore the intended, enacted and achieved EE curriculum within the Social Studies Teacher Education Programme at a Nigerian university.

1.4 Significance of this study:

The findings of this study will be of benefit to curriculum developers, teacher-training institutions in Nigeria and lecturers of SS.

Curriculum developers will gain insights into the alignment of SS curricula with the goals of the National policy on EE and the sequencing of topics for progressive development of skills/ knowledge.

Teacher training institutions and lecturers will benefit in terms of content, teaching strategies will be more environmentally and sustainably literate to be able to cascade pro environmental behaviours and attitudes amongst their PSSSTs and the communities.

1.5 Objectives of the study:

The purpose of this study was to explore how the intended EE curriculum is enacted and achieved, within the Social Studies Teacher Education Programme, at a Nigerian university.

The main objective of this study is to:

Establish how the intended Environmental Education Curriculum is enacted and achieved within the Social Studies Teacher Education Programme at a Nigerian university.

This main objective is broken down into the following sub objectives:

1. Establish how the intended Environmental Education within the Social Studies Teacher-Training Programme is aligned to the National Environmental Education Policy in terms of goals, objectives, competencies development, topics sequencing and progression of knowledge development.
2. Ascertain what teaching strategies are used by Social Studies lecturers to teach the intended EE curriculum, and the reason for using these teaching strategies.
3. Establish the factors that enable /constrain the teaching and learning of Environmental Education from the perspective of lecturers and pre-service Social Studies teachers.

1.6 Research Questions:

The main research question is:

How is the intended Environmental Education Curriculum enacted and achieved within the Social Studies Teacher Training Programme at a Nigerian university?

The sub- research questions are:

1. How is the intended Environmental Education within the Social Studies Teacher-Training Programme aligned to the National Environmental Education Policy in terms of goals, objectives, competencies development, topics sequencing and progression of knowledge development?
2. What teaching strategies are used by Social Studies lecturers to teach the intended Environmental Education curriculum and why?
3. What factors enable /constrain the teaching and learning of Environmental Education from the perspectives of lecturers and pre-service Social Studies teachers?

1.7 Research design:

This research employed a case study design for the exploration of how PSSSTs are being trained to teach Environmental Education. This was done by exploring the enactment of EE within the Social Studies Teacher Education Programme at a university in Nigeria. The study involved 6 lecturers teaching Social Studies in year 1-3 and 18 PSSSTs in year 1-3 of their studies who are training to teach EE in the secondary schools. This study adopted a qualitative research approach which embraced the interpretive paradigm in order to gain in-depth understanding/s of the research subjects' views about the teaching and learning of EE. The study used five data generation methods namely, document analysis, individual interview, focus group interviews, observation and open-ended questionnaires. The use of several data collection methods is aimed at generating quality data that provides answers to the research questions from different viewpoints towards ensuring trustworthiness.

1.8 Clarification of Key Terms

Environmental Education (EE): According to the United States of America Environmental Education Act (1970), Environmental Education is: An integrated process which deals with man's inter-relationship with his natural and man-made surroundings. It is seen as a study of the factors influencing ecosystems, mental and physical growth, living conditions, the decay of cities and population problems. It is intended to promote among citizens the awareness and understanding

of environment, our relationship to it and the responsible action necessary to assure our survival while improving the quality of life (p. 28-29).

Sustainable Development (SD): In this study, sustainable development is described as the pathway through which human beings achieve progress that meets the needs and aspirations of the present generation without compromising the ability of the future generations to meet their needs.

Environmental awareness: According to Ziadat (2010) a person displays environmental awareness when the person has knowledge, or perception, of an environmental issue, which includes their response to these issues.

Environmental literacy: Environmental literacy is essentially the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore or improve the health of those systems (Tuncer, Tekkaya, Sungur, Cakiroglu, Ertepinar, & Kaplowi, 2009). Environmental literacy is a function of individuals' increased sensitivity, knowledge, skills, attitudes and values towards the environment (Tuncer et al., 2009).

Official curriculum: The official curriculum also known as the formal curriculum is one of the two domains of curriculum enactment and is the aspect of the curriculum enactment process that presents what is expected to be implemented by the institutions in line with government or its agent's position. The official curriculum usually reflects the national, state and local government's positions about what the students are expected to learn. The official curriculum comprises three aspects, namely, curricular aims and objectives, content of consequential assessments and the designated curriculum which influences the operational curriculum (Remillard & Heck, 2014).

Operational curriculum: The operational curriculum otherwise referred to as implemented curriculum is the second domain in the curriculum enactment process and it is the domain where the official curriculum is put to action. Briefly, the operational curriculum is a shift from describing instructional objectives and how it could be achieved towards actual classroom enactment. It is the

stage where the curriculum goals and objective contained in the official curriculum domain are implemented. The operational curriculum involves three components, which are the teacher-intended curriculum, the enacted curriculum and the student outcome, (Contino, 2013; Remillard & Heck, 2014).

Intended Curriculum: The intended curriculum also referred to as teacher-intended curriculum involves all the steps taken by the teacher for a clearer picture of the planned instruction. In other words, the teacher-intended curriculum has to do with the actual steps taken by teachers in designing instruction based on what is contained in the official curriculum and also by interacting with the available instructional materials for the actualization of the set goals, (Hume & Coll, 2010; Porter, McMaken, Hwang &Yang, 2011).

Enacted curriculum: The enacted curriculum involves the interaction between the teacher and students in respect of the task of each lesson or several lessons that take place. That is, the real action that takes place between the Social Studies lecturers and the pre-service Social Studies teacher in the classroom in training the PSSSTs to teach EE based on what is stated in the University's Social Studies curriculum. The enacted curriculum is a very important determinant of what the students achieve from the curriculum (Seitz, 2017).

Achieved curriculum: The achieved curriculum refers to what the PSSSTs are able to attain from the classroom interaction between them and the Social Studies lecturers in enacting the Social Studies curriculum for preparing them to teach EE in schools. In other words, achieved curriculum means the outcome of the teaching-learning interaction on the PSSSTs that is, what remains with the PSSSTs which is acquired in terms of knowledge of and skills to teach EE (Remillard & Heck, 2014; Porter & Smithson, 2002).

Pre-service Social Studies Teachers (PSSSTs): These are students undergoing training in the university to become teachers of Social Studies, in other words, they are student teachers or teachers in training.

Constructive Alignment: This refers to the coherence that exists between sets of aims, goal, objectives, content and assessment within the curriculum or between policy and curriculum. In other word, constructive alignment in curriculum enactment mean unity that exists among the different components involved, (Biggs, 2012).

Topic Sequencing: Topic sequencing refers to the order in which things occur which is the logical arrangement of topics in such a way that the preceding topic is well linked with the next topic in order to be able to acquire the desired knowledge or skills.

Federal Environmental Protection Agencies (FEPA): This is the agency entrusted with the responsibility of ensuring that the Nigerian environment and natural resources are well handled in order to attain sustainability of the environment. The agency has in place the National Policy on Environment as the instrument that guides its operations.

1.9 Overview of the chapters:

Chapter One: This chapter discussed the introduction and background to the study. The introduction foregrounds the environmental challenges encountered in Nigeria which have resulted in untold hardship to the Nigerian population. In a bid to address these challenges the Federal Environmental Protection Agency (FEPA) established by the Nigerian government has in place the National Policy on Environmental Education. The NPEE is a policy that underscores the importance of Social Studies as a subject and Social Studies teachers in ensuring that the Nigerian citizens are environmentally literate. Furthermore, the purpose, focus, the rationale, significance, objective, research questions and research design were presented in this chapter. This was followed by clarification of terms, an overview of chapters, followed by the conclusion.

Chapter two: This chapter focused on the review of both international and local literature related to the study. Literature was reviewed in the following areas; curriculum alignment, enactment and achieved curriculum, alignment among intended, enacted and achieved curriculum, firstly from the general perspective and in respect of Environmental Education, teaching strategies used to train

pre-service teachers in Environmental Education, factors that enable / constrain the teaching of EE in higher education institutions and in schools, factors that enable / constrain the learning of EE as well as teachers' pedagogical content knowledge (PCK) to teach EE.

Chapter three: Chapter three paid attention to the theoretical frameworks. The study was undergirded by Remillard and Heck's (2014) model of the curriculum policy, design, and enactment system.

Chapter four: This chapter presented the methodology adopted in the study. A clear justification for the qualitative research approach and interpretative paradigm is provided in chapter four. A case study design and purposive sampling techniques were employed using multiple sources of data generation namely document analysis, individual interview, focus group interviews, observation and open-ended questionnaires. An elaboration of the ethical protocols observed during this study is explained in this chapter. Finally, steps taken to ensure trustworthiness and reliability are explicated.

Chapter five: This chapter centered on the analysis of data generated in response to research question one. That is, document analysis of the NPEE and the SS curriculum/lecture pack.

Chapter six: Chapter six focused on presentation and analysis of data in response to research question two.

Chapter seven: Chapter seven presents the analysis of responses in respect of research question three that seeks to find out factors that enable/constrain learning of EE from the perspectives of SS lecturers and PSSSTs.

Chapter eight: Chapter eight presents the summary of the findings that emerged from the analysis of participants' responses to the three research questions, recommendations of the study based on the finding are made and the conclusion of the study is presented.

1.10 Conclusion: This chapter presents the introduction and background to the study. The purpose and focus, the rationale, the significance, objectives, the research questions and the research design of the study were also highlighted. Additionally, clarification of the key terms used in the study

was done while the overview of the chapters in the thesis conclude this section. The next chapter presents a review of literature.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction:

The literature reviewed focuses on works related to this study which explored the intended, enacted and achieved Environmental Education (EE) curriculum within the Social Studies Teacher Education Programme at AA University (pseudonym). This chapter is presented in three sections in response to the focus of the study. Firstly, it examined issues of curriculum alignment, curriculum enactment and achieved curriculum in Environmental Education. Secondly it focused on defining Environmental Education, presented the history of EE in the world at large and Nigeria in particular; highlighted the importance of teaching EE within the Social Studies Teacher Education Programme and world environmental challenges. Additionally, the second section paid attention to EE and teacher education practice, knowledge and processes; Teachers' Understanding of EE, attitudes towards teaching and learning of EE, teaching strategies used to train pre-service teachers in EE, as well as factors that enable / constrain the teaching and learning of EE in higher education institutions and schools. The third section reviewed literature pertaining to pedagogical content knowledge needed to enact the EE curriculum. Finally, a conclusion of the chapter was presented.

2.2 ENVIRONMENTAL EDUCATION:

2.2.1 MEANING OF ENVIRONMENT:

Before delving into discussion on Environmental Education (EE), effort was made to briefly examine the term environment. Hence, the following section examines the meaning of environment.

Oyewale (2015), defines environment as the whole set of natural and social systems in which people and other organisms live and from which they draw their sustenance. In view of Mbalisi and Ugwu (2012), environment is a wide and all-inclusive term representing everything that supports the existence of humankind such as air, water, soil and light. They asserted that these

components with which humans continuously interact could be physical, biological or socio-cultural in nature. Similarly, Ullah and Wee (2013, p. 87) posit that "Environment is the sum total of water, air and land interrelationships among themselves and also with the human being, other living organisms and property". Furthermore, the Nigerian National Policy on Environment (2016) sees the environment as "the life supporting system for human existence and survival that provides much of the physical scene and the raw materials required for socio-economic progress which continuously interact among themselves and human beings" (, p.7).

From the perspectives of the scholar on what environment means it can be inferred that the environment deals with living and non-living factors in a particular location, and how it interrelates with human beings in that location. According to Oyewale (2015), the environment has two components namely the natural environment and the social environment. The natural environment encompasses both the living and non-living components that fall within one of the four spheres: atmosphere, hydrosphere, lithosphere and biosphere (ibid). On the other hand, the author explained that humans initiated the social environment in order to attend to their basic needs and encompasses social-economic, cultural, political, religious, psychological as well as physical aspects that are in a dynamic state of continuous interaction. The above position of Oyewale (2015) resonates with O' Donoghue (2001) who defined environment as "a living world made up of many environments that we experience as the surroundings in which we live. In these environments, communities of humans and other living things interact to shape our surroundings in different ways" (p.3).

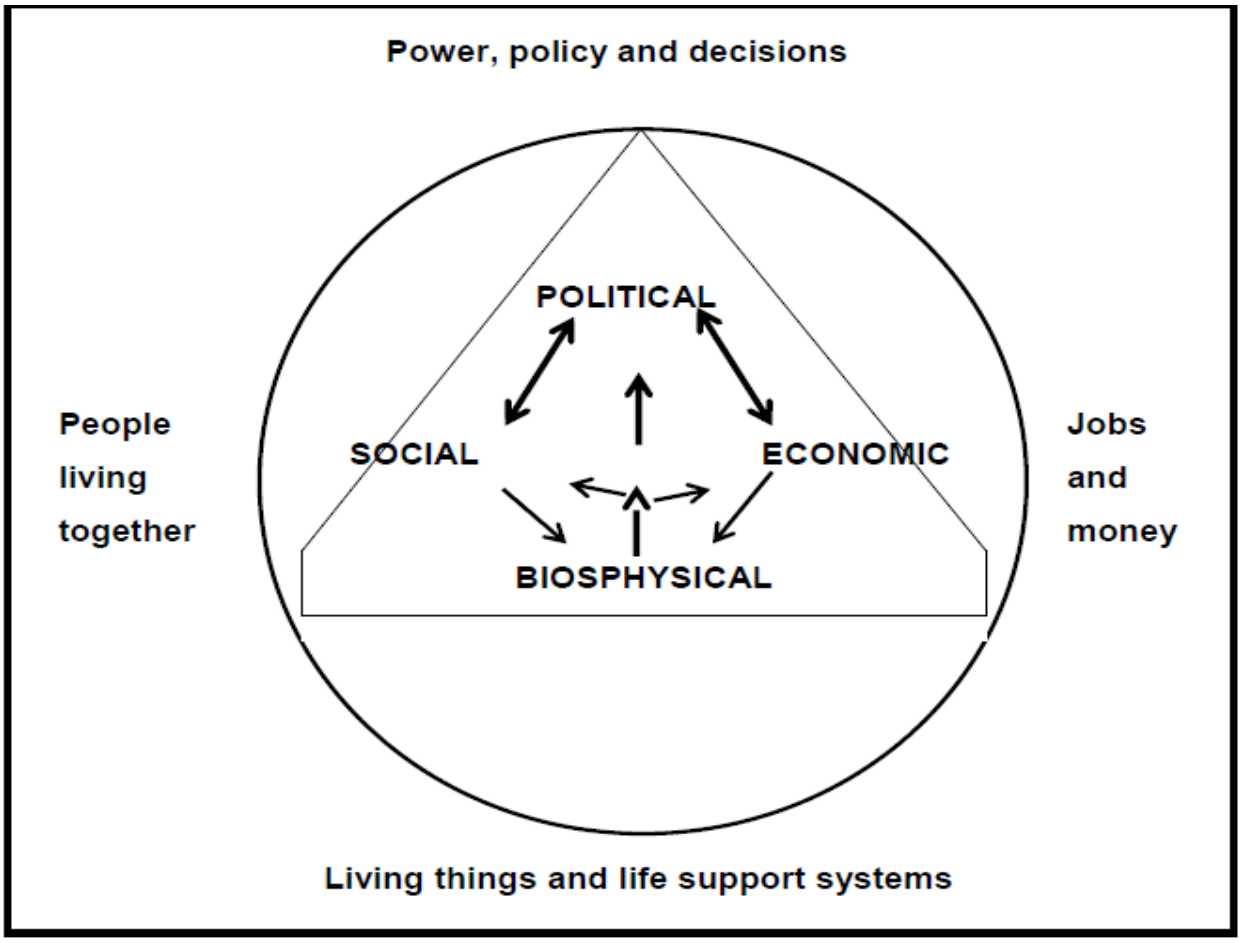


Figure 2. 1: Relationship among the components of the environment Adapted from O' Donoghue and Russo (2004, p.337)

Figure 2. 1 above presents the interactions among the components of the environment and man. The political aspect refers to how the people are being governed within the environment with respect to the laws of the land. The economy involves the different activities which the people engage in to earn their living within the environment. The social aspect deals with the relationship among the people and households while the biophysical component refers to the natural endowment of the environment. Relationship within the environment is dependent on the interaction that exists among these components.

2.2.2 MEANING OF ENVIRONMENTAL EDUCATION:

The Wisconsin Environmental Education Board(WEEB) (2015) defined Environmental Education as "a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, ethical awareness and sensitivity for the relationship between humans and the environment, and commitment to engage in responsible individual and cooperative actions. By these actions, environmentally literate citizens will help ensure an ecologically and economically sustainable environment". (WEEB, 2015, p.2)

According to Mbalisi and Ugwu (2012), Environmental Education means the study of the environment, the interrelatedness among its associated components, as well as the effects of human activities on the environment with a view to acquiring adequate knowledge and skill to solve environmental problems.

Dare (2014) described Environmental Education as planned efforts to teach about how the natural environment functions and particularly how human beings can manage their behaviour and ecosystems in order to live sustainably

According to United Nations Environment Programme (UNEP) (2012), Environmental Education involves the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his bio physical surroundings.

Previously, Environmental Education was defined by UNESCO (1975, p. 3) as a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, which has the knowledge, attitudes, motivation, commitment, and skills to work individually and collectively towards solutions of current problems and the prevention of new ones.

In view of the above definitions, it is evident that Environmental Education revolves around the activities of humans as they relate and interact with everything within the surroundings, knowledge acquisition and having a healthy environment. Hence, human beings have the responsibility of ensuring that the knowledge needed for a meaningful relationship is acquired, as the sustainability of the environment cannot be negotiated. Additionally, the responsibility of preserving the environment and its resources for the future is equally envisaged. This means that EE intends to

raise a level of awareness among people about their environment and provide adequate knowledge needed to live within the environment without impacting on it negatively, but rather engaging in relationships that will make the environment a better place in which to live.

The views expressed by UNEP (2012), Dare (2014) and The Wisconsin Environmental Education Board (2015) that emphasized the study of the socio-political relationship of human within the environment as well as the quest to achieve ecological and economic sustainability of the environment resonate with the diagram below which presents the different perspectives which are of concern to Environmental Education.

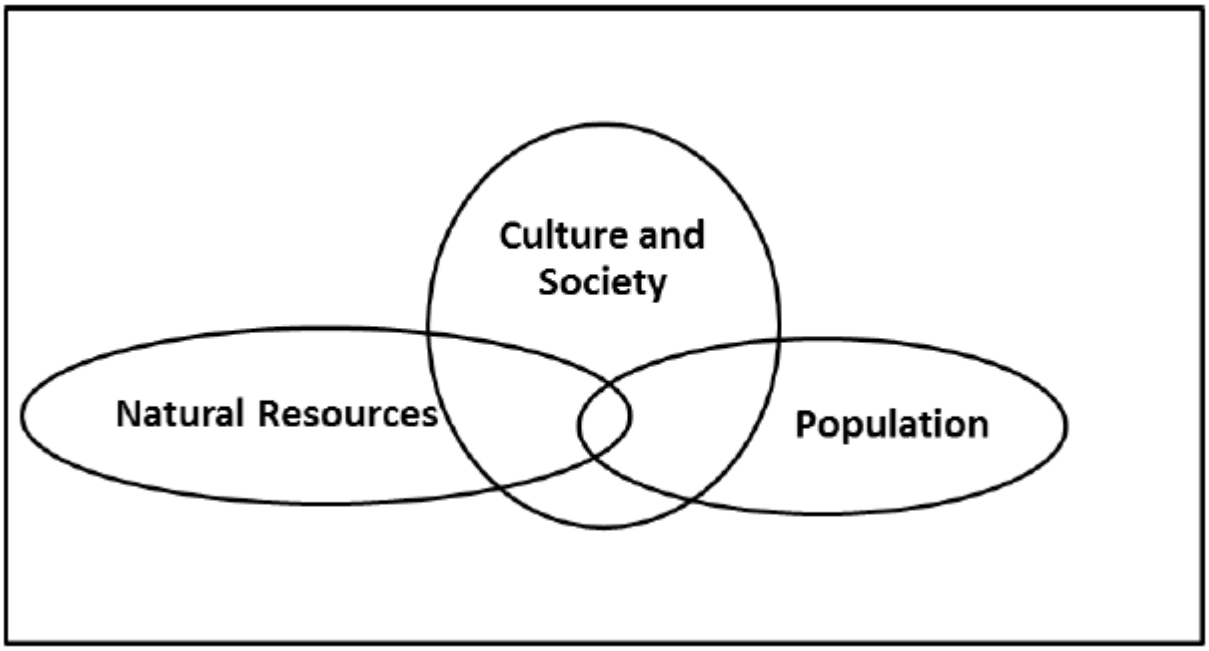


Figure 2. 2: Aspects of Environmental Education from Peters et al. (1976, p. 2).

Figure2. 2 above which provides more explanations to the submissions of scholars presents the interrelatedness among the different components of the environment. It represents the activities of man within the environment as it relates to the impact exerted on the environment through the use of the available resources by 'culture and society'. The need for reasonable use of the non-replaceable resources was represented by 'natural resources' while the consciousness that the

number of people within the environment does not remain static, thereby calling for a sustainable use of the resources was represented by 'population'. This means that the constantly growing population must find a way of ensuring that while the resources are used, they could still be available for future use.

The next sections present the history of Environmental Education at international level and in Nigeria.

2.3 History of Environmental Education:

2.3.1 International History:

The evolution of Environmental Education predates the 19th century as it was linked to the work of renowned scholars such as Jean-Jacques Rousseau who emphasized education that centers on the environment in his work before conservation education later evolved (Gottlieb, 1995). Besides the educational idea of Jean-Jacques Rousseau which focuses on environment, history also showed that prior to the 20th century in Egypt, activities that relate to proper use of the land was noticed among the farmers as they engaged in agricultural practices that promoted the prevention of soil erosion (Mandikonza & Lotz-Sisitka, 2016). Similarly, record has it that education on avoidance of indiscriminate felling of forest trees had long existed in China and Greece for many centuries (ibid). Later on from the 1920s, further effort towards the preservation of the environment began to evolve in the form of Environmental Conservation Education which was more concerned about the protection of the environment and the resources therein, and not how to make the people aware of the happenings of their environment as well as providing them with adequate knowledge that will ensure good relationship with the environment (UNEP, 1972). As a result of the industrial revolution witnessed in Europe and other parts of the world, there was increased production of goods accompanied by overuse of natural resources which invariably led to the emergence of environmental problems that required urgent attention (Mandikonza, et al., 2016). Hence, the introduction of Environmental Education became inevitable.

Environmental Education as a concept became prominent as a result of The United Nation Conference on Human and Environment held in Stockholm in 1972 (UNESCO, 1978). At this conference, the endorsement of Environmental Education through the recommendation of 96 countries was a major achievement. Moreover, this was subsequently followed by the outcome of

the Tbilisi conference directive to include EE in school curricula (Akinnuoye & Abd Rahim, 2010). Additionally, the subsequent encouragement enjoyed through the follow-up provided by the Rio de Janeiro Earth Summit of 1992 was a great support towards attaining the sustainability of Environmental Education (UNESCO, 2007). The effort did not end at this level as a further step of proclaiming the integration of Environmental Education through the Agenda 21 of 1996 was remarkable.

According to Stohr (2013, p. 6), in October 1977, the first intergovernmental conference on EE commenced in Tbilisi, Georgia. After the conference at Tbilisi, Georgia, Environmental Education was officially recognized with twelve principles approved to guide the teaching and learning of Environmental Education (UNESCO, 1978)**.** The Tbilisi conference Environmental Education principles stated among other things that the teaching and learning of Environmental Education should:

- Consider the environment in its totality-natural and built, technological and social (economic, political, technological, cultural-historical, moral, and aesthetic).
- Be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and non-formal stages.
- Be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective.
- Examine balanced environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas.
- Focus on current and potential environmental situations while considering the historical perspectives.
- Promote the value and necessity of local, national, and international cooperation in the prevention and solution of environmental problems.
- Explicitly consider environmental aspects in plans for development and growth.
- Enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences.

- Relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learners' own community in early years.
- Help learners discover the symptoms and real causes of environmental problems
- Emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills and
- Utilize diverse learning approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience (UNESCO, 1978).

In light of the outcome of the Tbilisi conference, many countries started to take concrete action on how Environmental Education could be used to provide solutions to the various environmental challenges (Muranen, 2014). Also, part of the events that followed the Tbilisi conference outcome was the establishment of the United Nations Environment Program (UNEP) and many environmental protection agencies (EPA) (Stohr, 2013, p .6). In October 1975, UNESCO and UNEP joined in an International Workshop on Environmental Education at Belgrade to complete the Belgrade Charter. The Charter called upon national governments to form a "new global ethic" through public education, promoting individual attitudes and behaviours consistent with recognized environmental goals and supporting economic growth that enhances rather than harms, the human environment (UNESCO/UNEP, 1978)**.** Furthermore, several other conferences where major decisions, declarations and strategies towards the eventual emergence of EE were taken were held in different parts of the world besides the aforementioned ones (Bosah, 2013; Irwin & Lotz-Sisitka, 2005). On the next page is Table 2.1. showing different conferences that contributed to the development of Environmental Education and the summary of events at such conferences.

Table 2.1: Summary of conferences that contributed to the emergence of Environmental Education

Year	Conference/venues	Roles in developing EE internationally.
1972	United Nations meeting held in Stockholm	Special UNEP programme for promoting Environmental Education throughout the world
1975	Belgrade Charter	Guidelines for worldwide Environmental Education initiatives were laid down
1977	Tbilisi conference	During this conference, the Tbilisi Declaration in which principles for EE were outlined
1980	The Environmental Education in the Light of the Tbilisi Conference held in Paris	This was a follow-up conference to the Tbilisi convention to determine the progress made by UNEP in the area of Environmental Education
1980	IUCN meeting in Gland-Switzerland	At this meeting, the Worldwide Conservation Strategy (WCS) was formed. The latter was to incorporate guidelines and strategies for curriculum design into EE
1987	The Moscow Conference	Delegates at the conference spelled out a strategy for EE for the decade 1990-2000.It also reconfirmed Tbilisi principles
1987	The World Commission on Environment and Development (WCED) or Brundtland Commission	Convened in response to global environmental concerns, highlighted the need for sustainable development.
1988	UNESCO-UNEP initiative	UNESCO and UNEP compiled the International Strategy for Action in the Field of Environmental Education and Training for the 1990s.
1990	World conference on 'Education for All'	Dealt with the provision of basic learning needs which included knowledge about a sustainable lifestyle.
1992	The Earth Summit	Agenda 21 - a 'blueprint' for sustainable development was compiled. In it, new Environmental Education programmes were proposed.
2002	The World Summit on Sustainable Development	Recognized a recommendation made by the Johannesburg Summit on Sustainable Development and declared the ten-year period beginning on 1 January 2005 a 'United Nations Decade of Education for Sustainable Development'.

Although there were several conferences that contributed to the development of Environmental Education in one way or the other, the Tbilisi conference (1977) was believed to be the conference where the final foundation for the emergence of Environmental Education as a subject and the decision to include it in curricula of different nations was laid (Stohr, 2013; Tsekos, Christoforidou, Tsekos, 2012). This is so because it was at this conference that the goals, objectives and the principles of EE were decided. Some of the principles that emphasize the need for continuous lifelong training, interdisciplinary approach, development of critical thinking and problem-solving skills provided very important guidelines in the inclusion of EE in the school curriculum (Bosah, 2013).

2.3.2 History of Environmental Education in Nigeria:

In Nigeria, effort towards protecting the environment had been in place for a long while (FEPA). Erhabor and Don (2016) argued that promulgation of environmental laws and regulations had been in practice since the time of British rule in the 1900s. Such laws and regulations included the Criminal Code of 1958 aimed at restricting the burying of corpses in houses to guard against water pollution, the Public Health Act of 1958 which aimed at controlling the spread of diseases and the Forest Ordinance of 1937 that guide access to and use of forest resources among others. These aimed at ensuring proper use of the environment (Bosah, 2013). Although the enactment of laws, ordinances and regulations are very important for things to function in any society, for adequate management and uses of the resources within our environment to be achieved, the researcher is of the opinion that the collective effort of each citizen cannot be overemphasized. Therefore, ensuring that the citizens are adequately aware of their roles in terms of how they need to relate with their environment to ensure proper uses of the natural resources now and its preservation for the future becomes imperative.

Ahove (2011) noted that, in furtherance of the process of improving the level of people's awareness about the environment, the West African Examination Council introduced environmental concepts into the biology syllabus. Despite the fact that the above step taken by the West African Examination Council in which Nigeria had been a member was a well-thought move, the step was limited by the fact that it was not able to meet the expectation of EE as demanded by one of its principles that advocated for a lifelong process that begins at the pre-school level and continues

through all formal and non-formal stages. This is so because biology is not offered in the primary schools and lower secondary school classes (NPEE, 2016).

According to Bosah, (2013); Jekayinfa and Yusuf, (2008), to be able to address the increasing incidences of environmental problems such as air, water and land pollution resulting from industrial activities; refuse disposal, bush burning, indiscriminate and unplanned construction of houses, there have been a series of environmental protection measures introduced in Nigeria. Some of these included environmental awareness campaigns, environmental legislations environmental policies, afforestation and land reclamation, environmental sanitation exercises as well as organization of conferences (Bosah, 2013; Jekayinfa & Yusuf, 2008). Also, the promulgation of regulations such as the Petroleum Refining Regulation in 1974, the formation of organizations like the Nigerian Conservation Foundation (NCF) in 1982 and the Federal Environmental Protection Agency (FEPA) in 1999 were steps towards ensuring incorporation of Environmental Education (Erhabor & Don, 2016). Robinson (2013) asserted that the Nigerian Educational Research and Development Council (NERDC) made frantic efforts to incorporate the environmental concepts into many subjects in the junior and senior secondary school curricula. Erhabor and Don (2016) stated further that the NERDC through the guidance of the United Nations Development Program and UNESCO developed the National Environmental Education Curriculum for use in Nigerian schools. This curriculum was based on the various career subjects and the ecological zones in Nigeria.

According to Jekayinfa et al. (2008); Robinson (2013), a further step towards the introduction of Environmental Education into the Nigerian educational system was championed by the National Educational Research Development Council (NERDC) in 1992. The NERDC created goals and objectives for Environmental Education in Nigeria which are;

- To enable young people to participate in decision making related to environmental issues.
- To enable learners to develop operational understanding of some of the basic concepts and processes relating to environmental issues such as pollution and deforestation.
- To develop the ability to enquire into problem situations associated with the environment and
- Considering social and cultural factors of the people and suggesting solutions.

In a bid to ensure that the above Environmental Education goals were achieved, a number of Environmental Education topics were incorporated into the primary and secondary school subjects, and particularly in some subjects which included agricultural science, geography and Social Studies in the secondary school; while at the tertiary institutions level, Environmental Education stands as a discipline on its own or as a component of general studies (Robinson, 2013).

The researcher is of the view that the infusion of Environmental Education into the Nigerian educational system was necessary in order to inculcate and create the needed level of awareness in the learners about the natural resources within their environment which are non-renewable and the imminent danger of careless activities in our environments. Providing such knowledge from the primary and secondary schools resonates with one of the principles of Environmental Education that calls for providing Environmental Education to learners from pre-school level (UNESCO, 1978).

In the next section, some world environmental problems that are equally prevalent in Nigeria are discussed.

2.4 Environmental Problems in Nigeria:

Nigeria like any other country is faced with several environmental challenges due to the continued harmful interaction between man and the environment thereby exposing man to several difficulties (Bosah, 2013; Ifegbesan & Rampedi, 2018).

According to Oyewale, (2015), Nigeria is confronted with several environmental problems such as deforestation, the loss of soil fertility, indiscriminate dumping of refuse, flooding, erosion and an unimaginable increase in air and water pollution. These problems serve as hindrances to progress regarding economic development. These issues are not fully understood by the Nigerian population, so resolving them is a major challenge. To improve the standard of living for humans, some steps taken have impacted negatively on the environment. Therefore, the processes involved in the development of new products expectedly assumed to give human beings comfort eventually ended up in the destruction and contamination of the environment, resulting in a situation where many species of plants and animals become endangered or have even become extinct (ibid).

FEPA (2016) as well as Ibimilua and Ibimilua (2014) argued that there are several factors responsible for the level of environmental problems witnessed in Nigeria, these include the

disposition of the Nigerian population towards environmental issues, non-enforcement of laws and regulations guiding the use of the environment, particularly aspects related to urban planning and development; prospecting for minerals without adherence to industrial standards; siting of public buildings and residential quarters in areas that are susceptible to flooding; erecting of public buildings and market stalls in ecological sensitive areas; inappropriate agricultural practices; uncontrolled logging and continuous deforestation resulting in its loss of precious biological diversity(FEPA, 2016, p.10).

UNEP, (2012) asserts that the degradation of the world's environment constitutes a very real and important concern for today's society. Currently, there are several increasingly significant environmental concerns and threats to the future of society, such as climate change, depletion of the ozone layer, over-consumption of non-renewable resources, pollution and flooding among others. (Bosah, 2013; FEPA, 2016). Some of these environmental challenges that are prevalent in Nigeria will be discussed in the sections below.

2.4.1 Climate Change:

According to UNEP (2012), climate change has been identified as one of the most critical global challenges of the time. The unusual weather patterns caused by climate change have been linked to the release of dangerous gases to the atmosphere as a result of industrial activities (Caldeira, 2012). The release of these gases, especially carbon dioxide into the atmosphere constitute the highest danger being faced by the world (Climate Reality Project, 2014).

The Federal Environmental Protection Agency (2016) argued that the impact of climate change on Nigeria is not minimal as it effects virtually all aspects of the economy. As a result of this, the effort towards attaining sustainable development is becoming much more difficult if not unrealistic with more overwhelming and undeniable evidence (UNEP, 2012). This is revealed by excessive rainfall resulting in flooding in many parts of the country, excessive heat, drought and low yield of agricultural products leading to food insecurity. The negative impact of climate change on Nigeria's economy is becoming more worrisome as the agricultural sector which is a major employer of labour as well as a high contributor to the nation's Gross Domestic Product GDP is highly climate sensitive (Bosah, 2013; FEPA, 2016). According to FEPA, (2016, P.36), the 2016 Climate Change Vulnerability Index (CCVI) published by a UK-based risk company, classifies Nigeria as being of high risk in the southern part and extreme risk in the north. As a result of this,

the nation could lose so much in terms of the Gross Domestic Product (GDP), which will invariably affect her national developmental dream of becoming one of the economically viable nations of the world.

The researcher is concerned that the effects of the above scenario will bring untold hardship on the citizens as the effect of food shortage on the well- being of the people cannot be over-emphasized. To guide against further deterioration of the environment, conscious effort to enlighten the masses about the grave effect of our actions on the environment is required now more than ever. This among other reasons necessitated the need to explore how Environmental Education is enacted in a Nigerian teachers' training institution with a view to ensuring that adequate Environmental Education is made available to the citizens.

2.4.2 Environmental Pollution:

Pollution is one of the environmental problems witnessed in many parts of the world. According to Greenstone and Hanna (2014), many developing countries suffer from severe problems arising from environmental pollution as a result of the effect of unchecked efforts to become industrialized. In a bid to achieve social and economic emancipation, actions that were inimical to human well-being were sometimes taken, natural resources carelessly used and so man in particular and the environment at large are regularly exposed to unhealthy situations (Greenstone, et al, 2014). Caldeira (2012) stressed that the gases released to the atmosphere as a result of industrial activities do not only result in the greenhouse effect but also resulted in some health challenges suffered by human beings. Furthermore, UNEP (2012) revealed that several lives are lost yearly in respect of peoples' continued contact with polluted air resulting from activities within and outside the house.

According to Greenstone et al. (2014), environmental pollution is promoted by three major factors namely industrialization, urbanization and globalization. These scholars purport that industrialization occupies the highest position out of these three factors as gasses emitted to the atmosphere using fossil fuels in the industries becomes a major source of pollution. Furthermore, as the population increases, there would also be increased need for fossil fuels thereby resulting in excessive pressure on the natural resources, and the resultant effect of increased production of waste products which is a major source of environmental pollution. The figure below presents the factors that facilitate environmental pollution.

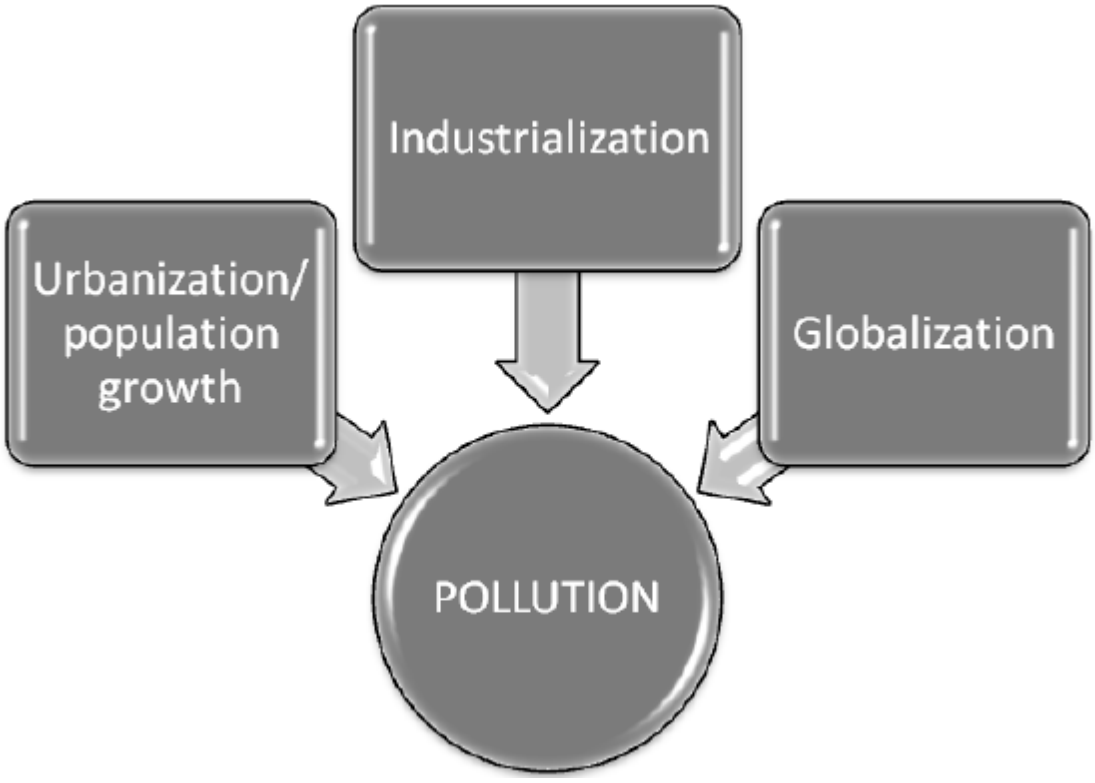


Figure2. 3: Major facilitators of Environmental Pollution.

Adapted from Nazeer, Tabassum, and Alam, (2016, p.590)

In Nigeria, Environmental Pollution is a major challenge just as witnessed in many other nations of the world (Amokaye, 2012). Despite the fact that the sub-Saharan Africa region where Nigeria is located is one of the least urbanized regions in the world, this region happens to have a very rapidly growing urban population. The rapidly growing population is associated with pollution whose effect on Nigerians is enormous (Bosah, 2013; Oyewale, 2015). According to FEPA (2016), the current level of environmental pollution in Nigeria is much higher than in previous decades. This high level of environmental pollution is linked to several factors which include high rate of population growth and urbanization and modern approaches engaged in agriculture, especially in the aspect of increasing use of agrochemicals (FEPA, 2016, p.32). The researcher is of the view

that this trend of events might not change in Nigeria unless something is done urgently to salvage the situation. The reason for this position is because as long as the continuously increasing population continue to engage in activities aimed at meeting the needs of the citizens without been mindful of the likely negative effects of such activities, then increased level of environmental pollution would be inevitable.

According to Ibimilua and Ibimilua (2014); Kadafa (2012), the land as well as water is not spared from the effects of pollution. With special reference to the Niger-Delta area, the waters are polluted constantly through oil spillage as well as the land that is rendered useless and unable to support agricultural production (Kadafa, 2012). The effects of pollution on the waters and lands of this region is one of the major factors responsible for crises sometimes witnessed among the people of the region and those engaged in the oil exploration business. Apart from the pollution effect on the environment, National Oil Spill Detection and Response Agency (NOSDRA) revealed that a huge sum of money is being lost by the nation through oil spillage (FEPA, 2016). Ebegbulem, Ekpe and Adejumo (2013); Ibimilua and Ibimilua (2014) reiterated that the effects of air, water and land pollution on the citizens is enormous as these lead to poor health situations, living in poor environments, food shortage which promotes high prices, lack of access to water that is pure as well as repeated crises in areas seriously affected. Greenstone and Hanna (2011) asserted that water pollution is one of the factors responsible for high infant mortality rates and health problems of people of all ages.

FEPA (2016) argued that solving the Nigerian pollution challenge is constrained by various factors. Some of the factors identified include poor identification of sources of specific pollutants; perhaps as a result of inappropriate technology been employed. Additionally, weak legal framework to punish offenders was equally identified (FEPA, 2016, P.33).The researcher feels that, perhaps the factors noted above are as a result of poor public and civic consciousness about the implications of our actions individually and as a group as they affect maintaining a healthy society and the actualization of sustainable development in Nigeria. Therefore the major task of Environmental Education is creating the necessary awareness to enable everyone to understand that his/her poor use of the environment combines with other's and produces a great negative effect, hence the need to be involved in environment-friendly relationships.

2.4.3 Solid Waste Management:

Another major environmental challenge faced by Nigerians has to do with waste disposal and management (Amokaye, 2012; Odumosu, 2016). Oyewale, (2015) asserted that the problem of waste management in Nigeria as the nation's solid waste disposal is linked to the large and continuously increasing population. FEPA, (2016) affirm that solid waste disposal in Nigeria has become one of the environmental problems that the government is most concerned about due to the high and increasing volume of domestic waste in the country, estimated to be about 63million tones yearly. (p.31)

Solid waste management has emerged as one of the greatest challenges facing state and local government environmental protection agencies in Nigeria (Abila & Kantola, 2013). According to Abila and Kantola the volume of solid waste being generated continues to increase at a faster rate than the ability of the agencies to improve on the financial and technical resources needed to address the problem. Ogwueleka (2013) argued that some of the factors responsible for the unprecedented level of poor waste management in Nigeria are inefficient collection methods, insufficient coverage of the collection system and improper disposal of solid waste. However, these above scholar argued that even though the quantity of solid waste generated in urban areas of developing countries is minimal compared to what is generated in the developed nations, there is a more effective and adequate waste management system in the urban cities of the developed nations.

The problem of solid waste management is a major concern as Nigeria disposes of waste in an uncontrolled manner and some parts of the urban areas are littered with waste dumps. (Abila, et.al, 2013); (FEPA, 2016. P.31). As a result of poor arrangement for collecting waste in some urban areas, many families were left with no option other than to drop their household waste in any available space (Abila, et.al, 2013). Even in places where there is arrangement for collecting and disposing of waste, the inefficiency of the personnel rendered this service as ineffective. This is sometimes responsible for the presence of different spots where rubbish is dropped. Part of the effect of such practices is that bad odours emerge and the decomposed refuse increases the incidence of air and land pollution as well as constituting a health hazard to the citizens (FEPA, 2016). (Odumosun, 2016). Abila (2014); Ogwueleka (2013) added that part of the factors that makes solid waste management a problem in developing countries such as Nigeria different from

that in the developed countries includes their composition, density, political and economic framework, quantity of waste, access to waste for collection, awareness and attitude.

From the submission of the different scholars, the researcher is of the view that with indiscriminate dumping and disposal of waste and blatant disregard for laws and regulations in Nigeria, even present development is under threat not to mention the future. Without proper management of waste, there will be environmental imbalance. Hence, to achieve sustainable development, effort must be made to see that the effects of waste in the environment do not in any way interfere with sustaining the environment now and in the future. Government need to be more active in the coordination of waste management activities. The populace on the other hand has a responsibility to gather and collect all waste generated in a prescribed manner and place. This is achievable through adequate Environmental Education within and outside the schools.

The following section focuses on Environmental Education and Teacher Education programmes generally and in Nigeria.

2.5 Environmental Education and Teacher Education Practice:

The need for the implementation of Environmental Education (EE) in teacher education programmes globally and in Nigeria in particular cannot be over emphasised. This is so no educational system can rise above the quality of its teachers (National Policy on Education NPE, 2013). Adequate EE preparation of student teachers has been identified as highly important for effective implementation of EE by future teachers (Gwekwerere, 2014). The view of Gwekwerere (2014) resonates with the positions of Tuncer, Tekkaya, Sungur, Cakiroglu, Ertepinar and Kaplowitz (2009) that in advancing the environmental literacy of the future generations, teachers have important roles to play. Liu, Yeh, Liang, Fang and Tsai (2015) further emphasized that for any meaningful Environmental Education programme to be implemented, the role of teachers cannot be underestimated.

The above positions of these scholars suggest that without teachers playing their role as vital agents of change, the goal of achieving sustainability of our society through EE may not be realizable. Consequently, the inclusion of EE within teacher education programmes becomes a necessity.

According to Reddy (2017), although much effort had been made towards including EE in teacher education programmes, findings from various studies revealed that it has not been easy to fit EE into the general teacher education programme. The lack of success in implementing a consistent EE programme in teacher education programmes despite calls for it is more a universal issue (Gough, 2009; 2013). Looking at the implementation of EE in Columbia, Moore (2005) stresses that competition from within the institution, the discipline to house the EE programme and problems relating to students' evaluation procedure hindered its implementation. Similarly, in a study carried out in Canadian institutions by Ormond, Zandvliet, McLaren, Robertson, Leddy and Metcalfe (2014), it was discovered that there was a challenge in developing the needed EE knowledge, skills and strategies in the pre-service teachers through a teacher education programme. The process is hindered basically by issues concerned with policy (Ormond et al., 2014). In Botswana, despite the policy provision to teach EE in the colleges of education through infusion approach, the programme has not been successfully implemented by the colleges (Ndwapi & Mosothwane, 2012).Other studies carried out in Belgium and the United States of America revealed among other things, the lack of understanding of the action-oriented and interdisciplinary nature of EE by the teacher training institutions **(**Van Petegem, Blieck, & Pauw, 2007). Also, poor preparation of pre-service teachers to be effective environmental educators was identified in most institutions (Liu, et al., 2015)

2.5.1 Environmental Education Practice, Knowledge and Process:

Borg, Gericke, Höglund and Bergman (2014) as well as Reddy (2017) contended that Environmental Education (EE) lacks a well- defined subject boundary as well as a clearly presented subject base compared to a traditional subject like geography. These are deficiencies identified by the scholars as factors that inhibit the smooth infusion of EE content into a disciplinary knowledge organization. Along similar lines Corney and Reid (2007) point out that EE content is interrelated with environmental, economic and social factors. Consequently, Reddy (2017) proposed a holistic approach for teaching EE because EE content needed to be drawn from the entire school curriculum rather than being seen as a particular subject. The focus of EE should address issues of both local and global levels, integration of a holistic education about the

environment advocated and should embrace the development of environmental awareness, knowledge, values, responsibility and action.

Finding a solution to the problems of subject matter and pedagogy is an issue that calls for urgent attention. Otherwise, Environmental Education in the education settings becomes meaningless.

2.5.2 Practical Knowledge as an Educative Process for Environmental Education in Teacher Education:

According to Short (2002), traditional disciplines, such as biological sciences serve as sources of subject matter or content knowledge for EE at school or for courses of study at other levels. A practical approach in the teaching of Environmental Education (EE) is advocated by UNESCO as all acquire adequate environmental knowledge through interaction with the environment at different levels of education (UNESCO 1978, 2014). This approach is believed to assist learners. Short (2002) also promotes the idea of practical knowledge as advocated by UNESCO (1978, 2014). Short (2002) referred to this knowledge as practical or mission-oriented knowledge which the universities can develop. The position of Short (2002) about practical or mission-oriented knowledge is that answers should be provided to problems as the situation demands, which should be the concern of the education institutions.

From the foregoing, practical or mission-oriented knowledge appears to be adequate for the teaching of Environmental Education. This is due to its ability to address issues in the local context and provide solutions that meet the local need of the students and community, with the students being actively involved in finding solutions to the environmental problems. In training pre-service teachers, the teacher training institutions require practical and mission-oriented knowledge for the pre-service teachers to be well equipped for their future tasks.

2.5.3 Training pre-service Teachers to teach EE

The roles of teachers in ensuring that the future generation acquire sufficient Environmental Education (EE) cannot be emphasised enough (World Commissions on Environmental Development- WCED, 1987 and Dhull & Verma, 2017). This is so because teachers have what it takes to inculcate into the younger generations the zeal to grow up as future leaders that will give the protection of the environment the needed attention (Gwekwerere, 2014; Esa ,2010;Tuncer et al.'s ,2009) findings revealed that if teachers must produce students that are more environmentally

literate, there is need for them to have acquired more environmental knowledge, possess an effective attitude towards the environment and show greater concern for environmental problems.

2.5.4 Teachers' Understanding of Environmental Education

Environmental knowledge is the acquisition of ideas and experience on environmental problems, conservation of resources, and how to solve the social ills and problems created by humans in the course of satisfying their needs through the exploration and exploitation of the environment (Adu, Olatundun, & Oshati, 2014 ; Mansaray & Ajiboye, 1997).

Dhull, et al. (2017) assert that teachers' adequate understanding of EE is essential for imparting to the learners the needed knowledge towards positive environmental actions. Gwekwerere (2014) noted the lack of adequate understanding and knowledge of environmental problems/issues among prospective teachers. The inadequacies noticed could be linked with the inadequate incorporation of EE within teacher education programmes (Yavetz, Goldman, & Pe'er, 2014). It was argued further that the inadequate incorporation of EE within teacher education programmes to a reasonable extent also serves as an obstacle to the successful implementation of (EE) in schools.

In a study carried out to assess the level of Greek pre-service teachers' knowledge, attitude and self-reported behaviour about marine pollution issues, Boubonari, Markos, and Kevrekidis (2013) found that pre-service teachers had moderate knowledge of what marine pollution issues were all about. On the other hand, Spiropoulou, Antonakai, Kontaxakaki, and Bouras (2007) reported on limited knowledge of the environment among Greek pre-service teachers. They discovered that such limited knowledge was a major factor behind the low rate of environmental programmes' implementation in schools. For Esa (2010), an important factor believed to be militating against proper pro-environmental behaviours is lack of environmental knowledge among students and teachers.

In a comparative study carried out by Akinnuoye and Abd Rahim (2011) on implementation of EE in Malaysian and Nigerian Secondary Schools, their findings showed that the majority of Nigerian teachers in the sampled schools agreed that there were major problems in the implementation of EE because this concept (EE) was difficult to teach due to lack of or inadequate facilities and conducive learning environment. They also discovered that not many of the Nigerian teachers in the sampled schools had attended EE in-service training, an opportunity that would have assisted

in updating their levels of the associated knowledge. The non- attendance of in-service training might result in poor teaching of EE in the schools.

In view of the above findings, it is very clear that the level of knowledge of EE possessed by pre-service teachers, is a determinant of what is taught in the secondary schools. The reason is that if teachers who are key actors in shaping the children that are environmentally knowledgeable in Nigeria lack adequate knowledge themselves, then achieving the goal of grooming environment-friendly future leaders becomes highly difficult if not impossible. Hence, ascertaining that pre-service teachers acquire adequate knowledge through what they are being taught becomes a matter of urgency.

2.5.5 Teachers' Attitudes towards Teaching and Learning of Environmental Education

Environmental attitudes refer to the collection of beliefs, affect, and behavioural intentions a person holds regarding environmentally related activities or issues (Kasarani, 2014). For Ogunjinmi, Onadeko, and Adewumi (2012), such attitudes are favourable and unfavourable feelings one has towards a characteristics of the physical environment or towards a related problem.

Kahyaoglu and Ozgen (2012) argued that determining pre-service teachers' attitudes towards environmental problems is of paramount importance as they are the ones who have been entrusted with the training of the future decision makers. A common factor from two studies carried out on pre-service teachers' attitude, knowledge and behaviour to environmental issues show that pre-service teachers have a positive attitude towards environmental issues (Boubonari, Markos & Kevrekidis, 2013. Tuncer et al., 2009) also showed positive results. Their study revealed that in a study carried out among prospective teachers in Turkey, despite the fact that the pre-service teachers demonstrated low level of knowledge concerning current environmental issues, their attitude towards the environment was positive with a high degree of concern about environmental problems.

In a recent study by Erhabor and Don, (2016) among pre-service teachers in Nigeria, the results show that the students had a positive attitude towards the environment. Similarly, Jekayinfa and Yusuf (2008) in a study on student teachers in Nigeria, also discovered that the pre-service teachers' attitudes towards teaching and learning of EE was highly positive.

These studies show that the attitudes of pre-service teachers towards teaching and learning about the environment and environmentally related issues are positive. This might be as a result of the experiences of the pre-service teachers within their immediate environment as regards certain environmental problems and feel something must be done to savage the situation. Without such positive attitudes, realizing the goal of impacting the students positively in EE in the secondary schools is doubtful because it is the teachers' attitudes that will determine the zeal that would characterize the teaching learning relationship among the learners to be taught.

2.5.6 Factors that constrain the teaching of Environmental Education.

The teaching of Environmental Education in higher education institutions and schools is not without its challenges. In other word, the process is constrained by certain factors (Akinnuoye & Abd Rahim, 2011). According to Akinnoye, et al, (2011) and Tuncer, Boone, Tuzun and Oztekin (2014), one major constraint to teaching of Environmental Education is lack of adequate knowledge of EE on the part of the lecturer/teacher. Without having adequate knowledge, then the task of preparing the pre-service teachers at the teacher training institutions as well as students in school will be hindered. Hassan and Ismail (2011) reiterated that inadequate knowledge of Environmental Education content on the part of teachers negatively affects what is passed on to the learners. That is, what is set out as an objective to be achieved through Environmental Education will be unrealizable (Turner et al. 2009). Furthermore, Hassan et al. (2011) identified the use of inappropriate teaching methods as another very important factor that constrains the teaching of Environmental Education in schools. As part of the principles of Environmental Education, the learners are expected to be taught using different methods that would ensure their full participation (UNESCO, 1978). The EE principle provides that a practical approach must be adopted in teaching the learners for the acquisition of adequate knowledge and appropriate skills needed to address environmental issues (ibid). Some of these methods are problem solving, cooperative learning, discussions, inquiry and fieldtrip methods (Ashmann, 2010). In the view of Siddqui and Khan (2015), even when the teacher possesses good knowledge of Environmental Education content to be taught and also approached the teaching using appropriate teaching methods, the effectiveness of the teaching exercise could still be constrained by non-availability of resources. In other word, these scholars argued that lack of resources is a factor that hinders effective teaching of Environmental Education.

According to UNESCO (1978), the teaching of Environmental Education must be all encompassing, touching environmental issues that are of both global and local interest but with special connection to the learners' localities. But Oncu and Unluer (2015) observed that at times, the environment where a learner comes from (rural or urban) does affect their responses to teaching of certain concepts or problems about the environment since some problems may not be common to them. As a result of the poor responses, achieving the objective of teaching Environmental Education in such a situation might be hindered. Similarly, Siddqui et al. (2015) stressed that lack of adequate support or motivation from the management of an institution might constitute a setback to the teaching of Environmental Education. Lack of adequate support from management emphasized by Siddqui et al. (2015) as a factor that could constrain the teaching of Environmental Education is sometimes exhibited by other members of the faculty who might not share the vision of teaching Environmental Education (Ashmann, et al., 2010). With the aforementioned factors interfering with the teaching of Environmental Education in the schools, it might not be possible to teach EE effectively. Therefore, these factors must be taken into consideration for positive result to be achieved.

2.6. Factors that constrain the learning of Environmental Education:

In a study on "Exploring students' learning challenges in environmental education" carried out by Rickinson and Lundholm (2010), their findings were found to be relevant to what is intended to be achieved by finding out the factors that constrain the teaching and learning of EE in schools and institutions of higher learning. Rickinson and Lundholm (2010) presented the findings of two studies carried out in two separate contexts at different times but with the same focus as they are both concerned with students' learning experiences in Environmental Education. The first presented the experiences of a sample of English secondary school students learning about the environment within a geography lesson while the second revealed the experiences of a sample of engineering and biology undergraduate in Sweden University (ibid).

As stated above, the first study took place among some teachers and students in selected English secondary schools in respect of their experiences in learning about the environment through geography. Specifically, the study explored the enactment of the environmental curriculum by teachers as it reflects their thoughts, how the students experience the teaching and relationship between the teachers and students' views about the lesson. The study was carried out through

qualitative methods, as generation of research data approaches included class observation of the lesson, use of students' lesson impression sheets as well as post-lesson interviews with teachers and students, while all interactions were audio recorded. The data generated were analyzed with the aim of finding out the teachers and students' actions in respect of their perceptions of the lessons (Rickinson, et al., 2010).

Similarly, the second study was carried out in Sweden among civil engineering and biology undergraduates learning about environmental issues as well as some postgraduate students focusing their thesis writing on the environmental field. In other words, three different categories of participants were involved, engineering undergraduates learning about some environmental content during a compulsory ecology course, biology undergraduates learning about some environmental content during an environmental audit report and some postgraduate students whose research focused on the environmental field. Similar to the first study, data generation was done through a qualitative research approach, engaging in observation of learners in the classroom and interviews that were audio recorded with the participants.

Although both studies were carried out in different educational contexts, certain similarities still existed between them, such as;

- Ascertaining the students' learning experiences about environmental issues based on their active participation in the learning process was the focus of both studies.
- Qualitative methods such as observation of learners in the class and audio recorded interviews were employed

Alongside the above similarities, there were marked differences in terms of the educational context as the age group of the learners for both studies differ. While the English secondary school students were 13-15 years of age, the Swedish undergraduate learners were 20-45 years of age. Additionally, while the English students focused on environmental issues in geography, the Swedish engineering undergraduates focused on environmental issues in a compulsory ecology course and the biology undergraduate students focused on environmental auditing.

Despite the marked differences in educational context and ages of the learners involved in these studies, the similarities in the findings have shown that there were common challenges being experienced by the learners in respect of the content of Environmental Education learnt or the processes involved in learning about the environment. As a result of the amalgamation of the

findings from both studies, three challenges (factors that hinder students' learning) that students face in learning about environmental education were identified. These are:

- Different emotional responses to the content
- Different opinions about the content as compared with the teacher/lecturer and
- Different views of what should be studied in a subject.

The diagram below represents the challenges (factors that hinder students' learning) faced by learners while learning about Environmental Education.

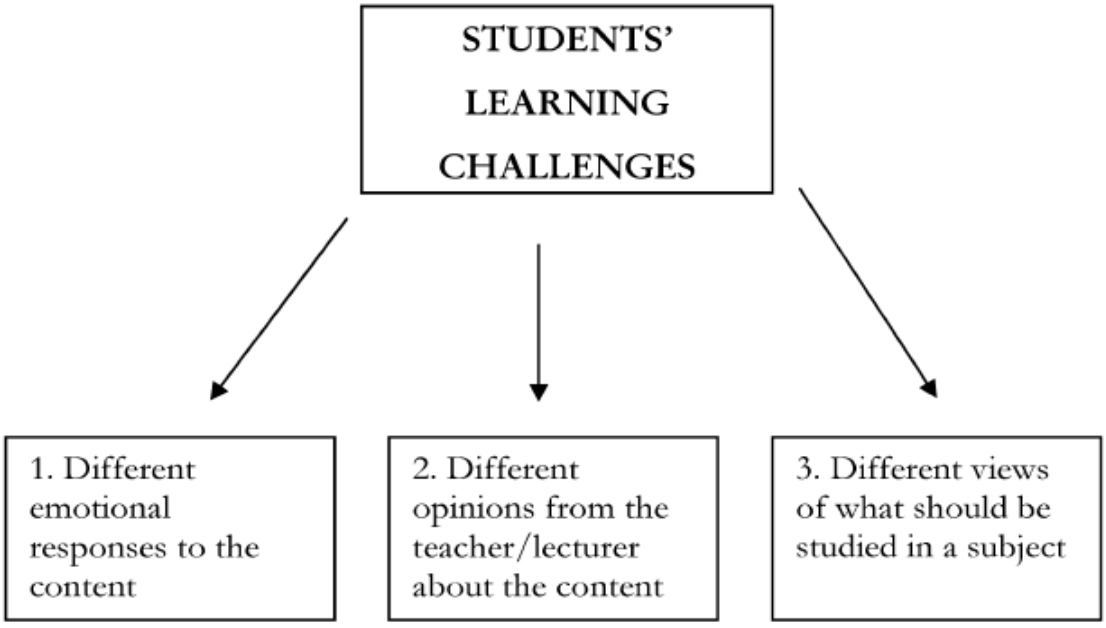


Figure 2. 4: Learning challenges experienced by students on Environmental Education courses.

Adapted from Rickinson and Lundholm (2008, p.345)

The first challenge emerged where the students had to struggle with their emotional responses in respect of particular subject matter learnt as their learning experiences could be determined by the way they responded to a particular section of the studied topic. Similarly, the second challenge was different opinions from the teacher/lecturer about the content that comes to play where the view of the teacher/lecturer is at variance with that of the students. Findings revealed that teachers

could be very firm on the issue they teach in Environmental Education (Corney & Reid, 2007; Ho & Seow, 2015), while the content been taught in Environmental Education could arouse strong emotions among the students. But because of the position of the lecturer and the consciousness of the lecturer's power in determining the fate of the students in the course, any student with conflicting opinions might be left with no choice but to accept the lecturer's view. Furthermore, the third challenge about different views of what should be studied in the subject has to do with students having feelings that certain topics should be part of the content to be covered in Environmental Education in order to be able to acquire adequate knowledge or not seeing the need for the inclusion of a particular topic in the course content.

The review of the above studies carried out by Rickinson and Lundholm (2010) is very relevant to my study which is an exploration of the intended, enacted and achieved Environmental Education curriculum within the Social Studies teacher education programme at AA University in Nigeria in a number of ways, such as:

- Both are case studies: While this study is carried out among Pre-service Social Studies teachers, the reviewed studies were carried out among selected English secondary school students and Swedish civil engineering and biology undergraduates.
- Qualitative methods such as classroom observation and audio recorded interviews were involved in generating data for both studies.
- Students' learning experiences were a major focus in both the reviewed studies and this current study.
- Both studies seek to find out students' learning challenges in Environmental Education; that is, the factors that hinder the learning of Environmental Education by students.

The above listed similarities make the findings of Rickinson and Lundholm (2010) on "exploring students' learning challenges in environmental education" very appropriate to address one of the themes in my study which raises factors that hinder the learning of Environmental Education by students. Hence, the findings of their studies about students' learning challenges in Environmental Education could be said to be some of the factors that hinder the learning of Environmental Education by pre-service Social Studies students.

The next section presents the need for pedagogical content knowledge (PCK) in teacher education programmes in general and in preparing pre-service teachers to teach Environmental Education in particular.

2.7. Pedagogical Content Knowledge

The need for the acquisition of adequate pedagogical content knowledge by pre-service teachers cannot be underscored enough (Van Driel & Berry, 2012). Without it, it will be difficult to ascertain whether particular subject matter taught by the teacher was understood by the learners or not. Teachers' competency that results in learners' advancement has two components (Kleickmann, Richter, Kunter, Elsner, Besser, Krauss & Baumert, 2013; Shulman, 1986), which are the Content Knowledge (CK) and the Pedagogical Content Knowledge (PCK). According to Kleickmann etal. (2013); Nind (2019), the content knowledge denotes adequate understanding of the content of the subject that is possessed by the teacher while the pedagogical content knowledge (PCK) has to do with the knowledge required by the teacher to teach the particular subject matter. Both sets of knowledge are very important in a teacher professional development programme. That is why it becomes very relevant to my study as the Pre-service Social Studies Teachers need to be well acquainted with the content knowledge of Environmental Education as well as the knowledge of how the content should be taught for the learners to learn effectively.

According to McDonald and Dominguez (2010), adequate knowledge of subject matter and the skills needed to effectively teach the subject matter is highly important for any teacher, especially for a new entrant into the teaching profession to perform well. Also, while examining factors that promote the effective teaching and learning in the field of mathematics, Baumert, Kunter, Blum, Brunner, Voss, Jordan and Tsai (2010); Hill, Rowan and Ball (2005) further emphasized that knowledge of teachers about the content to be taught, otherwise referred to as teachers' content knowledge (CK) and the knowledge of the skills to be used by the teachers to teach the subject matter, referred to as pedagogical content knowledge (PCK) will determine how well the students would learn. This is so because teachers are major agents required for students' learning to be worth-while, and so being certain about their levels of professional knowledge and pedagogical content knowledge cannot be negotiated (Baumert et al., 2010; Hattie, 2009). While stressing the importance of pedagogical content knowledge in achieving educational goals, Bausmith and Barry (2011) stated that teacher professional learning communities concentrate so much on pedagogical

content knowledge (PCK) of teachers more than issues pertaining to teaching and learning of subject matter.

2.7.1. Pedagogical Content Knowledge in Environmental Education

According to Kleickmann et al. (2013), teacher education programmes and professional development are identified as a means through which content knowledge and pedagogical content knowledge can be developed. The Social Studies Teacher Education Programme in AA University will therefore serve as a means through which the content knowledge and pedagogical content knowledge for teaching Environmental Education can be developed by the pre-service teachers to teach Environmental Education in schools. Darling-Hammond, (2010) and Kleickmann et al. (2013), argued that in spite of the importance of acquiring adequate subject content knowledge, the understanding of how this knowledge is taught to students is of greater importance during teacher education professional development. In other words, pedagogical content knowledge entails changing the content knowledge of a subject for if to be effective and easily used during classroom teaching -learning processes (Baumert et al., 2010); (Friedrichsen, Abell, Pareja, Brown, Lankford & Volkmann, 2009). Van Driel and Berry (2012) asserted that the pedagogical content knowledge as an integral part of teachers' professional knowledge applies to a particular topic, person and situation. In view of the above position by Van Driel and Berry (2012), as it applies to the training of Pre-Service Social Studies Teacher Education candidates at AA University to teach Environmental Education, the teacher education programme must take cognizance of what the PSSSTs are expected to teach, their personalities and the context of where they are going to teach in developing their pedagogical content knowledge.

In a study carried out by McDonald and Dominguez (2010) to examine the professional preparation of Science Teachers in Environmental Education, they emphasized the importance of pedagogical content knowledge for effective preparation of pre-service teachers (p.17) They mentioned that even though the teacher training institutions strongly need to make the acquisition of basic EE competences by the pre-service teachers their target, the need to acquire appropriate pedagogies to teach Environmental Education content with their learners must be given priority (McDonald et al., 2010). These scholars further reiterated that the results of major studies on training of pre-service teachers reveal that for success to be recorded in classrooms, adequate

knowledge of both the subject matter as well as the knowledge and competencies required to teach the subject matter is highly significant. This implies that for the Pre-service Social Studies Teachers in AA University to be well prepared to teach EE in schools, the Social Studies Teacher Education Programme must equip the teacher trainees with adequate EE content knowledge and the appropriate pedagogies to effectively teach EE in schools. To attain this, the PSSSTs must be prepared using the proper methods and appropriate instructional resources.

According to McDonald et al. (2010), a major challenge that was identified from their study as facing proper training of pre-service teachers for effective teaching of EE in schools could be linked to the fact that EE was expected to be taught as an interdisciplinary course. They argued that the interdisciplinary approach advocated was somehow limited by the fact that the ways most of the institution's department were structured does not promote working across each other thereby leading to a situation where the content knowledge and the approach to teach the content knowledge of EE might be acquired from different departments by the pre-service teacher. The above identified challenge might also be applicable to the AA University's Social Studies Teacher Education Programme since many of the EE contents/concepts to be taught could be traced to other courses. This situation therefore places responsibility on the AA University's Social Studies Teacher Education Programme/department in training of the pre-service teachers.

Despite the fact that McDonald et al.'s (2010) study was carried out among US universities to explore the professional development of science teachers to teach Environmental Education, the study is very relevant to my study carried out at a Nigerian University on the training of pre-service Social Studies teachers who are expected to teach Environmental Education in school. Both are case studies, and they use qualitative methods and focus on the training of pre-service teachers to teach Environmental Education. As a way of meeting the demand for adequate training of pre-service teachers that would effectively teach EE, the AA University's Social Studies Teacher Education Programme has the mandate to concentrate on not just producing teachers with sufficient EE content knowledge, but also teachers that would rightly transform the knowledge acquired into classroom instructional activities, as mere accumulation of content knowledge without acquiring the required knowledge about how the knowledge should be dispensed would hinder the achievement of the goals of teaching the learners about EE. To achieve this, the AA University Social Studies Teacher Education Programme must focus on the objectives of

Environmental Education in the aspects of adequate skills acquisition by the PSSSTs and appropriate methods needed to teach EE in schools.

2.8. Conclusion

The reviewed literature revealed that the enactment of Environmental Education curriculum in institutions' education programmes requires adequate attention as intended educational goals cannot be achieved through a poorly enacted curriculum. In respect of the enactment of the EE curriculum within the teacher education programmes, such attention is required for a meaningful result to be achieved. The alignment among the intended, enacted and achieved Environmental Education curricula therefore becomes an issue of utmost importance. In other words, the need for constructive alignment among these components become inevitable in order to achieve the set goals and objective of teaching EE in schools.

According to literature, the need for the inclusion of EE in the school curriculum was necessitated by the fast growing global environmental challenges occasioned by factors such as poor awareness of the interrelatedness between the proper use of the environment and the sustainability of the environment for present and future use. Literature shows that the world is faced with several environmental challenges such as climate change, pollution, loss of biodiversity, solid waste management, flooding and so on which pose a great threat to the existence of man and other living things. To solve these problems, literature revealed that combined efforts from governments at all levels, the general public and the institutions are crucial.

As a way of meeting the above demand, literature shows that the need for global acceptance of EE as a basic way of addressing the situation became necessary. Although literature reveals that EE was globally accepted in the 20^{th} century, particularly through the outcome of the Tbilisi conference of 1976, coupled with the efforts of the UNEP/UNESCO, records however showed that certain levels of EE were already practiced in some parts of the world that pre-dated the Tbilisi official date, but in rather primitive ways. The Nigerian government was not left behind in the effort of adopting EE as a way of solving environmental problems through the establishment of different environmental agencies and promulgation of environmental laws.

In Nigeria, the Nigerian Educational Research and Development Council (NERDC) oversees the inclusion of EE contents within the school curriculum starting from the primary level. Additionally, the Federal Environmental Protection Agency that developed the Nigeria National Policy on Environment was equally established. The policy document of this agency has served as a guide to the development of the EE curriculum by institutions in Nigeria. Furthermore, the Nigerian National Policy on Education identifies teachers as having very important roles to play in achieving the set EE goal as it states that no education system can rise above the qualities of its teachers.

The findings of several studies show that if teachers must effectively play their role of providing adequate Environmental Education to the citizens, the training of teachers must be given adequate attention. The means through which the pre-service Environmental Education teachers are trained was seen as highly germane. The pre-service Social Studies teachers must therefore acquire adequate knowledge of EE, the appropriate teaching method and relevant skills to be qualified for the task. Finally, findings from studies emphasized the need for the development of pre-service teachers' EE content knowledge (CK) and pedagogical content knowledge in ensuring the actualization of teaching EE in schools.

CHAPTER THREE

THEORETICAL FRAMEWORK.

3.1. Introduction

This chapter pays attention to the theoretical framework that underpins this study. In my quest to select an appropriate theoretical framework for this study, I was guided by Grant and Osanloo's (2014) rationale that a theoretical framework is the blueprint of a study and it ought to be linked directly to the research problem. As alluded to in chapter one the purpose of this study was to explore how the intended EE curriculum at a Nigerian university is enacted and achieved, within the Social Studies Teacher Education Programme. Thus, it was of paramount importance to find a theoretical framework that adequately reflected the focus of the study.

In this chapter, I present the Remillard and Heck's (2014) model for curriculum policy design, and enactment system. Finally, the chapter is concluded.

3.2. Remillard and Heck's (2014) model for curriculum policy, design, and enactment system

This study draws on Remillard and Heck's (2014) model of the curriculum policy, design, and enactment system for its theoretical framework. The choice of this model of the curriculum policy, design, and enactment system for this study is premised on the fact that it adequately captures the main concerns of this study. In other words, this framework provides a detailed explanation on the main constructs of this study (intended, enacted and achieved curriculum) and how they interrelate in order to achieve the goal of producing well trained pre-service Social Studies teachers who will teach Environmental Education at schools. Remillard and Heck's (2014) model examines the relationships that exists between the official and operational curriculum in terms of the curriculum objectives. In doing this, the operational curriculum emphasizes the teacher-intended curriculum, enacted curriculum and student outcomes.

In respect of this study, the official curriculum is represented by the National Policy on Environmental Education (NEEP, 2016) with well stated objectives that are expected to guide the teacher training institutions in Nigeria while designing their training programmes for preparing teachers to teach EE. Similarly, the operational curriculum with its different components (intended curriculum, enacted curriculum and student outcomes) is represented by the university's intended

SS teacher education curriculum for EE, which is enacted by Social Studies lecturers and the achieved curriculum focus on the outcomes of learning as demonstrated by the PSSSTs.

Model for curriculum enactment process

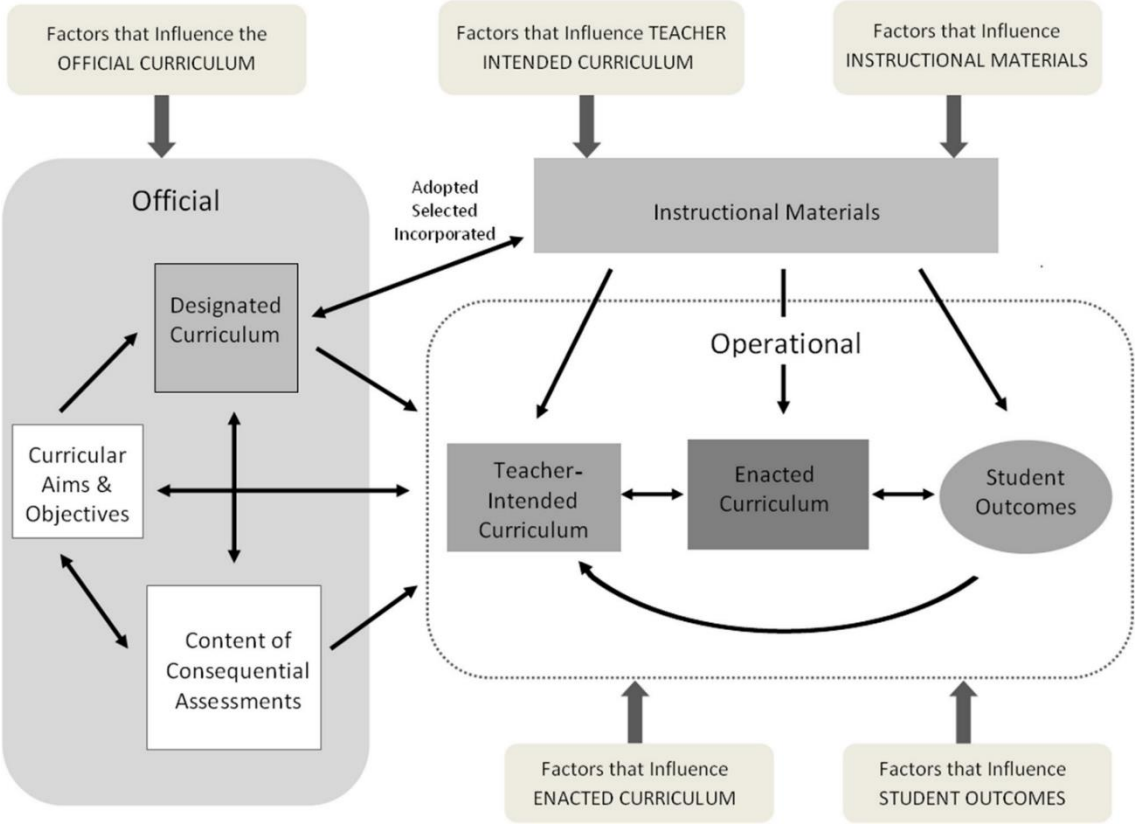


Figure 3. 1: Model for curriculum enactment process Adapted from Remillard and Heck (2014)

The above framework is adapted to suit my study as indicated in figure 3. 2 that follows:

Adaptation of the Remillard and Heck (2014) model for this study

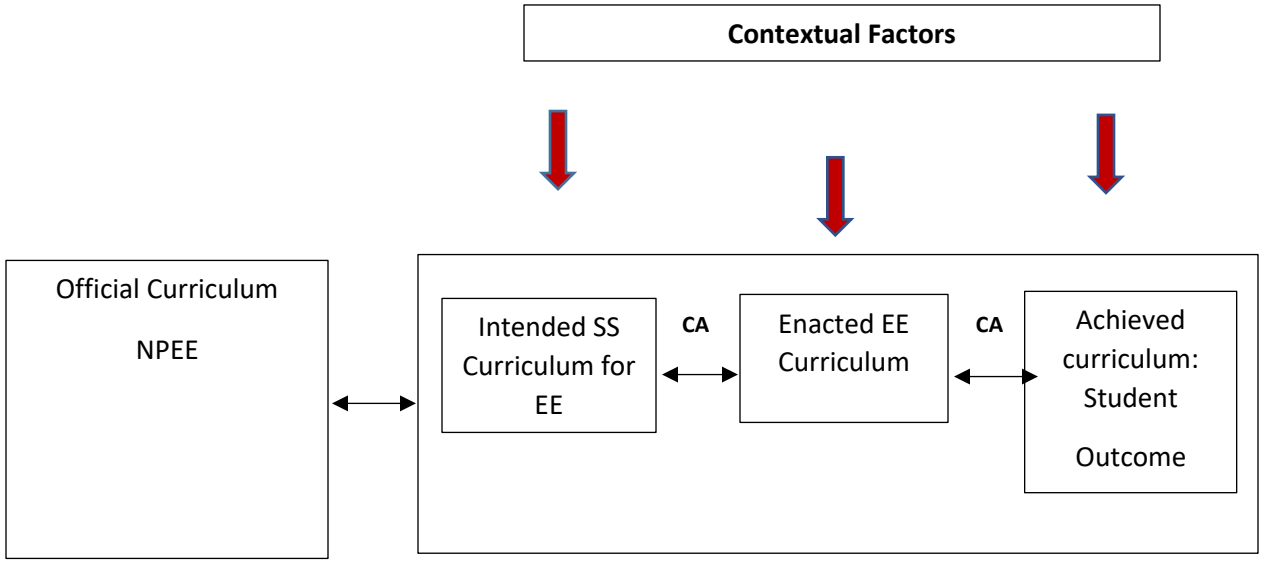


Figure 3. 2: Adaptation of Remillard and Heck's (2014) model to suit this study. Source: Author

Note: CA= constructive alignment

According to Remillard and Heck (2014), the process of curriculum enactment is a complex and multifaceted one that involves several actors at different levels and components that engage in continuous interactions. Remillard and Heck (2014) built their work on the framework of Schmidt, Jorde, Cogan, Barrier, Ganzalo and Moser (1996) on curriculum enactment. Although different terms were used by the two frameworks, a point of agreement in both frameworks lies in the fact that there is usually the formal/intended curriculum and the operational or implemented curriculum. The formal curriculum entails a written statement of what is intended to be taught in line with the national, state and local government positions. On the other hand, the implemented curriculum refers to what is actually done in the classroom. Schmidt et al. (1996) stressed that these two major parts are linked by several other components.

The above frameworks are relevant to the process of curriculum enactment of Environmental Education (EE) within the Social Studies Teacher Education Programme at a Nigerian university. This is so because the enactment and teaching of EE in Nigerian institutions is guided by a national

policy with clearly stated goals and objectives that further guide the operations of universities and schools (FEPA, 2016). Besides, the different domains of curriculum as identified by Schmidt et al. (1996) are relevant to my study. The official curriculum domain and its components in curriculum enactment process are presented next.

Official Curriculum:

According to Remillard and Heck (2014), the official curriculum is the aspect of the curriculum enactment process where the governing agencies state what the students are expected to learn and their performances. The official curriculum comprises three aspects, namely, curricular aims and objectives, content of consequential assessments and the designated curriculum. According to McLaughlin (1990), these components have an influence on the operational curriculum.

i. Curricular aims and objectives: The curricular aims and objectives is a policy statement of what the students are expected to learn through instructions given by teachers (Remillard & Heck, 2014). It is usually adopted at national or state level in order to achieve specified outcomes. In Nigeria, this would by the NPEE, its aims and objectives, and intended learning outcome for EE.

ii. Content of consequential assessment: The content of consequential assessment is also referred to as tested curriculum (Cuban, 1993). This is the assessment of the effects of the curriculum on the school, students and teachers with a view to ascertaining the progress and or level of the quality of instruction on the school, student or any individual student's achievement (Remillard & Heck, 2014). The assessment serves as a way of finding out whether the goals of the curriculum are attained by the students. In enacting the EE curriculum in Social Studies Teacher Education Programme in Nigeria, effort must be made to ensure that appropriate assessment of the attainment of the curriculum goals by SS lecturers is ascertained.

The contents of curricular aims and objectives and consequential assessment affect each other as shown in the model.

iii. The designated curriculum: According to Remillard and Heck (2014), designated curriculum means the instructional plans as provided by an authorized governing body at any level with

recourse to the official curricular aims and objectives as a way of ensuring that the goals of the curriculum enactment are addressed. Remillard and Heck stressed that the designated curriculum is specifically connected with the teacher. That is, the plans of how the teacher needs to implement the curriculum. This is, the stage at which the role played by instructional materials in the official curriculum of any school system is pronounced (Valverde, Bianchi, Wolfe, Schmidt, & Houang, 2002). The instructional material could be an approved textbook or other resources. These scholars state that in some school systems, the official curriculum is communicated by the curricular aims and objectives and assessment without the designated curriculum. Hence, instructional material is outside the official curriculum.

Next the operational curriculum domain and its components are discussed.

The Operational Curriculum:

The operational curriculum is the second domain in the curriculum enactment process. Remillard and Heck (2014) established that this is the stage where the official curriculum is put into action. This means that the operational curriculum is a shift from describing instructional objectives and how they could be achieved towards actual classroom enactment. Remillard and Heck (2014) state further that the operational curriculum component is so named because it is the actual transformation that occurs through the enactment process separately from the official domain. This is the stage of implementation of both innovations and adaptation of local context (Stein & Coburn, 2008). The operational curriculum involves three components, which are the teacher-intended curriculum, the enacted curriculum and the student outcome.

i. The teacher-intended curriculum: The teacher-intended curriculum evolves when teachers design instruction by drawing on the designated curriculum and other available resources (Remillard & Heck, 2014; Gueudet & Trouche, 2009). The process encompasses all the steps taken by the teacher for a clearer picture of the planned instruction. There exists strong interaction between the teacher-intended curriculum and the instructional materials in making plans that will lead to achieving the desired goal. The teacher intended curriculum in this study is the intended SS teachers' education curriculum for EE at the AA University.

ii. Enacted curriculum: The enacted curriculum involves the interaction between the teacher and students in respect of the task of each lesson or several lessons that take place. According to Remillard and Heck (2014), the enacted curriculum is identified as the element that has the greatest impact on the students' outcome in the curriculum framework. This is not an indication that other elements do not influence students' outcomes, but to be relevant they must fit into the enacted curriculum. A very important point noted by Raudenbush (2008) about the enacted curriculum is its proximity to classroom learning. Remillard and Taton (2013) emphasized that the enacted curriculum has the teacher at the centre of the activities. Thus, the double arrow between the teacher-intended curriculum and the enacted curriculum explains the dynamic nature of the curriculum. The interaction among students, the teacher, the task to be carried out and educational material that occurs at this level further depicts the importance of the enacted curriculum (Rezat, 2011). This interaction is referred to as instructional interaction.

The above discussed level of the curriculum enactment process is relevant and very important to the enactment of Environmental Education EE in the Social Studies Teachers' Programme in Nigerian Teacher Training Institutions. This is so because at this level, the real interaction that will ensure proper enactment of the EE curriculum takes place. That is, interaction among the students (those to be taught with the curriculum), the teacher (the implementers of the curriculum) and educational materials (resources needed to aid the process of instruction). According to Herbel-Eisenmann and Otten (2011); Wood, Nelson, and Warfield (2014) in a study on the enactment of the mathematics curriculum, the way a subject is positioned and represented in the classroom is reflected and shaped by the nature of interaction that takes place. Furthermore, Esmonde and Langer-Osuna (2013) emphasize the importance of students-teachers-instructional resources interaction at the enacted curriculum level during any curriculum enactment process. These scholars stressed that this interaction which is part of the enacted curriculum influences the student outcomes.

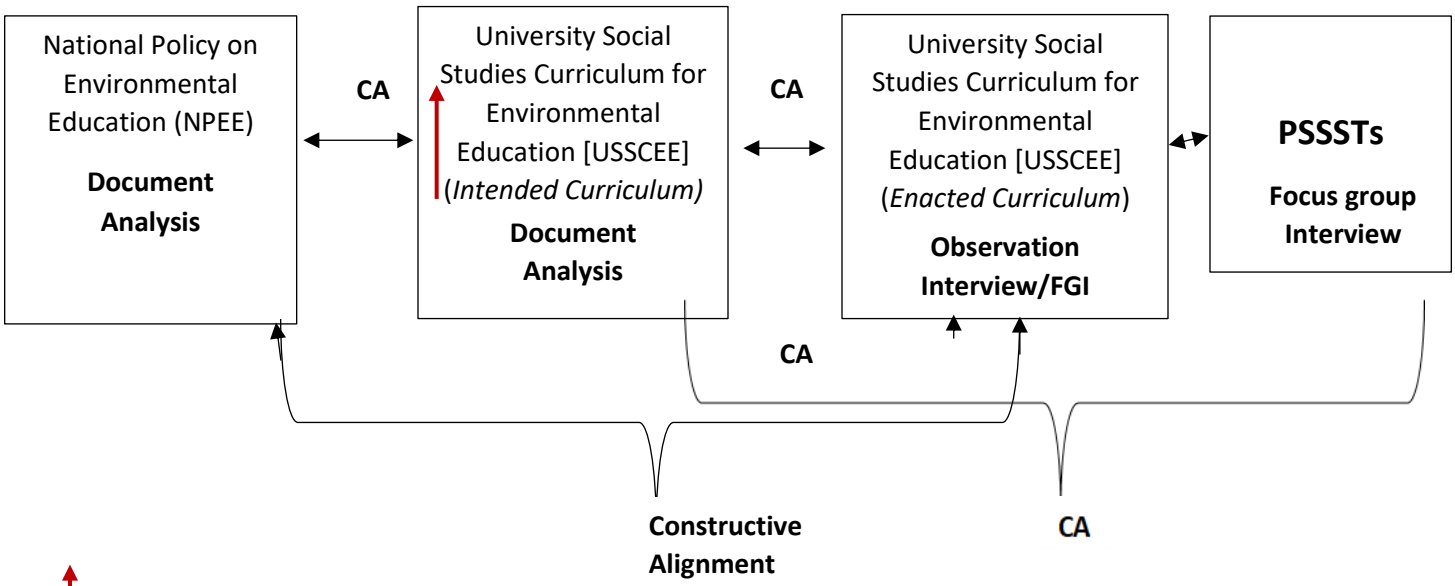
iii. Student outcomes: The student outcomes in a curriculum enactment exercise refer to what remains with the students by virtue of their involvement in the enacted curriculum, (Remillard & Heck, 2014). This is a very important aspect of any curriculum enactment endeavour because it is expected that the curriculum in use at any time should have the students who are to be instructed

with it as its focus. The preference for the term outcomes by Remillard and Heck (2014) was borne out of the fact that the enacted curriculum might possibly produce different types of results besides skill acquisition. Rather, it could be how much the students achieve from an instructional approach, the students' new attitudes/ views of the subject, their contributions in the classroom and so on (Ruthven, 2011); (Boaler & Greeno, 2000); (Herbel-Eisenmann & Otten, 2011). Additionally, Remillard and Heck (2014) established that the results of the enacted curriculum are not limited to only what is intentionally taught; hence the term hidden curriculum is used to describe certain outcomes that were not explicitly taught. The enacted curriculum determines what the student actually learns while the student outcomes affect the activities carried out through the enacted curriculum thereby resulting in a continuous interaction between them. The interaction is reflected by the bidirectional line between them.

From the framework, one can note that there are two basic domains of curriculum enactment which are the official curriculum and the operational curriculum with their different interrelated components. These domains and components are influenced by several factors that act on them from the environment. Remillard and Heck (2014) submit that these factors that exert their influences on the curriculum may be social, political, cultural, structural or cognitive in nature, and the influences could be exercised through formal or informal policy. For instance, in a study carried out by Xu (2013) in China, he observed that curricular goals and instructional materials were influenced by the evolving political and cultural conditions of the nation. In a similar study by Pepin, Gueudet, and Trouche (2013), they observed that the differences in Norwegian and French cultural traditions were obvious in their official curriculum, instructional materials and operational curriculum. Also, Lui and Leung (2013) observed that in the enacted mathematics curriculum in Germany and Hong Kong, the influence of the Dadaktik and Confucian traditions were revealed at the levels of the teacher-intended curriculum and instructional materials.

A close look at the different stages and levels involved in the curriculum enactment process reveal that the intended curriculum is one component that plays multiple roles in the curriculum enactment process. It serves as a key resource to the official curriculum as well as the implemented curriculum at different levels.

Suitability of TF as an Analytical framework:



Sequencing of topics, objectives/learning outcomes and assessments

Source: Author:

*__Note__: CA=Constructive Alignment

The key terms in this study are alignment, sequencing of topic and enactment thus I need an analytical framework that embraces these constructs when I engage in curriculum analysis. Constructive alignment refers to coherence between sets of aims, goal, objectives, content and assessment within the curriculum or between policy and curriculum (Biggs, 2012); Trigwell & Prosser, 2014). The sequence in a curriculum focuses on the order in which things occur (Zapata 2006). One approach to sequence is based on the logic of the subject matter, another approach is based on the way individuals process knowledge (Ornstein and Hunkins, 2009). These terms will be used when interrogating the alignment between:

- NPEE and intended curriculum SS university curriculum,
- The intended and enacted EE curriculum,
- NPEE and enacted curriculum
- Intended curriculum and student outcomes

As can be seen from the diagram the analysis of data is not a linear process, it is across documents (CA) and within documents (Sequencing). To use the above framework during analysis I will embark on content analysis. This means I will engage in rigorous, systemic, repetitive reading of the documents, transcripts of observations, interviews and focus group interviews bearing in mind the meanings of constructive alignment and sequencing before coding can begin.

The analysis of these policy documents will be guided by the following four questions:

What need is your curriculum responding to?

Who is the curriculum aimed at?

What are the goals of the document?

What content areas does it focus on?

3.3. Conclusion

Remillard and Heck's (2014) model of the curriculum policy, design, and enactment system and Porter's (2002) three-dimensional curriculum alignment model and the Surveys of Enacted Curriculum frameworks are used for the theoretical framework for this study. The use of both frameworks provide opportunity to explore the process of enacting the EE curriculum within the Social Studies Teacher Education Programme. Furthermore, the suitability of the Remilard and Heck 2014 framework as analytical tool was emphasized. The use of the framework will give room for rigorous and systemic analysis of the data generated from different sources. In the next chapter the methodology is elaborated.

CHAPTER 4

RESEARCH METHODOLOGY

4.1. Introduction

The previous chapter described the theoretical framework that underpinned this study which together with the nature of the research directed the choice of research methodology. Creswell and Creswell (2017) assert that research methodology entails the procedures through which researchers go about their work of describing, explaining and predicting phenomena. This chapter presents the research methodology by describing the different components therein. The research paradigm is discussed first and the justification for the interpretative paradigm is presented. Next the rationale for adopting a qualitative research approach in the study is discussed followed by a description and justification of the case study design. The location of the study and purposive sampling techniques used are outlined. The research instruments (document analysis, one-on-one interviews, focus group interviews and questionnaires), and the procedures used for data generation and its analysis are described. Thereafter issues around research rigour and ethics are considered and limitations of the study were discussed. Finally, a summary of the chapter is presented in the last section.

4.2. Context of the study

This study was carried out at the AA University (pseudonym) within the faculty of Education, specifically in the Department of Social Science Education. The reason for carrying out the study in the faculty of Education is because it is the faculty where teachers are trained for the Bachelor of Education (B.Ed.) degree in Social Studies. The Social Studies lecturers, the Pre-service Social Studies Teachers (PSSSTs), the SS teacher education curriculum for EE as well as NPEE document formed the sample for the study.

4.3. Research Paradigm

Paradigms are patterns of beliefs and practices that guide the way we do things and establish a set of practices. Creswell and Creswell (2017) consider a paradigm to be the perception of the world as viewed by individuals, while Cohen, Manion, Morrison, (2018) assert that paradigms serve as a lens through which a phenomenon may be viewed. Put simply, this means that the paradigm directs the thought patterns and actions undertaken in a study, from its inception.

This study lies within the interpretative paradigm. According to Cohen et al., (2018) the main concern of the interpretivist paradigm is to understand the subjective world of human experience and to derive meaning from shared experience. Similarly Bertram and Christiansen (2014) state that the purpose of an interpretivist paradigm is to develop a better understanding of how people make sense of the contexts in which they live, work and learn. In agreement, Check and Schutt (2011) are of the opinion that interpretivists view reality as socially constructed with different meaning by different people. Hence, there is a need to understand the meaning given by different people in a study.

This means that researchers working within the interpretive paradigm aim to describe and make sense of social phenomena, such as people's opinions and experiences, with a view to developing a greater understanding of how people make sense of the contexts in which they live and work. Creswell and Creswell (2017) stress that the interpretive paradigm is appropriate when a study is concerned about the specific context where people live and work.

The use of the interpretive paradigm allowed me to gain deeper insights into how the Social Studies teacher education intended EE curriculum is enacted and achieved, within the Social Studies Teacher Education Programme, at the AA Nigerian University. Therefore, the experiences of the participants and their opinions about the teaching and learning of EE is presented from the perspective of the participants.

4.4. Research approach

This study adopted a qualitative research approach because I sought to explore the enactment of Environmental Education within the Social Studies Teacher Education Programme at AA University. The ontological position of the interpretive paradigm forms the basis for choosing a qualitative research approach for this study. According to Cohen et al. (2018), qualitative research is a research approach that studies a phenomenon or person within the context in which they exist. Cohen et al. (2018) further stress that the approach is aimed at having an in-depth understanding of an identified behaviour and what necessitates such behaviour. Furthermore, Corbin and Strauss (2014) argue that qualitative research seeks to explore participants' in-depth experiences about a phenomenon with a view to understanding how meanings are made in order to develop multiple social realities about a particular phenomenon possible. Qualitative research offers suitable approaches when seeking to know or interpret in-depth rich thick descriptions and understanding of a real-life phenomenon, such as human subjective experiences, contexts or conditions of living, social behaviours, understanding or conceptions, views and perspectives on social issues (Yin, 2017). The above position of Yin (2017) concurs with Creswell and Creswell's (2017) who assert that qualitative research is an approach to study how an individual or a group perceive a subject or issue within the society. Similarly, Johnson and Christensen (2019) stress that qualitative research uses diverse procedures for data generation to ensure trustworthiness of the data generated.

To explore the enactment of Environmental Education within the Social Studies Teacher Education Programme at the AA University, the qualitative approach has been used because this approach is appropriate to carry out the nature of the proposed research. Also, qualitative research provides opportunity to interact with the participants in their natural setting, that is, the university where teaching and learning of EE occurs. The participants had means of freely expressing their views without any form of bias or imposition of personal views.

4.5. Research Design:

This study adopted case study design which allowed for in-depth exploration of this study that focuses on the enactment of Environmental Education within Social Studies Teacher Education in a Nigerian University. According to Creswell and Creswell (2017) case study is one of the unique research designs used within the Social Sciences and education for carrying out qualitative studies. Case study focuses its findings on a single entity, which can be a person, group/s or organization, event, action, or situation. Yin (2017) affirms that a case study is an approach to research that make use of various data sources to explore a phenomenon within its context. Baxter and Jack (2008) add that using various data sources is to ensure that the subject/ or objects being explored are not viewed through a single lens, but through several lenses for deeper understanding of the phenomenon.

A case cannot be considered without its context as the context binds the case. McMillan and Schumacher (2010) explain that a case bound to a context refers to the uniqueness of the study in respect of the time, setting as well as the characteristics of the research participants. In this study, the case explored is the enactment of Environmental Education within the Social Studies curriculum. The context is bounded to the SS Teacher Education Programme at AA University in Nigeria (Pseudonym). According to Yin (2014), a case study could either be descriptive in its approach, explanatory or exploratory. He explains that a descriptive case study is concerned with giving reports of an event while the explanatory case study relates to testing hypothesis. On the other hand, the exploratory case study focuses on gaining deeper insight and understanding a situation or phenomenon. Yin stresses that the new insight or information about the phenomenon could serve as a basis for further studies. In view of the above positions as presented by Yin (2014), this study adopts the exploratory case study as the focus of the study is to explore the enactment of EE within Social Studies Teacher Education programme in a Nigerian University.

4.6. Sample:

According to Cohen et al. (2018), sampling involves making decisions about which people, settings, events or behaviour to include in the study. According to Bernard (2017), generating

research data is a fundamental issue, due to the importance of the generated data, which includes gaining better understanding of the theoretical framework. Hence, choosing the samples from where the needed data would be generated and the ways to collect the data require thorough investigation. Additionally, Flick (2014) asserts that for adequate generation and interpretation of data, as well as presentation of findings, the sampling technique is very important. Sampling facilitates making reasonable choices about participants and data generation procedures by the researcher. This study thus uses purposive sampling which refers to a sampling technique that involves thoughtfully choosing a participant for research based on the qualities possessed by the participant in respect of the study (Bernard 2017). Rule and John (2011) described purposive sampling as sampling that based the selection of the research participants on their appropriateness to facilitate the need for the research.

This means that purposive sampling entails identifying and choosing participants for a study based on their proficiency and knowledge about the researched phenomenon. Besides been well-informed and experienced, Kumar (2011) emphasized that the participants being available and prepared to provide required information coupled with the ability to clearly express their views about the phenomenon are very important.

This study sought to explore the enactment of Environmental Education within the Social Studies Teacher Education Programme at a Nigerian university, hence the following were purposively selected:

- National Policy on Environmental Education,
- The SS teacher education curriculum for EE at AA University,
- SS lecturers (lecturing year 1-3 of the BED SS programme)
- and PSSSTs (from year 1-3).

The choice of the Social Studies lecturers and the Pre-service Social Studies Teachers become very important because the lecturers are the ones enacting and using the SS teacher education curriculum for EE for training of teachers while the PSSSTs are the ones trained with the documents. Additionally, Check and Schutt (2011); Cohen et al., (2018) further stress the importance of taking participants' locations, proximity and phenomenon being studied into consideration while choosing samples in qualitative research. The above conditions further confirm the suitability of the Social Studies lecturers and PSSSTs as samples for this study based

on the fact that both groups are within the premises of AA University, which eases the problems of availability and accessibility. Within the SS Teacher Training Department at AA University there are a total of 6 lecturers who teach across from years 1-3. All 6 lecturers were invited to participate in the study. 18 PSSTs were selected – 6 per year (from year 1-3). The criteria for the selection of PSSSTs was guided by their performance in the first semester examination (2 PSSST will be selected from the top, middle and bottom rung of the mark distribution for each year of study – 6 per year)

4.7. Location of study:

The location of the study is AA University, in, Ondo State Nigeria, in the South Western geo-political zone of the country. The institution has six faculties which are Faculties of Agriculture, Arts, Education, Law, Science and Social and Management Sciences. This study was carried out in the Faculty of Education and specifically in the Department of Social Science Education. The Faculty of Education would be the focus for the study because it is the faculty where the training of teachers is carried out in the university. The university trains students at both the undergraduate and postgraduate levels in the different faculties either as full-time or part-time students, with a student population of about 17 000.

Map of Nigeria showing states Source: Google maps

4.8. Data generation plan:

In qualitative research, data could be generated through observations, tests, questionnaires, interviews and focus group discussions. This means that data generation in qualitative research involves collecting data that are primarily in the form of words and not numbers (Mason, 2016). The data for this study are generated as per the plan reflected in Table 4.1.

Table: 4.1 The data generation plan for the study

Research question	**Phase**	**Data source**	**Method used to generate data**
1. How is the Social Studies Teacher-Training Curriculum on EE aligned to the National Environmental Education Policy in terms of goals, objectives, competencies development, topics, sequencing and progression of knowledge development?	1	National EE policy SS teacher education curriculum for EE for y1-3	Document analysis: content analysis for constructive alignment
2. What teaching strategies do SS lecturers use to teach EE and why do they teach the way they do?	2	SS teacher education curriculum for EE y1-3 SS Lecturers	Document analysis Observation /interview
3. What factors enable /constrain the learning of EE from the perspective of: 3.1.SS lecturers, 3.2. PSSSTs	3	 SS lecturers PSSSTs	 Focus group interview Questionnaire/ focus group interview

The above table shows the research questions, the research participants, data generation sources, and the methods to be used in generating the data. Data were generated in four phases. Each phase is outlined next.

Phase 1 of data generation aimed to address research question one which entailed document analysis of NPEE and the SS teacher education curriculum for EE

To answer research question 2, data were generated during phase 2 from the SS teacher education curriculum for EE for teaching the PSSSTs through document analysis as well as observation of SS lecturers during their enactment of the SS curriculum.

Phase 3 of data generation embraced one-on-one interviews and observations with the SS lecturers to generate data to respond to research question 3, while at phase 4 of the data generation process, the SS lecturers were engaged in focus group interviews while open-ended questionnaires were administered to the PSSSTs before they were also engaged in focus group interviews.

Next the explanations of the data generation instruments used in the study are presented.

4.9. Data generation instruments

The following methods were used to generate data, document analysis, observations, individual interviews, focus group interviews and open- ended questionnaires.

4.9.1. Document Analysis:

Document analysis involves gathering of information used in an official text, studying and analysing the content and then processing and understanding of the content in the documents so that conclusions may be drawn (Cohen et al., 2018). Ritchie et al., (2003) describe document analysis as careful studying of documents with the aim of gaining in-depth understanding of its content. Yin (2017) states that documents serve as a complementary source of information to other sources of data generation. Bell (2010) stresses that, while collecting information from documents, the researcher must be conscious of the fact that only information that is relevant to the study being carried out is extracted for analysis. In this phase, the documents involved were the National Policy on Environmental Education (NPEE, 2016) and the Social Studies teacher education curriculum for Environmental Education for year1-3.

The NPEE was subjected to content analysis to establish its goals, aims, objectives and content. The SS programme from year 1-3 was subject to content analysis in order to establish its goals, aims, objectives and identify the main topic included in each year of the SS programme as well as the competences that are envisaged to be developed in PSSSTs. The NPEE and SS teacher education curriculum for EE for year 1-3 will be checked for constructive alignment in terms of

objectives, goals, competencies, topics, and progression of knowledge development. In other words, a process of curriculum auditing between the NPEE, SS teacher education curriculum for EE and the enacted SS teacher education curriculum for EE occurs. These analyses were juxtaposed to map the alignment and/ or disjuncture between the national NPEE and the SS teacher curriculum for EE. Furthermore, through the analysis of the Social Studies Environmental Education programme for year 1-3 / lecture pack, the envisaged strategies to teach EE among the PSSSTs were ascertained as well as the amount of EE content in the documents. This process helped to discover how this content was to be taught so that the PSSSTs could gain the needed skills to teach EE in schools. The analysis of the document further helped to gain insight into the envisaged professional development concerning EE that would be acquired through the Social Studies teacher education curriculum.

According to Bowen (2009, p.31), document analysis as one of the instruments for data generation in qualitative research has both merits and demerits. The merits include a high level of proficiency achievable within a limited time frame, low cost required and stability of analyzed documents which is guaranteed based on the fact that the researcher's presence does not lead to any form of alteration of information. Also, less stress is involved in document analysis as there is readily available information for evaluation. Bowen (2009) noted that document analysis is sometimes criticized on the basis that it may not give room for detailed responses to research questions. Bowen stressed that the several merits of document analysis far out-weighed the above short-coming. However, in this study the use of document analysis alongside other data generation instruments caters for any lack of detail through the use of document analysis because the other instruments are capable of generating in-depth responses required for research questions in qualitative research.

4.9.2. Observation:

Creswell and Creswell (2017, p.113), describe observation as a qualitative data generation method that involves collecting "open-ended, firsthand information" through studying of individuals within a particular setting. According to Hammersley and Atkinson (2007), observation as a data collection technique in qualitative research involves studying the day to day actions or activities

of particular groups of individuals in their natural setting with a view to understanding a particular phenomenon (see appendix 6 for observation schedule). This means the researcher must be within the setting while the activities are going on to have a first- hand experience of events. Thomas, Nelson and Silverman (2015) stress that using observation for data generation in qualitative research requires that the researcher spend a reasonable amount of time within the context where the study is carried out. Hammersley and Atkinson (2007) concur with the above views of Thomas et al. (2015) asserting that observation involves the researcher partaking in the day to day activities of some individuals for a long period either openly or secretly as the researcher watches various activities and listens to different conversations of the people.

In this study, each of the 6 Social Studies lecturers were observed twice (the duration of each observation was 45 minutes, in line with the duration of the lecture) in the SS class while teaching to see the strategies employed to teach the pre-service Social Studies teacher Environmental Education. To ensure that the observed activities were captured, observations were audio recorded and field notes were kept by the researchers (Pitney & Parker, 2009). Taking of notes is aimed at providing the researcher the opportunity to gather relevant information required to answer the research questions for which the observation was carried out.

Creswell and Creswell (2017) state that some merits of observation are that it creates the chance to collect firsthand information from a natural context. On the other hand, Thomas et al. (2015), Locke (1989) emphasized that a key weakness of observation as a qualitative research approach for data generation lies in the fact that normal activities of a natural setting are often altered by the sighting of a stranger. This is so because the participants might apply some caution in the way they naturally behave having realized there is a stranger taking down certain information about them either through writing or by recording. This weakness can be addressed by the researcher by examining the lecturers' teaching portfolio (with lessons plans, assessments etc.).

In addition, the recorded notes will serve as a very important guide during the post observation one-on-one interview with the Social Studies lecturer on why they teach EE among the PSSSTs the way they did as observed in the class.

4.9.3. Individual Interview:

According to Mason (2016), an interview is a conversation between a researcher and the respondents, but is different from everyday conversation as it focuses on the researcher's need for data generation. Similarly, Cohen et al. (2018, p.349) maintain that an interview refers to "exchanging opinion between individuals on issue of common concern with a view to providing answer to the issue being discussed." Interview is one of the instruments mostly used for data collection in a qualitative research owing to the fact that it allows for in-depth interaction between the interviewer and the interviewees, (Creswell and Creswell, 2017). Based on the fact that this study embraces the qualitative approach, individual face-to-face interviews were carried out with the 6 SS lecturers that taught the PSSSTs from year 1-3 on the reasons why they teach Environmental Education the way they did.

According to Robson (2011), there are three types of interview viz: structured, semi-structured and unstructured individual interview. The structured interview uses programmed questions with the researcher been fully in charge. The semi-structured interview adopts a flexible approach using an interview plan to regulate the discussion, without the researcher dominating the interaction. The unstructured interview however is highly flexible and casual in nature, with the investigator allowing the discussion to evolve even though there is a specific focus (Robson, 2011). Drawing on the positions of Robson (2011) this study adopts the semi-structured one-on-one interview (see appendix 7 for semi- structured interview questions). The semi-structured one-on-one individual interview often comprises several open-ended questions which helps to understand the central phenomenon and answer the study questions, (Creswell & Creswell 2017). This will allow the interviewees liberty to respond to questions in their own way for elaborate and detailed answers, (Mason, 2017). The one-on-one interview is an ideal way of interviewing as it allows the participant to feel comfortable and confident to share ideas confidentially. The semi-structured interview allowed for an enabling interaction between the researcher and the interviewee. The researcher was able to ask certain unintended follow-up questions thereby probing deeper for in-depth understanding of the reasons why the Social Studies lecturers chose to teach EE the way they do and how the strategy used by the SS lecturers was able to equip the PSSSTs with the needed skills to teach EE in schools. The interviews were audio recorded and transcribed verbatim.

Wilkinson and Birmingham (2003) highlight the advantages and disadvantages of using interviews as a data generation method. The advantages include the interviewer's liberty to introduce follow-up questions that will enhance probing deeper during the interview. The body language of the interviewee can be noticed by the researcher. Additional information can be gathered by the interviewer besides the answers from the interviewee. However, some disadvantages of the interview were identified by Wilkinson and Birmingham (2003) as much time is wasted on the interview and transcribing of information from the interview. In this study, the above- mentioned limitation will be taken care of by ensuring that the interview process, transcription of information collected and the analysis of data are given enough time. To ensure that the phenomenon being explored is well understood, and the focus of the interview which is to find out the reasons why the Social Studies lecturers teach EE the way they do is maintained, the semi-structured interview plan was used. This assisted in exploring the question in-depth (see appendix 7 for semi structured interview questions).

4.9.4. Focus groups interviews

According to Cohen et al. (2018), focus group interviews are a source of data generation in qualitative research that involves unstructured discussion between researcher and participants. Creswell and Creswell (2017) affirm that focus group interviews are useful in acquiring common opinions from several individuals and often comprises four to six people per group. In addition to the above submissions, Yin (2017) stresses that ''the groups are 'focused' based on the fact that people with similar experiences or views have been assembled" (p. 141). The intention is not to get an undivided result from the participants but rather to collate diverse ideas or views.

In the focus group interview, the participants were at liberty to express their perception about the factors that enhance/hinder the teaching and learning of Environmental Education at AA University. Patton (2002) asserts that some of the participants in a focus group interview would be encouraged to contribute meaningfully as they listen to their colleagues presenting their views. "Hence, the data for the study surfaced as the participants share opinions" (Cohen et al., 2018, p. 436). Aligned with Check and Schutt's (2011, p. 205) advice I used an open-ended question to "produce qualitative data in a focus groups" Krueger and Casey (2009, p. 7) agree that "the data in the focus group are solicited through open-ended questions". The open-ended questions centered on the participants' experiences concerning the factors that enable/constrain teaching and learning

of Environmental Education on the part of the Social Studies lecturers and the Pre-service Social Studies Teachers. The focus group interviews were audio-recorded to ensure that adequate information was collected.

Ngure (2013, p.108) submitted that there are several benefits attached to the use of focus group interviews in collecting qualitative data as depicted in Table 4.2 below.

Table 4.2: Benefits of Focus Group Interviews.

S/N	Merit	Merits explained.
1	Synergism	Combined effect of the group produces a wider range of information, ideas, among others.
2	Snowballing	When a member of the group raises a comment, the comment often triggers a chain of responses from other participants in the group.
3	Motivation	Participants tend to respond quicker after the first course and are more likely to express their attitudes and feelings as the overall level of enthusiasm increases.
4	Security	Most participants find comfort in a group that shares their feelings and beliefs
5	Spontaneity	Since a participant is not meant to answer specific questions, their responses are likely to be more spontaneous and less conventional.
6	Serendipity	The ethos of the group is likely to produce wider ideas and often when least expected
7	Specialisation	The content allows a more trained interviewer to be used and minimise the possibility of subjectivity.
8	Scientific scrutiny	The nature of the research gives room for scrutiny in the technique by allowing the observers or by later playing back and analysing recording sessions.
9	Structure	Discussions afford more flexibility in the topics that can be covered and in the depth in which these are treated
10	Speed	Given that several participants are being interviewed at the same time, this speeds up the process of collecting and analysing data.

Source: Ngure, (2013)

4.9.5. Questionnaires:

An open-ended questionnaire was used to generate data from PSSSTs. Kumar (2011) states that an open-ended questionnaire as a source of qualitative data generation affords participants to express their views freely without restrictions. According to Cohen et al. (2018), the use of open-ended questionnaires is appropriate for probing into a complex topic that requires detailed responses from the participants of such a study. The need for the use of the open-ended questionnaire (see appendix 8 for open- ended questionnaire) in this study is to find out the factors that enable / constrain the teaching and learning of Environmental Education (EE) from the participants, who are the pre-service Social Studies teachers (PSSSTs). Collecting information on factors that enable / constrain the teaching and learning of EE from the PSSSTs is aimed at assisting the researcher on the questions to ask the PSSSTs in the focus groups.

McMillan and Schumacher (2010) state that questionnaires have some merit compared to other data generating tools. This includes the fact that the use of questionnaires is cost-effective, the respondents have enough time to ponder on the questions, and unlike other data generating tools the same questions are attempted by all the respondents through the questionnaire. However, Yin (2017) argues that one of the demerits of questionnaires is that there could be an attempt by respondents to hide certain important information because of the fear that such responses might be inappropriate. To address this demerit, the respondents were encouraged to freely state their views as no opinion or view is correct or incorrect. Similarly, Ghauri and Gronhaug (2010) opine that the liberty of the respondents while presenting their views could result in generating voluminous data that might be challenging to manage by the researcher. Myers and Torracca (2010) suggest that ensuring the organization and uniformity of the generated data through content analysis would lead to appropriate management of the vast amount of data.

The questionnaire used in this study comprised two sections, section A and B. Section A contains information on the participants' biographical data while section B contains open-ended questions to explore the factors that enable / constrain the teaching and learning of EE from PSSSTs of AA University. The questionnaire is self- designed by the researcher and was submitted to the researcher's supervisor for necessary corrections and modifications. The questionnaire was administered to the PSSSTs personally by the researcher and the timeframe given for return. The

collected questionnaire will be subjected to content analysis to ascertain whether the participants' responses to the open-ended questions are arranged in themes.

4: 10 Piloting of instruments

The research instruments for this study were involved in a pilot study. According to Cohen et al., (2018) a pilot study is a process that allows the researcher to have better knowledge of the research questions, as well as the methods and procedures to be used for the study by first using it among a few participants. These scholars stressed that carrying out a pilot study adds quality to the research question and methods for the study. In other words, any question, either for interview, focus group or open-ended questionnaire that appears to be unclear/ confusing or which cannot allow for in-depth responses from the participants can be modified.

The interview questions were presented to Social Studies lecturers from the Department of Teacher Education of another university to ascertain that the questions are unambiguous. The SS lecturers for the pilot study responded to the interview questions and their responses provided a clue to the nature of responses that are likely to be received from the SS lecturers of AA University by the time the study is eventually carried out. The responses / observations made by the SS lecturers for the pilot study assisted in making necessary modifications before the final interview questions for the study emerged.

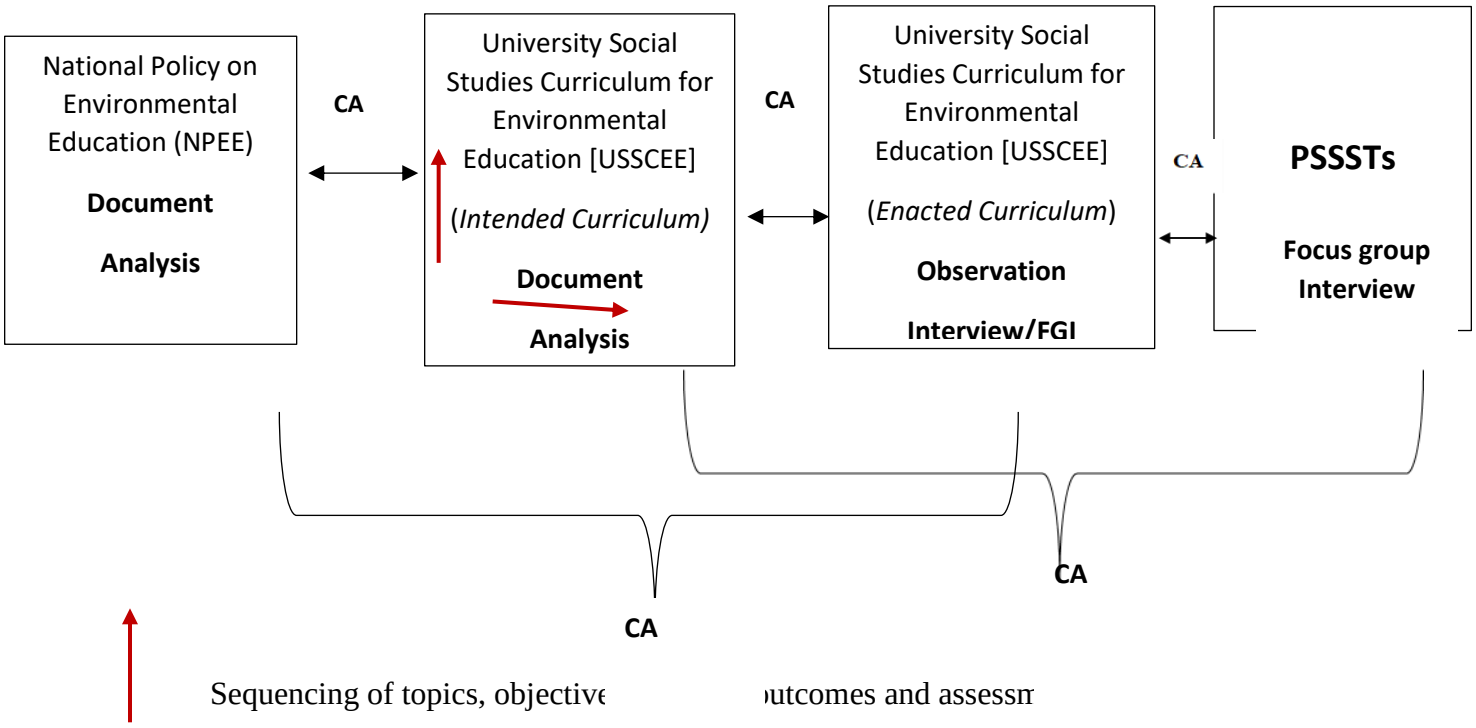
Similarly, the open-ended questionnaire was piloted with few pre-service Social Studies teachers from another University. The pilot PSSSTs who were of similar characteristics with the AA University's PSSSTs were those that volunteered to respond to the questionnaire meant for the study. From those that volunteered to respond to the questionnaire, some were selected to form two separate groups for the focus group interviews. I discovered through the pilot study certain modifications that were required for better results to be achieved. Firstly, there was need to restructure some of the questions for the questionnaire and the focus group interviews to get in-depth responses from the PSSSTs. Similarly, I noticed that I was a little fast during the focus group interview session thereby not allowing the participants adequate time to respond to questions. Therefore, the experiences gathered from the pilot study assisted me to make necessary modifications, first on my part as the researcher in respect of my interactions with the research

participants and on the quality of questions and methods adopted. This was very important to improve the reliability of the procedures used and content validity of the instruments.

4.11. Data analysis:

The data generated in this study were analyzed by applying the content analysis bearing in mind the constructs of my theoretical framework (see page 52, chapter 3). According to Cohen et al. (2018, p. 537), "qualitative data analysis encompasses the arrangement and clarification of how qualitative data are collected from respondents" with a view to making meaning out of the collected data. In the view of Bogdan and Biklen (2007), data analysis has to do with achieving results from well-organized data that are properly coded and presented in themes. Additionally, Drew, Hardman and Hosp (2008) affirm that themes developed from qualitative data are usually separated by words and presented orderly through qualitative data analysis. To analyze the data generated from this study, it will be properly arranged and coded so that the different themes that are developed from using diverse data generation sources can be ascertained.

Suitability of TF as an Analytical framework: Figure 4.1



As mentioned previously, in this study, data were generated through the following sources: document analysis, one-on-one interview, observation, focus group interviews and open-ended questionnaires. These sources were reflected in the above figure. The key terms in this study are alignment, sequencing of topic and enactment thus I needed an analytical framework that embraces these constructs when I engaged in content analysis of the curriculum. Constructive alignment refers to coherence between sets of aims, goal, objectives, content and assessment within the curriculum or between policy and curriculum (Biggs, 2012); (Trigwell & Prosser, 2014). The sequence in a curriculum focuses on the order in which things occur (Zapata 2006). One approach to sequence is based on the logic of the subject matter, another approach is based on the way individuals process knowledge (Ornstein and Hunkins, 2009). These terms will be used when interrogating the alignment between:

- NPEE and intended curriculum,
- The intended and enacted EE curriculum,
- NPEE and enacted curriculum
- Intended curriculum and student outcomes
- The sequence of topics and learning activities within the intended and enacted curriculum

As can be seen from figure 3, analysis of data is not a linear process, it is across documents i.e. horizontally (CA) and within documents i.e. vertically (Sequencing). To use the above framework during analysis I will embark on content analysis and consider the factors listed in Table 1 during content analysis.

Table 4.3: Factors to consider during content analysis

Factor	
Rationale	Why are PSSSTs learning?
Aims & objectives	Towards which goals are PSSSTs learning?
Content: conceptual/procedural	What are they learning and Why? How is it arranged (sequenced)?
Teaching strategies	How is learning facilitated?
Learning activities	How are they learning?
Assessment	What are they tested, when and why?
Materials/resources	With what are they learning?

This means I will engage in rigorous, systemic, repetitive reading of the documents, transcripts of observations, interviews and focus group interviews bearing in mind the meanings of constructive alignment and sequencing before coding can begin. The data generated from documents (NPEE and SS teacher education curriculum for EE at AA university for teaching EE) will be subjected to content analysis to establish the alignment between them in terms of goals, objectives, competencies development, topics, sequencing and progression of knowledge development This is aimed at providing answers to the research questions. According to Krippendorff (2013, p. 24), content analysis is a "research procedure that entails drawing inferences that are valid from text in respect of the situation for which they are used". The above position aligns with Cohen et al.'s (2011, p. 564) submissions that content analysis is a process of presenting information on data generated from documents. In view of the above authors, such data must be coded and classified while texts are matched together for themes to be formed and arranged so that dependable submissions can be made.

Data generated through one-on-one interviews and focus groups are audio-recorded to allow the researcher the opportunity to be focused on the phenomenon explored. Also, the researcher is able to get all the information provided by the participants because the researcher is able to play what has been recorded several times (Kvale & Brinkmann, 2009, p. 179). The data generated from the one-on-one interview and the focus group interviews were transcribed. According to McMillan & Schumacher (2010, p. 371), data transcription refers to the method of converting data into an

"easily analyzed form" The researcher will play the audio-recording of the interviews severally and also read through the words that are transcribed verbatim repeatedly in order to gather in-depth information that answers the study's research questions. Similarly, the participants' responses to the open-ended questionnaire will be read repeatedly to represent the views conveyed by the respondents in text data. In addition, the observations made within the classroom will be related to the data collected through the different sources identified above. This is aimed at finding out the participants' opinions on the strategies used to teach EE, the reasons for adopting the strategies and the factors that enable / constrain the teaching and learning of EE.

The data collected using the above sources will be coded to ascertain that they address the questions raised in this study and the main constructs in the study which are constructive alignment, sequencing of topic and enactment. According to Adler and Clark (2008), coding entails putting consistent statements from transcribed data together into sections. De Vos (2004, pp.345-346) identifies three types of coding which are open coding, axial coding and selective coding. The open coding has to do with breaking down the collected data so that it can be adequately probed, compared and confirmed to be intellectually distinguished while axial coding involves the rearrangement of the open coded data to ensure the existence of links between different groups. On the other hand, selective coding entails choosing the main group and linking it to other groups to authenticate their connectedness to one another and the necessity for additional modification. The three types of coding as described by De Vos (2004) are relevant to this study. (Creswell, 2012) submits that when related sections or codes are combined, themes are developed. Through this combination, precise data that reflects the true result are presented. Roulston (2010, p. 150) buttresses the submission of Creswell, 2012) by stressing that thematic analysis in qualitative method involves arranging codes into "groups or clusters by way of organizing and categorizing the codes".

4.12. Ethical issues:

Ethical issues guiding qualitative research would be strictly followed in this study. According to Strydom (2011, p. 113), Ethics refers to "shared confidence, approval, collaboration, promises, satisfactory agreements and anticipations between individuals participating in a research task". In the view of Kvale and Brinkmann (2009), ethics refers to the politeness involved in the way people live, think and act. According to the Belmont Report,Department of Health (2014); Stevens (2013);

Ritchie, Lewis, Nicholls, and Ormston (2013), putting the interest of the research participants into consideration is very important. These scholars emphasized that participants in any qualitative research needed to be accorded the deserved respect by the researcher. Similarly, Resnik (2015) states that participants in any research are adequately informed through the ethical codes about the need for the information collected by the researcher as well as the plan to honestly accord the participants and gathered information due respect. Marriam (1998) stressed that the ethical consideration in qualitative research covers both data generation and diffusion of research findings. Hence, the following ethical issues are taken into consideration in this study in order to ensure ethical conduct on the path of the researcher:

4.12.1. Gatekeeper permission

According to Wiersma and Jurs (2009), seeking gatekeeper permission is obligatory for any research to be carried out in any educational institution. Prior to data collection for this study, consent to conduct this study was sought by applying for the ethical clearance from the Human and Social Sciences Ethics Committee of the university where my degree is to be awarded. The ethical clearance was approved. Also, a letter of permission to conduct research at AA University in Nigeria was written to the Registrar of the institution who is the gate keeper and permission to carry out the study in the institution was granted.

4.12.2. Informed consent from participants

Cohen et al. (2018) say the rights of persons that are involved in a research study are conveyed as informed consent, anonymity, privacy and confidentiality. Informed consent involves making sure that participants in any study are legally and mentally capable to decide either to participate or not, and having the liberty to discontinue being participants whenever the need arises, especially at a point when the participants do not adequately understand the rationale for the study. Drew, Hardman, and Hosp, (2008, p. 57) submit that "Consent encompasses the process by which a person may decide whether or not to get involved in a study". Informed consent was sought from the Social Studies lecturers and pre-service Social Studies teachers (PSSSTs) at the AA University in Nigeria. They were given an informed consent letter to inform them about the purpose of the research and that participation is voluntary. Further they will be assured of confidentiality, anonymity and the right to withdraw from this study without any consequences.

4.12.3. Anonymity and confidentiality

McMillan and Schumacher (2010) argue that the settings and names of persons involved in research should not be revealed by being published. Rather the anonymity of participants' personal information must be ensured to uphold their trust. Kvale and Brinkmann (2009, p. 72) added that the confidentiality of "participants' information" must be assured. In the letters to the gate keepers and participants, anonymity and confidentiality were assured. Details of the participants and the location of the study were not revealed. As much as possible, pseudonyms and codes were used to represent the research location and the participants' identities. All responses were treated in a confidential manner. The participants were not exposed to traumatic or offensive questions or measures that could have an unpleasant or harmful side effect during the study.

4.12.4.Accuracy

According to Christians (2005, p. 145), "providing correct data in research is a fundamental norm" that must be upheld at all times. This author stresses that any attempt to "cook up" data, use falsified sources of information or provide incomplete information for whatsoever reason falls foul of the research ethic. In this research, the data collection and presentation were done without any form of falsification or presenting incomplete information. Rather, to ensure accuracy, information collected was presented verbatim.

4.12.5. Data use and disposal

In the letter to seek permission for the conduct of this study at AA University and the informed consent letter for the SS lecturers and PSSSTs, it was clearly stated that information provided by the participants is needed strictly for the Doctoral Degree research and other relevant scholarly publications. It was equally clearly stated that data generated would be securely stored in the university for a period of five years before been disposed of. All interview transcripts, and questionnaires will be disposed of by shredding while audio-recorded tapes would be incinerated.

4.13. Research rigour

Rigour in qualitative research involves all the measures put in place by the researcher in order to carry out an in-depth and reliable study. According to Mays and Pope (1995), rigour in qualitative research is concerned with trustworthiness and validity. The strategies adopted at each phase of a research helps to determine how credible and trustworthy a study is (Polit & Beck, 2010).

4.13.1 Trustworthiness

Trustworthiness is an element of rigour and is a measure of whether the findings of a research study can be relied on by readers. It speaks to the processes followed in gathering data or information (Cope, 2014). Shenton (2004) suggests that trustworthiness in qualitative research can be ensured if appropriate research methodology is applied. As this study is a qualitative study, I considered the entire research design to ensure fitness of purpose. In the interviews/ focus group interviews, my participants were given a chance to restate what they said to be sure they mean what they say. The interview questions were open -ended questions in order not to impose opinions on the participants.

4.13.2. Member Checking

One of the key steps that was taken to ensure trustworthiness is known as member checking. Creswell (2014) suggests that member checking is related to participant reflection, and "consists of taking data and interpretations back to the participants in the study so that they can confirm the credibility of the information and narrative account. For member checking to be done, a common approach is to organize participants in a research into a focus group to review the research outcomes, or create opportunity for the participants to observe the raw data and give remark on their accuracy" (p. 127). For this study, member checking was applied during data generation. PSSSTs who returned their fully completed questionnaires were asked to confirm that their answers reflect what they intend. In cases where PSSSTs feel they made errors in the questionnaire, or who are unsure of what they wrote, they were given new questionnaires to fill in. The essence of member checking is to make sure that participants can express their views accurately on the phenomenon being explored, and to avoid misinterpretation by the researcher. Interview transcripts were also subject to member checking. For interviews, member checking is important,

because of the possibility of mishearing what was said and to ensure their views are accurately captured. All transcripts of interviews were sent to the SS lecturers for member checking.

4.14. Ensuring Validity of the Research

Validity in qualitative research refers to the overall authenticity of the research. Unlike rigour, validity speaks to the entire research report rather than merely the process of gathering information in the research. McMillan and Schumacher (2010, p. 330) describe validity as the "level of similarity between the descriptions of a phenomenon and the actual world occurrence". That is, how much the result of a research tells about the common impact of the study on the participants and the researcher. In view of Creswell (2014, p. 259), to validate the result of a study, the researcher has the responsibility of deciding how "correct or trustworthy" the result is through "triangulation and member checking". Cohen et al., (2018) further emphasize that validity confirms the worth of any study.

Creswell (2014) proposes that one of the measures of ensuring validity is to include thick or rich descriptions. Thick description, as described by Creswell and Miller (2000), is a procedure used to describe the setting, the participants, and the themes in a qualitative research. Furthermore, Denzin (1989) as cited in Creswell and Miller (2000) says that "thick descriptions are deep, dense, detailed accounts" (p. 128). Creswell and Miller (2000) further add that thick description speaks to the confidence with which the readers feel as if they had "experienced, or could experience, the events being described in a study. The process of writing using thick description is to provide as much detail as possible" (p. 129). In other words, thick description is the ability of the research to connect with every reader of the research report in the simplest and most comprehensible language. This procedure influenced my study at each step.

4.15. Limitations of the study

According to Yin, (2014), case study has limited generalizability because it considers a particular case. Hence, since the study would be conducted in only one university in Nigeria, the findings cannot be generalized but would be relevant and limited to that context only. To address the above limitation, I will provide a thick rich description of the context by involving multiple methods so that the result can be applied to similar contexts in Nigeria. Also, some of the participants may not

want to freely express their views during focus group interviews because they may not feel comfortable or they may be shy (Cohen, 2011). To overcome this limitation, the use of open-ended questionnaires has been included in the data generation methods to provide a means for the shy participants to express their opinions.

4.16. Conclusion

This chapter discussed the qualitative research methodology used for the study. The data generation instruments and methods that were selected in line with the rudiments of a qualitative research approach were explained in detail. The basis for adopting an interpretive paradigm, qualitative research approach and case study design for the study were equally discussed. Similarly, the steps taken towards achieving trustworthiness in the data generated were explained in detail, while the chapter was concluded with discussions on the ethical considerations and limitations of the study. The succeeding chapter will center on the presentation and analysis of data that emerged from this research.

CHAPTER FIVE

PRESENTATION OF FINDINGS AND DISCUSSION: RESEARCH QUESTION ONE

5.1. Introduction:

This chapter presents the analysis of the qualitative data generated through document analysis of the National Policy on Environmental Education (NPEE) and the Social Studies Teacher Education Curriculum for Environmental Education at the AA University. The intention is to highlight the alignment (if any) between the NPEE and the SS Teacher Education Curriculum for Environmental Education (course pack) with regard to goals, objectives, competency development, topics sequencing and progression of knowledge development.

To achieve the above intention, the contents of the two policy documents NPEE and the Social Studies Teacher Education Curriculum for Environmental Education at the AA University were analyzed in order to provide answers to research question one which is: How is the Social Studies teacher-training intended curriculum on Environmental Education aligned to the National Policy on Environmental Education in terms of goals, objectives, competencies development, topics, sequencing and progression of knowledge?

5.2. Question One: Document Analysis:

As mentioned earlier in chapter 3 (page 53) the analysis of the two policy documents (NPEE and the Social Studies Teacher Education Curriculum/ for Environmental Education) in respect of research question one was based on the following questions namely;

- What need is your curriculum responding to?
- Who is the curriculum aimed at /intended for?
- What are the goals of the curriculum?
- What content areas does it focus on?

In the next section, the analysis in response to the above guiding questions is presented.

Table 5.1: Reflecting the analysis of the NPEE and SS Teacher Education Curriculum for EE of AA University.

Guiding question	NPEE	SS PSSSTs curriculum/course pack
What need is your curriculum responding to?	• Crisis in Nigeria in Environmental Education • Low levels of environmental literacy among the Nigerian population	NPEE in terms of raising environmental literacy level among the Nigerian population
Who is the curriculum aimed at /intended for?	• Informal sector: Nigerian population • Formal sector: Schools and universities	PSSTs
What are the goals of the curriculum?	• Raise public awareness • Engender a national culture of environmental preservation • Improve the quality of the environment for adequate good health and well-being • Promote sustainable use of natural resources • Restoration/maintenance of the biological diversity of ecosystems • Promote understandings of the essential linkages between the environment, social and economic development issues • Encourage individual and community participation in pro environmental behaviour/practices • Build partnership among all stakeholders: government, international institutions, non-governmental agencies and communities that center on addressing environmental matters/challenges	• To prepare specialist teachers who would be adequately qualified to teach SS in secondary schools • To expose and equip pre-service teachers with pedagogies needed to teach SS • Develop a capacity to learn and acquire basic skills such as listening, reading, speaking, writing, and calculation, together with those of observation, analysis, and inference, make sound judgments • Ensure the acquisition of the relevant content knowledge and information needed to teach SS • Inculcate agency and responsible citizenship towards environmental issues, justice, and togetherness for the development of the nation ▪ Develop attitudes and values for a rational utilization of cultural, spiritual, and natural resources and their

		conservation for national development

What content areas does it focus on?	• Conservation and Management of Natural Resources • Waste and Environmental Pollution • Emerging current issues eg. climate change • Cross sectoral issues • Policy implementation • Implementation strategies and actions	**Year 1 (has 7 modules)** SSE 101: Introduction to SS Education and Nation Building SSE 102: The Family-Based Structure of Society SSE 103: Community Studies SSE 104: Religion and Belief Systems SSE 105: Man and His Environment SSE 106: Element of SS SSE 107: Social-Economic Environment of Nigeria **Year 2 (has 12 modules)** SSE 201: Principles and Concept of SS; SSE 202: The Origin of Man; SSE 203: Industrialization; SSE 204: Social Integration in Nigeria; SSE 205: Laws, Crime and Society; SSE 206: Inventions, Technology and Man; SSE 207: Teaching SS in Junior Secondary Schools; SSE 208: Nigeria as a Nation; SSE 209: Nigeria Socio-Political Institutions; SSE 210: Population and Economic Development in Nigeria; SSE 211: Research Methods in SS Education; SSE 212: Ecosystem and the Environment. **Year 3 (has 14 modules)** SSE 301: Nigerian Cultural Environment; Values, Science and Technology; SSE 302: Social Changes and Problems; SSE 303: Nationalism and Patriotism in Nigeria; SSE 304: Peoples of the world; SSE 305: Attitudes, Stereotypes and Prejudices; SSE 306: Population Education; SSE 307: Political Structures and Forms of Government; SSE 308: Social Services in Nigeria; SSE 309: Economic Structure and Comparative Economics Systems; SSE 310: Finance and Financial Institutions in Nigeria; SSE 311: Nigerian Cultural Pattern and Historical Origin; SSE 312: Labour, Income and Wealth; SSE 313: Social Studies Education and Theories of Nation Building; SSE

		314: Comparative trends in Social Studies Education.

Discussion

From the table above it is clear that there is a high level of correspondence between the Social Studies Teacher Education Curriculum for EE at AA University and the NPEE for each of the four questions posed in Table 5.1. In other words, there is constructive alignment and convergence between the NPEE and the SS curriculum. The use of the Remilard and Heck's (2014) model was beneficial as it brought to the fore the alignment between the official curriculum (NPEE) and the intended curriculum (SS Teacher Education Curriculum for EE at AA University).

The NPEE aimed at providing the formal (universities and schools) and the informal (Nigerian population) sectors of the Nigerian population with adequate EE knowledge to solve the high incidence of environmental crisis as well as improving on the level of environmental literacy of the citizens. The SS Teacher Education Curriculum for EE at AA University is aimed at imparting adequate EE knowledge to the PSSSTs who will eventually enact the SS curriculum at schools (thereby capacitating learners with knowledge and skills needed to address environmental issues) and engage with the communities where they teach.

Considering the goals of the NPEE and the SS Teacher Education Curriculum for EE, there is convergence between what is aimed to be achieved, as is clear in Table 5.1. The goals contained in both policy documents are; to create awareness about the need to preserve the environment, promote the culture of proper usage of and maintenance of natural resources, secure the environment for healthy living, provide needed knowledge about the linkage between proper use of the environment and economic development and to build an effective network among the different sections of the community towards improving the human environment. The SS curriculum is explicit in terms of its intention to ensure the PSSSTs acquire the needed EE knowledge, skills and values for the actualization of the goals contained in NPEE. This means that the SS Teacher Education Curriculum for EE has a clear plan on how to improve the literacy level among the Nigerian population in terms of EE.

Furthermore, on the aspect of curriculum content, the NPEE has content area that focuses on broad aspects of EE. The content area of the SS Teacher Education Curriculum for EE covers the broad

aspects of EE as set out by the NPEE but the content is spread over three years into smaller modules. The topics included in the SS Teacher Education Curriculum (see Table 5.1. for topics) form an essential link between SS, man and the environment, thereby ensuring that the goals as outlined by NPEE are achieved. This means that the topics contained with the SS Teacher Education Curriculum for EE ensures that PSSSTs will become aware of the impact of their own behaviour and that of their societies on the environment, and that they have access to accurate information and skills to enable them to make environmentally sound decisions and to develop an environmental ethic to guide their actions and the actions of their future learners.

For example there are topics in human geography (Introduction to SS Education and Nation Building, Man and His Environment, Population and Economic Development in Nigeria; Nigerian Cultural Environment; Values, Science and Technology; Peoples of the world) spread over year 1 to 3 of the SS programme which must be comprehended by PSSTs if they are to teach these goals in the SS curriculum at schools. The content emphasizes systems thinking, which involves identifying the various biophysical and social components in each environmental context and distinguishing their interrelations. The aim of including the system thinking among the topics is to highlight the interactions between ecological and social systems with the view to produce ecologically literate individuals who have a clear perception and understanding of a system's dynamics and ruptures, as well as its past and alternative future trajectories. They understand the complexity of studied phenomena, thus enabling better decision-making. Higher order thinking skills, such as systems thinking, can be developed. The above explanation illustrates how the content included in the SS Teacher Education Curriculum for EE is aligned to the goals and aims of NPEE.

The selection and inclusion of the topics in the SS Teacher Education Curriculum for EE provides a pedagogical basis for dealing with environmental issues within the Nigerian and global context. The topics support PSSTs to understand and appreciate how places and landscapes are formed, how people and environments interact, and the consequences that arise from our everyday spatial decisions, and earth's diverse and interconnected cultures and societies. Furthermore the topics included allow for the development of deep content knowledge and understanding of the major natural systems of the earth (landforms, soils, water bodies, climate, vegetation) and the interactions within and between ecosystems and the major socio-economic systems of the earth

(agriculture, settlement, transport, industry, trade, energy, population). Additionally these topics with the SS Teacher Education Curriculum for EE allow for the development of valuable skills such as the ability to communicate, think about, use practical and social skills to explore SS /EE topics on a range of scales, from local to international. In addition, attitudes and values dedicated to seeking solutions to local, regional, national, and international problems are nurtured.

A closer examination of the topics and content in the SS Teacher Education Curriculum for EE at AA University illuminates that the topics and their respective content are arranged in a way that allows for progressive development of conceptual understanding within (in a year) and across the programme (across the 3 years). This means that the topics are arranged in a sequential manner to facilitate progressive development of concepts and content knowledge. In other words foundational knowledge and concepts are developed prior to the development of complex /difficult concepts and knowledge, for example in year one PSSSTs learn about the Introduction to SS Education and Nation Building, in year 2 they study Principles and Concept of SS and eventually in year 3 they learn about Nigerian Cultural Environment; Values. Put simply, this means that there is constructive alignment of the content (topics) within the SS Teacher Education Curriculum for EE. This constructive alignment is in terms of horizontal sequencing of content (that is progressive development of module content within the year of study) and vertical sequencing of content (that is progressive development of module content across the programme from year 1 to 3 of the SS Teacher Education Programme for EE). It is also worth noting that the content in the SS Teacher Education Curriculum for EE advocates responsible citizenship and agency in order to perpetuate pro environmental behaviour and environmental literacy among the PSSSTs and ultimately among the Nigerian population.

5.3. Conclusion

In this chapter two policy documents namely, the National Policy on Environmental Education (NPEE) and the Social Studies Teacher Education Curriculum/course pack for teaching Environmental Education at the AA University were subjected to content analysis. The analysis process was guided by the following questions:

- What need is your curriculum responding to?

- Who is the curriculum aimed at /intended for?
- What are the goals of the curriculum?
- What content areas does it focus on?

in order to establish if the policies were aligned with each other. Content analysis on the policies reveal that the policies are constructively aligned in terms of what the curriculum is responding to, who is the target audience, the goals and content to be covered. Since the Social Studies Teacher Education Curriculum at AA University is aligned with NPEE it can be inferred the SS Teacher Curriculum will serve as a medium through which the goal of the National Policy on Environmental Education could be achieved.

The next chapter presents answers to research question two which is, what teaching strategies do Social Studies lecturers use to enact Environmental Education?

CHAPTER SIX

PRESENTATION OF FINDINGS AND DISCUSSION: RESEARCH QUESTION TWO

6.1. Introduction:

This chapter presents data generated via document analysis of the SS Teacher Education Curriculum for EE at AA University, SS lecturers lesson plans, observation of SS lectures and interviews with SS lecturers in response to research question two, namely, what teaching strategies do Social Studies lecturers use to teach Environmental Education at AA University and why? Teaching strategies refer to methods used by SS lecturers to help PSSSTs understand the desired course content contained in of the SS Teacher Education Curriculum for EE at AA University. The goal of this question is to explore the alignment between intended SS Teacher Education Curriculum for EE at AA University, the planned enactment of the SS Teacher Education Curriculum for EE (via document analysis of lesson plans) and the actual enacted SS Teacher Education Curriculum for EE (via observation of SS lecturers enacting the curriculum) and the rationale for using the teaching strategies they do. Finally, a discussion is presented on the findings and the chapter is concluded.

6.2. Document analysis of the SS Teacher Education Curriculum for EE for teaching strategies

Content analysis of the SS Teacher Education Curriculum for EE at AA University brought to the fore the teaching strategies advocated in the intended curriculum for the specified content as per the curriculum (see Table 5.1. for content). The SS Teacher Education Curriculum for EE emphasized the need for a constructivist student centered approach during the enactment of the curriculum, in order to achieve the goals and objectives of the SS Teacher Training Programme which is to:

- Prepare specialist SS teachers who would be adequately equipped with the content knowledge to teach Social Studies at secondary schools and
- Expose PSSSTs to the pedagogies needed to teach and engage learners in SS.

- Develop a capacity to learn and acquire basic skills including those of listening, reading, speaking, writing, and calculation, together with those of observation, analysis, and inference, which are essential to the formation of sound judgment.
- Ensure the acquisition of the relevant body of knowledge and information which is an essential pre-requisite to personal development as well as to a positive personal contribution to the betterment of humankind; create awareness that discipline is essential for an orderly society.
- Inculcate positive values and appropriate values of integrity, honesty, hard work, fairness, justice, and togetherness for the development of the nation.
- Develop the ability for a rational utilization of cultural, spiritual, and natural resources and their conservation for national development.
- Appreciate the diversity and interdependence of all members of the local and national communities and the country and international understanding (Ifegesan, et al, 2017, p. 98).

The constructivist approach to teaching EE in the SS Teacher Education Curriculum resonates with that of Day and Spronken-Smith's (2017) findings, which assert the constructivist approach to undergird the teaching and learning of EE. To create a constructivist student centered approach, the following 5 teaching strategies were advocated by the SS Teacher Education Curriculum for EE at AA University, namely:

- Discussion,
- Lecture methods/chalk and talk,
- Cooperative group work
- Project based teaching and
- Field trip/excursion

Next a discussion is provided on the rationale for the advocated teaching strategy contained in the SS Teacher Education Curriculum for EE.

6.2.1. Discussion Method

The discussion method is aimed at achieving the objectives of the Social Studies Teacher Education Curriculum for EE in terms of developing critical thinking, problem solving, sharing of ideas, communication and working collaboratively. The discussion method can be in conjunction with other teaching methods as it allows all students to participate. The SS Teacher Education

Curriculum for EE emphasizes that for the discussion method to be successful, it must be guided by specific teaching goals and lecturers /teachers are required to plan extensively to guide the discussion process. According to Pauw (2015) group discussions concerning the structure of a problem, the causes of the problem, and the potential responses to solve the problem from an environmental, ecological, economical, and societal point of view are appropriate methods for studying environmental issues.

6.2.2. Lecture method/chalk and talk

It is envisaged in the SS Teacher Education Curriculum for EE that the lecturers would sometimes need to do some chalk (writing) and talk as a way of teaching the PSSSTs certain content about EE without dominating the process. This is necessary because some knowledge about EE must be passed across theoretically by the lecturers. By teaching the PSSSTs these contents/concepts, they would have acquired the basic EE knowledge which will enhance their practical knowledge and application of ideas (Warden, 2010).

6.2.3. Cooperative group work

The analysis of the SS Teacher Education Curriculum for EE highlights the importance attached to developing the spirit of cooperation for solving environmental problems among the PSSSTs. This is in pursuance of one of the goals of the Social Studies Teacher Education Programme which aimed at promoting interdependence among a diverse population with a view to annexing different ideas for solving environmental problems. The varied and diverse environmental problems require approaches that are different. Training the PSSSTs using cooperative teaching methods would help the teacher trainees to work together in groups as a team by cooperating and collaborating with each other to proffer solutions to identified problems. This approach suggests that to make the best of our environment, the learners must be conscious of the fact that everyone has a role to play first as an individual and also as a unified whole through combined efforts, which is the main focus of cooperative teaching. By using a cooperative group work method to teach the PSSSTs, the PSSSTs discover that through cooperation, certain goals/ problems that might be difficult to achieve or solve alone are easier achieved or solved. When this is transferred to teaching and learning about EE, it assists to develop the spirit of personal as well as teamwork approaches of solving environmental problems. Hence, a cooperative teaching method is envisaged to be used in teaching

the PSSSTs about EE as is visible in the excerpt from the SS Teacher Education Curriculum for EE at AA University:

> *"Ensure the acquisition of the relevant body of knowledge and information which is an essential pre-requisite to personal development as well as to a positive personal contribution to the betterment of humankind* cooperative group work *is essential" (Pg. 401, SS teacher education curriculum for EE)*

6.2.4. Project -based teaching

Project based teaching as advocated in the SS Teacher Education Curriculum for EE is aimed at teaching the PSSTs about EE by identifying and using a particular project to provide a solution to the environmental problem. The PSSSTs were thereafter expected to carry out any project that could serve to provide a solution to an identified environmental problem. In other words, each PSSST is expected to address local contextual environmental problems in their locality. By this project- based teaching, the PSSSTs acquire problem-solving skills required to teach their future learners about EE.

The following excerpts from the SS Teacher Education EE Curriculum at AA University highlight the advantage of project- based teaching:

> *…… Project based teaching and learning can introduce students to real-world problems and scenarios that cannot be simulated in the classroom, it also allows for the application to theory to solve contextual problems… (Pg. 421, SS teacher education curriculum for EE)*

6.2.5. Field trip/excursions

Field trips and excursions are advocated as teaching strategies to provide PSSSTs with hands on experiential learning opportunities about environmental issues within their environment. The rationale for field trips and excursions as per the SS Teacher Education Curriculum for EE is:

> *Learning in the natural environment via field trips and excursions develops students' environmental sensitivity, fosters their concrete understanding of*

environmental issues, and engages students actively with ecological issues (Pg. 423, SS teacher education curriculum for EE)

The PSSSTs were expected to visit sites where they could see the effects of environmental problems such as air, soil and water pollution; soil erosion; poor waste disposal and sites of domestic waste dung. By taking the PSSSTs to these sites they gain first-hand information and awareness of natures' physical and biological degradation and the way by which the environment is being poorly used. It is envisaged that such direct experience would arouse concern about how the environment could be better used and to stimulate pro environmental values and behaviour among PSSSTs. This means that field trips or excursions could positively affect their attitudes towards the environment and their passion to raise environmentally friendly learners through their future teaching of EE. In agreement with the SS Teacher Education Curriculum for EE, Djonko-Moore and Joseph (2016) assert that field trips and excursions may stimulate the participants' curiosity, their sense of empathy for creatures, responsibility and unity with nature, maximizing the acquisition of information about nature and, ultimately, changing their conceptions about the importance of environmental conservation.

6.3. Document analysis of SS lecturers' lesson plans: Planned teaching strategies for enactment of the SS curriculum

As mentioned previously in chapter four, six SS lecturers who lecture from year 1 to 3 participated in this study. These lecturers made their lessons designed for the second semester of 2018 available for document analysis. Each lecturer handed in 4 lesson plans for analysis (altogether 24 lessons plans were collected). All lesson plans collected were subjected to content analysis. The 24 SS lesson plans analyzed evidenced comprehensive theory driven planning including a range of short and long term goals for each topic in the EE curriculum and developed an understanding of the significance and importance of the local natural environment for the traditional owners of the land. Planned strategies included experiential, hands-on, open-ended, discovery learning and play in a wide range of environments, such as parkland, bushland, long grass, riverbanks, fallen logs and leafy treed spaces; individual and collaborative focused observation, (problem solving, decision-making), the content knowledge, skills and values to be developed, the notion of learning in, about, for and from the environment as a community of learners was articulated under the banner

of helping PSSSTs to build respectful, caring, empathetic attitudes to the natural world. The teaching strategies/pedagogies that were planned for the enactment of the SS Teacher Education Curriculum for EE are reflected in Table 6.1. below.

Table 6.1. Planned teaching strategy for enactment of the SS Teacher Education Curriculum

SS lecturer	Planned teaching strategies
P1	Discussion, group work, field trip, chalk and talk
P2	Project work, discussion, chalk and talk, group work
P3	Group work, discussion, chalk and talk, project work, field trip
P4	Field trips, discussions, chalk and talk, chalk and talk
P5	Cooperative learning, discussion, chalk and talk, field trip
P6	Chalk and talk, discussion, collaborative learning, simulations and ICT

From the above table it is evident that the teaching strategies the SS lecturers planned to use during their enactment of the SS Teacher Education Curriculum for EE are aligned to the teaching strategies contained in the intended SS Teacher Education Curriculum for EE. However, it is worth noting that P6 has indicated that he uses simulations as a teaching strategy and uses ICT to teach GIS, teaching strategies not used by the other 5 SS lecturers.

6.4. Teaching strategies used by SS lecturers to enact the SS Teacher Education Curriculum

Data generated via the observation of SS lecturers' lessons and interviews were used to establish the teaching strategies employed during the actual enactment of the curriculum. During the interviews, the participants mentioned that since the content of each topic to be taught varies, the strategies used to teach the topics vary accordingly. In other words, the topic and the accompanying content directs the teaching strategy to be employed during enactment of the EE curriculum. For enactment to be well executed the appropriate teaching methods must be employed to ensure the actualization of the programme objectives. The Social Studies lecturers mentioned that different strategies such as cooperative discussion (group work), project work, field trips/excursions with chalk and talk / lecture method (partially used) were adopted in their teaching of the PSSSTs about EE.

The following excerpts from the participants' responses to the individual interview evidence the discussion:

> *Emm, yes, yes, It is the topic you want to teach that determines the method to use, so each time you teach a new topic you have to think about the teaching strategy (P1)*

Similarly, participant 3 said:

> *Well, since there are different knowledge and skills to be taught in the different topics, different approaches are involved but with the consciousness of being learner centred. (P3)*

From the above excerpts, it is evident that in enacting Environmental Education within the Social Studies Teacher Education Programme at AA University, SS lecturers, use different strategies to teach the topic or content to be taught. Participant 1 emphasized that the need to be conscious of the peculiarities of some Social Studies topics/contents and the nature of the various PSSSTs to be taught while determining the appropriate teaching strategies cannot be sufficiently underscored. Similarly, participant 3 stressed that different strategies were adopted in training the PSSSTs bearing in mind the knowledge and skills intended to be acquired by them. This resonates with the assertion of Ifegbesan et al. (2017) that since Social Studies draws its content from several disciplines with appropriate content that could promote the training of learners with adequate knowledge, skills and values, which include adequate knowledge about the environment needed for sustainable development, right and diverse methods are required to teach the different content. These authors equally emphasize the importance of teacher-trainers' consciousness about their choices of strategies adopted in teaching the pre-service teachers the different topics.

Furthermore, a closer look at the responses of the research participants to the strategies used in training the PSSSTs revealed that all the respondents admitted that the PSSSTs were the focus of whichever approach was used in teaching them. In other words, learner-centered strategies were adopted. This resonates with the assertions of Tran, Nguyen and Nguyen (2011) that for learners to be able to construct their own knowledge within and outside the classroom, there is a need for a shift from teacher-centered teaching and learning strategies to learner-centered teaching and learning strategies. The above positions were alluded to by Mandikonza and Lotz-Sisitka (2016) in their study on Emergence of Environment and Sustainability Education (ESE) in Teacher Education as they observed that teachers required to adopt professional approaches such as

lecturing, discussion, debates, excursions and writing of assignments as a way of ensuring that ESE is properly taught.

Below are some of the excerpts from the participants' responses to the individual interviews that substantiate the above arguments:

> *Yes, generally learners centred approaches such as cooperative method, project method, and discussion method (P1)*

Additionally, participant 2 stated that:

> *So the peculiarities of that very discipline determines what to be adopted, the method to be used so as to encourage the learners to assimilate what must have been taught (P2)*

From the above excerpts it was evident that the SS lecturers were mindful of the need to make the PSSSTs the focus during the teaching and learning processes rather than the lecturers themselves. Participant 2 noted that such an approach was necessary to assist the learners internalize what was been taught and for teaching to be learner centered. Next data are presented from the lessons observed.

As mentioned in chapter four each of the 6 SS lecturers' lessons were observed twice. Table 6.2. reflects the teaching strategy used to enact the observed lesson.

Table 6.2. Planned teaching strategy and actual teaching strategy used during enactment of the SS curriculum

SS lecturer	Teaching strategy planned as per the two lesson plans for the observed lesson	Teaching strategy used during enactment
P1	Field work and group work	Chalk and talk, field trip and discussion
P2	Project work, group discussion	Chalk and talk, chalk and talk
P3	Group work, discussion/ chalk and talk	Excursion, chalk and talk
P4	Excursion and discussion	Chalk and talk, chalk and talk
P5	Cooperative learning and discussion	Discussion (guided group discussion), field trip
P6	Simulation and discussion	Chalk and talk, chalk and talk

From Table 6.2, it is visible that there is a divergence from the planned teaching strategy indicated in the lesson plan and the actual teaching strategy used during the lesson.

6.4.1. Discussion Method

Analysis of the participants' responses from the individual interviews revealed that discussion/ group work was used as one of the teaching methods for training the PSSSTs about EE. All the Social Studies lecturers mentioned that discussion/ group work method was regularly used during their teaching as this method availed the PSSSTs opportunities to jointly discuss issues that emerged from any topic been taught and arriving at possible solutions by annexing the different suggestions made. The above responses of the Social Studies lecturers concerning the use of discussion method while teaching was evidenced during one of the class observations as a reasonable level of discussion was witnessed among the PSSSTs when they engaged in discussion on environmental pollution. The use of the discussion method by the lecturers showed that they acknowledge the importance of the method in training PSSSTs for them to acquire the needed knowledge, skills and values to teach their future learners about EE. The following excerpts from the responses of the research participants (SS lecturers) support the above submissions:

> *I want you to take 10 minutes to discuss in your group activities of man that contribute to water pollution and how water pollution can be reduced. (P5)*
>
> *Ok your time is up, each group leader will present the factors that contribute to water pollution and what can be done to reduce water (P1)*

The choice of teaching the PSSSTs using the discussion method concur with the assertion of Mayer and Torracca (2010) that critical thinking and acquisition of knowledge by learners is enhanced using group work strategy to teach them. The above assertion is also alluded to by Darling-Hammond (2010) and Nelson (2010) who contend that the Pre-service Teachers' Training Programme must incorporate opportunities for the teacher trainees to regularly interact with each other in groups as one of the teaching strategies that would engage them in group work thereby availing each of them the opportunity to practice how they would teach their future learners about EE. Through this regular group practice, the "real" EE teacher characteristic in them evolves.

6.4.2. Excursions:

The Social Studies lecturers, specifically, participant 3 attested to the fact that field trips method was usually used in teaching the PSSSTs about EE. The lecturer mentioned that it is difficult for the PSSSTs to acquire adequate knowledge about their environment if confined within the classroom. Classroom experience alone will only provide the PSSSTs with theoretical knowledge about their environment and prevalent environmental problems without practical or on-site experience which might spur the learners to taking positive action towards the sustainability of the environment and its resources. Participant 3 stressed that the field trip is one of the teaching methods that works best for him in teaching the PSSSTs about EE. The following excerpt from the responses of SS lecturers to individual interviews supports the above position:

> *Field trips also for hands on learning, it allows for identification of real problems in the environment and for solutions to be found to address these challenges, it creates awareness of environmental challenges and can change their attitudes towards the environment (P3)*

The approach of participant 1 in teaching the PSSSTs agrees with the submission of Ashmann and Franzen (2015 p.16) in respect of their findings from a study on Wisconsin Teacher Education Programme on EE that "several teacher education programs adopt field trips while training their pre-service Environmental Education teachers in order to help the teacher trainees have adequate knowledge of the resources around them that could enhance their future teaching of their learners". The acknowledgement of the importance of field trips by participant 1 informed the choice of adopting it as one of the strategies used to teach the PSSSTs about EE. The use of field trips by the Social Studies lecturers in teaching the PSSSTs further supports the earlier submissions by the lecturers that learner centered approaches were adopted in teaching the PSSSTs about EE.

6.4.3. Chalk and talk

Chalk and talk/lecture teaching strategy was used most frequently to enact the SS Teacher Education Curriculum for EE at AA University. Five out of the six SS lecturers changed their planned teaching strategy (as indicated in their lesson plan) during the observation lessons. The inference is that in theory (in their lesson plans) SS lecturers embrace the teaching strategies advocated by the intended SS Teacher Education Curriculum but in practice they rely on the chalk

and talk method to enact the curriculum. In other words, there is a disjuncture between the intended curriculum, their planned teaching strategy and the actual teaching strategies used to enact the curriculum.

More importantly, the observation of the SS lecturers' enactment of the curriculum revealed that they dominated the lesson and there was very little interaction/engagement with PSSSTs. In other words, the constructivist learner centered approached the SS lectures embraced in theory did not materialize in their practice. This means that the SS lecturers dominated the lectures and PSSTs had little or no engagement with the content presented and the lectures were teacher centered rather that student centered.

The reasons for SS lecturers using the teaching strategies they did when enacting the lessons are presented next.

6.5. Reasons for adopting the teaching strategies they do

From the data generated via the interviews two themes evolved to justify the teaching strategies used which are:

- Acquire adequate Environmental Education (EE) knowledge and
- Understanding the relationship between human activities and environmental sustainability.

The following section discusses the two themes

6.5.1. Acquire adequate Environmental Education (EE) knowledge

The analysis of Social Studies lecturers' interview responses emphasized the quest to ensure that the PSSSTs acquired adequate EE knowledge that would enable them to teach their future learners effectively about the environment. The SS lecturers believed that without teaching the PSSSTs using the chalk and talk method they would not acquire the content knowledge needed in teaching their future learner. It is believed that the purpose of acquiring EE knowledge by the PSSSTs through their training was to prepare them for the task ahead, which is, to also train learners that will be adequately informed about the environment, and who are equipped to play their roles in maintaining a sustainable environment.

Below are some excerpts from the SS lecturers' individual interview responses that elucidate the need for acquiring adequate EE knowledge:

The PSSSTs should know these issues to enable them teach them effectively after graduation, the only way to do this is by chalk and talk (P1)

Since we are training the PSSSTs to be able to teach in schools, it is important to teach them in a way that they can gain all the content and teaching methods needed to teach when they get to the school later (P2)

It is important that the PSSSTs know these in order to be knowledgeable to teach their learners after they might have completed their teacher trainings programme here (P3)

From the above excerpts, it can be seen that participant 1 was of the view that knowing the basic environmental issues was very important for the PSSSTs to be effective teachers of EE among their future learners after graduation from AA University's Social Studies Teacher Education Programme. Hence, the way the SS lecturers taught the PSSSTs about EE was guided by the above-mentioned expectation. Similarly, in view of participant 2's response, the SS lecturer linked the proper teaching of the PSSSTs using appropriate teaching methods with future success as teachers of EE in schools. Participant 2 argued that it is the understandings of relevant environmental issues that the PSSSTs acquired that would assist them to be capable EE teachers to their future learners in schools. Similarly, participant 3 reiterated the views of participants 1 and 2 by saying that the methods employed to teach the PSSSTs needed to acquire adequate EE knowledge in other to make a meaningful contribution among their future learners after their pre-service teacher training. In other words, how well the PSSSTs will teach their future learners about EE would be determined by the level of environmental knowledge acquired while on training.

The foregoing informed the reasons for the choice of teaching methods such as chalk and talk and discussion. This is aimed at ensuring that the PSSSTs acquire adequate knowledge, skills and environmental values required to be a competent and successful EE teachers in schools after the completion of their teacher training programme.

The above submissions resonate with part of the provisions contained in the Preparation Guidelines for Environmental Educators by the North American Association for Environmental Education (NAAEE) (2010) which emphasized the need for environmental educators to possess adequate knowledge about the objectives of EE and also acquire competent knowledge and understanding

about environmental issues as well as skills required to teach EE well in schools. Similarly, Ashmann (2010); Franzen (2017); Yavetz, Goldman and Pe'er (2014) argue that teacher educators must incorporate and teach EE in their lessons for pre-service teachers to be adequately prepared to teach EE. Without teaching the PSSSTs to acquire adequate knowledge and skills about EE, they would not be competent enough to teach EE in schools. The positions of the above scholars concur with the reasons given by the AA University's SS lecturers for teaching the PSSSTs the way they did.

Next a discussion follows on the need to promote understanding the relationships between Human activities and Environmental Sustainability.

6.5.2. Promote an understanding of the relationships between human activities and Environmental Sustainability

The second theme that emerged from the analysis of the individual interview responses from the AA University's SS lecturers was understanding the relationships between human activities and environmental sustainability. The analysis of the SS lecturers' responses revealed that another major concern that determined the approaches employed by the SS lecturer in training the PSSSTs to teach EE was based on the need to ensure that the PSSSTs have good understanding of the relationships that existed between the activities engaged in by human beings within the environment and the sustainability of the environment and its resources for the benefit of human beings.

The SS lecturers were of the view that human activities within the environment could either have positive or negative effects on the functioning of the environment and its components. In other words, human beings in such environments must exhibit environmentally friendly behaviour. Without engaging in positive activities within the environment, the numerous available natural resources meant for the sustenance of human beings would be misused and wasted, thereby making the sustainability of the environment difficult if not impossible. As a way of ensuring that the environment and its resources are protected, the SS lecturers saw the need to ensure that the PSSSTs have this understanding through the methods used to teach them, such as chalk and talk and taking them on field trips where the PSSSTs had on-site experience of some human activities on the environment and their effects.

The following excerpts from the SS lecturers' individual interview responses support the above views:

> *"I intend the PSSSTs to learn some ideas about EE which include value of environment with respect to human and material resources; ecosystem; how all biological organisms relate and depend on each other; need to preserve the natural environment by man; exploitation of all resources by man; safety/ security of man; development of the environment comprehensively" (P1)*
>
> *"The EE is emm important. In this regard because of the need to protect individual's lives, properties, and animals, because most of the animals this time around are gradually going into extinction and it was due to the fact that our inability to protect the environment has wrecked a lot of havoc on the environment generally and looking at……..." (P5)*
>
> *"Some of the ideas the PSSSTs are intended to learn has to do with the fact that the sustainability of man within his or her environment depends on attitude towards the environment where he or she lives, therefore the need to develop environmental friendly behavior is very important. As a result of this consciousness, man will work towards proper use and management of resources within the environment" (P3)*

From the above excerpts from the SS lecturers' responses to the individual interview, the reason for teaching the PSSSTs about EE the way they did could be deduced. Participant 1 stated in strong terms why the PSSSTs were taught the way they were. The PSSSTs were expected to fully understand the strong bond that existed among the different components of the environment vis-à-vis the sustainability of the environment and its resources or otherwise, in relation to human activities within the environment. Participant 1 mentioned that proper preservation of the natural resources, responsible exploitation of natural resources, safety/security of the entire components of the environment and development of the environment comprehensively depends on human beings. Hence, the need to teach the PSSSTs in a way to understand their individual as well as collective roles in ensuring the sustainability of the environment.

Similarly, participant 2 further emphasized the need for the PSSSTs to understand the importance of preserving the environment as a factor that informed why the SS lecturers used the teaching

method they adopted in teaching the PSSSTs about EE. Participant 2 cited the example of some animals that were already going into extinction as part of the effects of human's unfriendly activities on the environment which must be given urgent attention. Without this understanding, the PSSSTs might not see the need for their roles in teaching their future learners about the sustainability of the environment. Additionally, participant 3 reiterated the positions of participants 1 and 2 regarding the need to create environmental sustainability consciousness among the PSSSTs through the way the SS lecturers teach. It is this consciousness that would motivate how the PSSSTs will teach their future learners about EE.

The above submissions concur with the assertions of Gwekwerere (2014) that the goal of teaching Environmental Education in schools is to make the learners understand the effects of human activities on their immediate environment and the entire universe in order to create strong feelings towards achieving the sustainability of the environment in them. The above researcher argued that understanding how human activities impact on the environment guides the choice of how EE is incorporated in teacher education programmes. Similarly, Mandikonza and Lotz-Sisitka (2016) reiterated that there is need for the different components of the environment to relate interdependently for the sustainability of the environment to be achieved. These researchers therefore emphasized the need for education that will provide the learners with this understanding of the relationship between human actions and other components for the sustainability of the environment.

Furthermore, a closer look at the analysis of the AA University's SS lecturers' responses to the individual interview revealed that the SS lecturers teach the PSSSTs the way they did so as to make them have understanding on why proper management of environmental resources is very important. All the SS lecturers stressed that the need for the PSSSTs to acquire understanding about benefits of proper management of the natural resources within their environment was another factor that informed how the PSSSTs were taught about EE. Without deliberate measures to use and manage the natural resources meaningfully, these resources which are supposed to ensure the sustainability and well-being of humans in their various environments might soon not be available. The SS lecturers said that the PSSSTs should not only be aware of the availability of natural resources for the benefits of humans within the environment but must equally be made to know

that these resources need to be well used and managed. For the PSSSTs to have this understanding, the SS lecturers adopted teaching methods such as field trips/excursions which availed the PSSSTs' opportunities to visit locations where some natural resources were available. Similarly, teaching methods such as cooperative discussion, and project methods would assist the PSSSTs to share ideas on how best they felt the natural resources could be used and managed for sustainability. Once the PSSSTs have a good understanding about the need for proper uses and management of environmental resources, it will then be easy to teach their future learners on why the natural resources around them must be well managed.

The above submissions of the SS lecturers are supported by the following excerpts from the lecturers' individual interview responses:

> *"I observe in the students' inadequate value for the environment especially the natural environment" (P1).*
>
> *"Yes, I still want to go back to the previous question. For them to really understand what the environment is all about, and how they perceive the environment, and also when it comes to teaching and learning what methods are we using that can influence them positively in preserving the society, in preserving the environment, ……. If you catch them young, then the need to also protect your environment is also important, and as a matter of fact, we realize that as soon as they understand everything they need to know, the better for our society. Killing of animals, hunting and all these kind of a thing should be discouraged" (P2).*
>
> *"I notice that the students do not have sufficient knowledge about the relationship between the effect of their actions on their environment and the sustainability of man within the environment. Also they need to know that man have to manage the resources around well for the survival of present and future generations" (P3).*

From the above excerpts, the reasons why the SS lecturer taught the PSSSTs the way he/she did was revealed. Participant 1 noted the lack of adequate respect for the environment, particularly respect for the natural resources among the PSSSTs. Without placing adequate value on the natural resources around, abuse of such resources is inevitable. To ensure that the PSSSTs placed adequate value on the uses and management of resources within the environment and teach their future

learners the same, the SS lecturers had to adopt appropriate teaching methods for training the PSSSTs about EE. Similarly, participant 2 mentioned that the dispositions of the PSSSTs towards the uses of the environmental resources is a function of the understanding they possess about why they needed to protect/preserve the natural resources. It was stressed that once the PSSSTs were well taught and understood the role of humans in preserving the natural resources, then creating an environmentally friendly relationship towards achieving the sustainability of the natural resources would be possible. Additionally, participant 3 emphasized that the sustenance of the present and future generations depend on how well the natural resources are managed. This knowledge was found to be lacking among the PSSSTs, hence the need to adopt teaching methods that would facilitate having this understanding which would equally assist the PSSSTs to teach their future learners about the importance of effective natural resources management culture.

The above resonates with Gunturkun's (2016) argument in a study on EE preparation of Turkish pre-service teacher that misuse of natural resources and general abuse of the environment resulted from lack of adequate knowledge about an appropriate human-environment relationship. The scholar linked the poor attitudes towards the use of the environment to inadequate possession of needed environmental knowledge by teachers. By extension, it was as a result of the inadequate EE received by the pre-service teachers. There is therefore a need to teach the pre-service teachers in such a way that would enable them teach EE well thereby resulting in having a population that is well informed about the consequences of their actions in the environment. Additionally, Alvarez-Garcia, Sureda-Negre and Comas-Forgas (2015) emphasized that for the pre-service teachers to possess appropriate understanding and attitudes towards the environment, teacher educators have important roles to play. Alvarez-Garcia, et al. (2015) and Harinder and Abdul-Rahman (2012) were of the view that the methods adopted by the institutions in charge of the training of pre-service teachers is very important in determining how well the pre-service teachers understood their roles in training citizens with pertinent understanding about and attitude towards the uses and management of natural resources within the environment. That is, citizens with adequate understanding of the complex natural environment and the relationship between the components of the environment.

6.6. Discussion

The policy and lecturers emphasized the need for a constructivist learner centered approach for teaching EE. This resonates with Ashmann (2010) who emphasized the use of practical approaches that are learner centered in training pre-service teachers about EE, the data generated through document analysis of the AA University's SS Teacher Education Curriculum for EE and excerpts from interviews/observation of the Social Studies lecturers of AA University help to ascertain the level of learner centeredness involved in teaching and assessment of the PSSSTs.

My finding brings to the fore the constructive alignment between the teaching strategies proposed in the intended SS Teacher Education Curriculum for EE and the planned teaching strategies as per the lesson plans for the enactment of the intended curriculum. When the data from three sources, intended curriculum, lesson plans and observation regarding teaching strategies are juxtaposed the disjuncture between the intended, planned and actual teaching strategy used becomes visible. This means that the teaching strategy used to enact the curriculum is not constructively aligned to the intended curriculum and the lesson plan.

The class observations were used to ascertain the actual approach for training the PSSSTs, it was discovered that a prominently used method for enacting the curriculum was chalk and talk / lecture method. The SS lecturers were found to dominate in each of the classes observed with minimal participation of the PSSSTs, meaning that such teaching was more teacher centered rather than learner centered. The above observation revealed a major point of divergence between the intended SS curriculum and the enacted curriculum. In view of the divergence observed between the intended SS curriculum and the enacted curriculum, it becomes difficult to achieve what was advocated in the SS curriculum/lecture pack used for training the PSSSTs.

Remillard and Heck's (2014) model of the curriculum policy, design, and enactment system has provided a platform to analyze the strategies that the Social Studies lecturers use to enact Environmental Education by looking at the different teaching methods and how this is related to the intended curriculum and the planned teaching strategies as per the lesson plans and the actual teaching strategy used in enacting the curriculum. In other words, the theoretical framework served

as a mirror to check the connectivity or alignment between the intended curriculum and the enacted curriculum during the analysis of participants' responses to research question two.

6.7. Conclusion:

This chapter attempted to answer research question two. To answer this question, the AA University's SS Teacher Education Curriculum for EE, lesson plans, lecture room observations and individual interviews were used. The policy and the SS lecturers emphasized the need for constructivist/ learner centeredness. There were 5 teaching strategies foregrounded in the SS Teacher Education Curriculum for EE only three of these were used during the observation of lesson. The actual enactment of the curriculum is underscored by a teacher centered approach. In the next chapter the third research question is answered.

CHAPTER 7

PRESENTATION OF FINDINGS AND DISCUSSION: RESEARCH QUESTION THREE

7.1. Introduction

This chapter presents the analysis of the qualitative data collected from Social Studies (SS) lecturers and the Pre-service Social Studies Teachers (PSSSTs) of AA University in respect of research question three which is; what factors enable/constrain the learning of EE from the perspectives of SS lecturers and PSSSTs. The sources of data to answer research question four are focus group interviews with the SS lecturers and open- ended questionnaires and focus group interviews with the PSSSTs. Having ascertained how the SS lecturers teach the PSSSTs about EE and the reasons why they teach the way they did, research question four seeks to find out the factors that make the learning about EE possible as well as those factors that pose challenges to learning of EE from the SS lecturers and the PSSSTs perspectives. Furthermore, themes that emerged from the data generated in respect of the participants' responses (SS lecturers and PSSSTs) to research question four are presented and discussed.

7.2 What factors enable/constrain the learning of EE?

There are two parts to this question the first is the perspective of the SS lecturers and the second is the perspective of the PSSTs. I will first report on the SS lecturers' perspective and thereafter present the perspective of the PSSSTs.

7.2.1. Perspective of SS lecturers

I will first present the factors the SS lecturers consider as enabling factors and next present the factors that constrain learning.

7.2.1.1. Factors that enable the learning of EE from SS lecturers' perspective:

From the analysis of the SS lecturers' responses on the factors that enable the learning of EE within the AA University's Social Studies Teacher Education Programme, two themes emerged, namely

availability of resources and teaching strategies. These themes were availability of resources and teaching strategies.

Theme one: Availability of resources: The availability of resources that would support proper teaching and learning processes was one major factor that enables the learning of EE. All the respondents attested to the fact that for the learning of EE to be made possible, the lectures must have access to basic learning resources. This is so because learning about EE cannot be done in theory only. Learning EE requires practical activities, hence the need for learning resources cannot be emphasised enough. The following excerpts affirm the above assertions:

> *A number of resources are available for teaching of the PSSSTs using the chalk and talk method, they include printed media in encyclopedias, Wikipedia, text books, journals; multi-media gadgets; models; cardboards for: drawing, flash cards, or any required representation* ***(P1).***
>
> *I think emm, this time around there are so many methods, so many approaches that need to be adopted or apply. There are also sources in the environment that can actually be used to teach the environment because they are also products of the environment……. that can be used because they are readily available* ***(P2).***
>
> *Some resources such as text books, journals, real objects as well as online resources and presentations on slides are available for teaching the PSSSTs* ***(P3).***

From the above excerpts, availability of resources to learn EE become imperative. In the excerpts above it is significant to note that the resources SS lectures consider to enable the learning of EE are directly linked to the teaching strategies advocated by the intended curriculum. As discussed earlier in chapter six, SS Teacher Education Curriculum for EE advocated 5 teaching strategies to be used during the enactment of the SS curriculum.

From the above excerpts it is conspicuous that to learn about EE within the Social Studies Teacher Education Programme, relevant information about the environment and environmental issues must be gleaned from several sources. Learning about EE requires gathering useful information from printed materials such as relevant textbooks, journals encyclopedia and current environmental issues that could be sourced by exploring the internet. This makes the availability of means through which the internet can be accessed very important. Additionally, learning about EE cannot be only

through what is read in printed media; hence the SS lecturers emphasized the availability of models that provide means for practical interaction while learning about EE. This is very important because human lives interact with the environment at all times. When these resources are available, then learning of EE within the Social Studies Teacher Education Programme is enabled.

The above submissions of the SS lecturers agree with the assertion of Buchanan (2012) that availability of resources is of importance if competent EE teachers are to be trained. The scholar stressed that the resources needed to prepare competent EE teachers is not limited to the physical resources available in the teacher training institutions only but also include time and space made available to the pre-service EE teachers. Similarly, Ashmann and Franzen (2015) state that the role played by availability of resources in the EE teacher preparation programme cannot be underscored enough. They identified three major forms of resources that must be available in a teacher training institution for effective EE teachers to be trained, which are; material resources which include physical objects, buildings, material/ apparatus for teaching and learning processes, computers and internet facilities; human resources in terms of availability of instructors in EE with adequate knowledge, skills as well as a positive disposition committed to raising efficient EE teachers and social resources in the form of shared vision, teamwork/ relationships and prospect among the lecturers who train the EE teachers. Additionally, Hwang, Hong, and Hao (2018) reiterated that the need for resources with other factors like content knowledge and pedagogical knowledge in the training of quality EE teachers cannot be overemphasized. The AA University's SS lecturers claimed that the availability of these resources make the training of the PSSSTs about EE possible. This is because, the combination of teaching/ learning materials, adequate knowledge and skills on the part of the lecturers and common vision among the lecturers is non-negotiable for effective and efficient EE teachers to be trained.

Theme Two: Teaching Strategies: The second theme that emerged from the analysis of the SS lecturers' responses in respect of the factors that enable the learning of EE is teaching strategies. The SS lecturers affirmed that learning about EE was made possible due to the use of appropriate teaching strategies/ methods in training the PSSSTs. The SS lecturers mentioned that teaching methods such as chalk and talk, discussion, cooperative project and field trips were used for preparing the PSSSTs to teach EE in schools, and these teaching strategies facilitate active engagement with content material and thereby enable learning. It is believed that learning about

EE cannot be done effectively by using a single teaching method or classroom based method only, but a variety of methods that would provide the PSSSTs the opportunity to learn about and experience practical hands on learning with their environmental context. The SS lecturers claimed that the need to adopt several teaching methods was informed by the aforementioned reasons:

> *The strategies such as field trips ……. Must be planned in advance with set goals and learning activities, planning is critical for the success of this learner centered teaching strategy* ***(P1)***
>
> *Well, I will not say there is a particular method that works best for the PSSSTs because they equally show good understanding of some topics that were taught with lecturing method or any other methods* ***(P2).***
>
> *for them to actually understand what to be taught, the teacher must be well equipped with facts, with evidences and many more. Very important point is that relevant teaching methods for better teaching and learning processes were always used* ***(P6)***
>
> *"Since the strategies I mentioned earlier produce results, I have no doubt that they work for the PSSSTs in learning about EE"* ***(P3)***

The above excerpts from the SS lecturers elucidate the teaching strategies that enable the learning of EE. Participant 1 foregrounds field trips as a teaching strategy that embraces a learner centered approach, as it allowed the PSSSTs the opportunity to have a physical encounter with certain phenomena mentioned during classroom teaching. It is evident that to engage PSSSTs in field trips requires prior critical planning by the SS lecturer. Participant 2 added that considering the fact that several environmental issues were meant to be learnt by the PSSSTs, the lecturers equally ensured that their teaching was not limited to the use of one particular method but several methods that promote better learning. The SS lecturers further reiterated their convictions that the strategies used for teaching the PSSSTs promotes adequate learning about EE because learner centered approaches were adopted.

The submissions of the SS lecturers that the use of appropriate teaching strategies enable learning of EE concur with the assertion of Ashmann (2010); Darling-Hammond (2010) and Franzen (2017) that the use of various teaching strategies that actively involve the pre-service teachers are of

importance in teacher education aimed at preparing EE teachers. These authors stressed that to train competent, knowledgeable and highly skilled EE teachers, the pre-service teachers need not only be confined to the classroom but also involved in outdoor learning by going on field trips to local sites. The pre-service teachers need much practical experience for them to be adequately prepared for the task of promoting environmentally friendly behaviours as well as being competent enough to teach EE in schools. Additionally, regular practice among the pre-service teachers is of utmost importance as it will assist them to develop confidence to be good teachers. In other words, as part of the strategies envisaged to train pre-service EE teachers, regular practice/ presentation by the pre-service EE teachers among themselves guided by the lecturer is important. Franzen (2017) reiterated the importance of various but appropriate strategies for training the pre-service teacher to learn about the environment by identifying other teaching strategies such as problem-solving, cooperative learning, discussion and inquiry which submission also resonates with the provision of Centre for Innovative Teaching and Learning (2012) about the training of competent pre-service teachers.

7.2.1.2. Factors that constrain the learning of EE from SS lecturers' perspective:

From the analysis of the SS lecturers' responses in view of the factors that constrain the learning of EE within the AA University's Social Studies Teacher Education Programme, two themes emerged which are PSSSTs' lack of respect and understanding about the environment and poor funding of the programme.

Theme One: Inadequate respect for the environment by the PSSSTs: The responses of the SS lecturers to the factors that constrain the learning of EE revealed that inadequate respect for the environment on the part of the PSSSTs was a factor that constrains the learning of EE. The lecturers said that the lack of respect for the environment and the interdependence within it on the part of the PSSSTs could be linked to poor knowledge about the environment possessed by the PSSSTs. Without adequate knowledge of the various components of the environment and how these components interrelate for the sustainability of human beings, they cannot value the environment as required. This inadequate value and pertinent attitude towards the environment constrain the learning of EE by the PSSSTs. The above responses of the SS lecturers are supported by the following excerpts:

"I observe in the students' inadequate value for the environment especially the natural environment. I intend the PSSSTs to learn some ideas about EE which include value of environment with respect to human and material resources; ecosystem; how all biological organisms relate and depend on each other; need to preserve the natural environment by man; exploitation of all resources by man; safety/ security of man; development of the environment comprehensively" ***(P1)***

"……. the students do not have sufficient knowledge about the relationship between the effect of their actions on their environment and the sustainability of man within the environment. Also they need to know that man have to manage the resources around well for the survival of present and future generations. Some of the ideas the PSSSTs are intended to learn has to do with the fact that the sustainability of man within his or her environment depends on attitude towards the environment where he or she lives" ***(P3)***

"And as a matter of fact, we realize that as soon as they understand everything they need to know, the better for our society …….and so many other things. Killing of animals, hunting and all these kind of a thing should be discouraged ..... In this regard because of the need to protect individual's lives, properties, and animals, because most of the animals this time around are gradually going into extinction and it was due to the fact that our inability to protect the environment has wrecked a lot of havoc on the environment" ***(P2).***

The above excerpts revealed some factors alluded to by the SS lecturers that constrain the learning of EE. The SS lecturers mentioned that many of the PSSSTs do not have adequate respect for the environment. In other words, the PSSSTs lack sufficient knowledge about the importance of the environment to the sustainability of humans. The importance of proper usage and management of the natural resources for human sustenance was not valued by the PSSSTs. Participant 2 stressed that without adequate knowledge about the importance of the environment to survival of the present and future generations, learning about the environment by the PSSSTs would be constrained. In view of this lack of value for the environment and its resources displayed by the PSSSTs, the SS lecturers observed that there was no strong passion to learn about the environment. This situation was identified as a factor that constrains the learning of EE.

The above views as revealed by the analysis of the SS lecturers' responses to factors that constrain the learning of EE resonates with arguments of Hwang, Hong, and Hao (2018) about the role of the value of professional development as a factor that enhances willingness to participate in professional development training by teachers. These authors posit that without adequate value attached to professional development, most teachers' commitment to such training which is aimed at enhancing their professional knowledge and skill is constrained. How the teachers perceived the value of the professional development training in terms of additional knowledge, skills and the relevance of the experiences to be acquired determines their willingness to learn (Maskit, 2011); (Underwood, 2012). Similarly, Boubonari, Markos and Kevrekidis (2013); Yavetz, Goldman and Pe'er (2014) emphasized that how the pre-service teachers learn about EE is not only determined by their levels of environmental knowledge and skill but also by their levels of commitments to environmental issues. In other words, their learning is determined by their value for the environment. The PSSSTs in the same way were discovered by the SS lecturers to display similar responses to the submissions of the above authors in the learning of EE. Their responses to learning of EE was determined by the value they give to the environment, its resources and the interdependence of human and environmental resources for sustainability. This is because without knowing the usefulness derivable from having environmentally friendly relationships, learning about the environment might not be seen as important. Hence, the lack of value for the environment as mentioned by the SS lecturers was a factor that constrains the learning of EE.

Theme Two: Insufficient Financial Resources: The second theme that evolved from the SS lecturers' perspective of factors that constrain the learning of EE was insufficient financial resources. The SS lecturers mentioned that inadequate availability of funds limited the learning of EE within the Social Studies Teacher Education Programme to the use of certain teaching strategies to the exclusion of other important strategies. The SS lecturers attributed the inability to sufficiently embark on field trips with the PSSSTs during their professional training to non-availability of funds for such trips. As a result of this, the PSSSTs were not sufficiently and adequately made to have practical teaching and learning sessions, which was another factor that constrains the learning of EE.

The following excerpts from the SS lecturers' responses support the above submission:

> *"Teaching the PSSSTs about EE is faced with difficulties of logistics or need to finance field trips; water trips; value holding to change for better and consequently refined attitude towards environment"* ***(P1)***
>
> *"The problem of non-availability of sufficient funding that will assist to expose the PSSSTs to enough practical experiences which the teaching of this course requires is a major challenge. The learners are supposed to be made to embark on several field trips to places that will help them learn better but this requires availability of good transportation arrangement among other things"* ***(P3)***

From the above excerpts, the submissions of the SS lecturers in respect of the second theme is substantiated. The SS lecturers mentioned that difficulties caused by lack of funds to finance field trips was a major factor that constrains the learning of EE. The SS lecturers were of the view that the PSSSTs needed to visit several places during their studies. These trips were required to avail the PSSSTs the opportunities to have on-site experiences of certain environmental issues or problems rather than mere classroom knowledge. Also, practical teaching and learning would be ensured. Visiting these locations would help the PSSSTs better understand certain content that had been discussed in the class room, and having a direct contact with certain unwholesome environmental situations could arouse strong feelings towards promoting positive environmental behaviours and finding solutions to identified environmental problems. But the lack of funds resulted in the inability to take care of certain logistics like preliminary visits to envisaged field trip sites, providing good transportation for the PSSSTs and lecturers for the trips and other important arrangements. Hence, lack of funds to facilitate such trips was identified as a major challenge faced by the SS lecturers which was a factor identified as a constraint to learning of EE.

The above analysis concurs with the findings of Ashmann and Franzen (2015) that the non-availability of resources was identified as a major reason for less success recorded in the training of pre-service EE teachers by most teacher training institutions/ universities. The authors argued that if needed material resources are available through the provision of funds, in addition with enough human and social resources, the teacher education programmes will perform better in training of the pre-service teacher. But without the provision of these resources, learning about the environment and EE will be constrained. This is so because the presence of lecturers with adequate EE knowledge and skills must combine with various available resources if teachers with well-

grounded EE knowledge be produced by the various teacher training institutions responsible for preparing teachers to teach EE in schools. In agreement with the submission of Ashmann and Franzen (2015), Erhabor (2016) stated that there is no doubt that most Environmental Education programmes especially in developing countries are poorly funded and the inadequate funds made available for the EE programme is a major constraint to effective training of EE teachers.

The following section presents the analysis of factors that constrains the learning of EE from the PSSSTs' perspective.

7.2.2. Perspective of PSSSTs

The following sections present the analysis of factors that enables and constrains the learning of EE from the PSSSTs' perspectives. I will first present the factors that enable the learning of EE and thereafter present the factors that constrain the learning of EE from the perspective of PSSSTs.

7.2.2.1. Factors that enable the learning of EE from PSSSTs' perspective:

From the analysis of the PSSSTs' responses on factors that enable the learning of EE, one theme emerged which is knowledge about the benefits of EE.

Knowledge about the benefits of EE: The PSSSTs mentioned that learning about EE was enabling as a result of realization of the benefit and importance of EE to them. Having realized the benefit of EE to them individually and to their profession as teachers, the PSSSTs were keen to acquire EE knowledge and skills. The views of the PSSSTs concerning the factors that enable the learning of EE is supported by the following excerpts:

> *Emm.., another thing I like about EE is that it widen my knowledge for instance, if I want to engage in agriculture/farming , the knowledge I gained in EE can help me in the decisions I have to make in terms of soil Ph, soil type, soil erosion, crop rotation, irrigation, planning seasons, natural pesticides,* ***(FGI-2; P4)***
>
> *Another thing is that the knowledge of EE will make us to be conscious of how we use and conserve things in our environment and with that we will also be able to contribute towards the improvement of our environment and natural resources. It helps one to be conscious of how we interact with our environment what we need*

to do to act as responsible environmental citizens, this knowledge empowers us to be agents of change in our communities. ***(FGI-2; P1)***

I believe the study of EE is of importance because it gives us certain knowledge about our environment and environmental issues. It also provides us with some skills to tackle environmental problems. ***(FGI-1; P4)***

What I like about learning EE is that it is about reality, that is what we are taught is what we can see. For example, effects of pollution, population explosion and so on. ***(FGI-1; P1)***

Education is meant to make individuals functional in his environment, likewise, EE make an individual functional by equipping individuals with skills that are needed to be functional in his environment. That is, it makes an individual functional in his environment. ***(FGI-1; P2)***

Similarly, the PSSSTs' views on the questionnaire were presented:

I enjoy a lot of things about EE because it has really sharpened my knowledge to what is around me that am ignorant of. ***(Q, P6)***

What I enjoy about learning EE is how it teaches us about our natural environment, the way it functions and how we can manage the environment. ***(Q, P10)***

What I enjoy about learning EE is that it helped me a lot about learning and understanding of those things that I do not knowledge about and it really help me so much that it brightens my life. ***(Q, P19)***

I enjoy a lot of things about EE because it has really added to my knowledge to know about things i was ignorant of around me. ***(G, P13)***

Experience about the nature of the premises, acquisition of knowledge in any situation, testing individual capability of learning, responding to the pattern of learning. ***(Q, P23)***

The above excerpts from the PSSSTs' responses to factors that enable the learning of EE revealed that one major factor that enabled the PSSSTs to learn about EE was the awareness of the new

knowledge, experiences and skills that they stand to acquire. The expectation of the PSSSTs which motivated their commitment to learning about EE resonated with the assertion of NAAEE (2010) that through learning about EE, approaches and contents required them to become environmentally literate, for the attainment of sustainability. In other words, EE enhances the acquisition of questioning, analysis and interpretational skills, as well as possessing adequate understanding needed to proffer solutions to environmental problems individually and collectively. This consciousness made the PSSSTs to be passionate about their learning. The PSSSTs discovered that apart from the fact that learning about EE would enhance their professional training, they equally realized that knowledge acquired through their learning about EE would be useful in other aspects of life. This is so because the PSSSTs discovered that enough knowledge about the environment and environmental issues is necessary in every sphere of life. The PSSSTs were excited about the opportunity to have wider knowledge about life generally and the acquisition of additional skills which could make them become solution providers to societal problems. In other words, the PSSSTs believed that learning about EE would make them functional both as teachers and in any other area of endeavours.

In view of the awareness of several benefits derivable from learning of EE, the PSSSTs were motivated about their professional training process which served as a factor that enables the learning of EE from the perspective of the PSSSTs. The responses of the PSSSTs resonate with the findings of Gwekwerere (2014) in a study on Pre-Service Teachers' Knowledge, Participation and Perceptions about Environmental Education in Schools. The author noted that some of the pre-service teachers' commitment to learning more about the environment and EE was based on self-motivation that resulted from their realization of the benefits derivable from taking positive and informed actions within the human environment. The submission of Gwekwerere (2014) was reiterated by Warner, Langlois and Dumond (2010) that the zeal demonstrated by some pre-service teachers while learning about the environment can be attributed to their personal resolve to acquire knowledge about environmental issues and the environment at large. Furthermore, Delvaux, Vanhoof, Tuytens, Vekeman, Devos and Van Petegem (2013) assert that the seeming worth of acquiring additional professional knowledge by teachers through professional development programmes leads to a positive attitude towards such professional training and thereby resulting in enhanced learning. In respect of the PSSSTs, the prospect of the new and additional knowledge about the environment and EE to be acquired becomes a motivating factor to learn. From the

foregoing, personal motivation and quest to acquire environmental knowledge and skills to solve environmental problems is therefore a major factor that enables the learning of EE by the PSSSTs. This disposition was based on the realization of benefits derivable from EE by the PSSSTs.

The next section presents the factors that constrain the learning of EE firstly from the SS lecturers' perspective and then from the PSSSTs' perspectives.

7.2.2.2. Factors that constrain the learning of EE from the PSSSTs' perspective:

From the analysis of the PSSSTs' responses in view of the factors that constrain the learning of EE within the AA University's Social Studies Teacher Education Programme, three themes emerged which are Inappropriate Teaching Methods, Insufficient content of EE in Social Studies Teacher Education Programme and Inadequate EE Content Knowledge of SS lecturers.

Theme One: Use of Inappropriate Teaching Method: The first theme that emerged from the analysis of PSSSTs' responses to factors that constrain the learning of EE is the use of inappropriate teaching method by the SS lecturers. The PSSSTs said that most of the SS lecturers use chalk and talk or the lecturing method to enact EE. The PSSSTs claimed that the use of the lecture method made their learning of EE more theoretical rather than practical. The views of the PSSSTs about the predominant use of the lecture method for their training was that the method alone cannot provide them with adequate knowledge about the environment as well as enough EE knowledge and skills required of future EE teachers. Consequently, the possibilities of learning about EE adequately is constrained. The following excerpts affirm this:

> *in my own view, and based on my experience, chalk and talk or lecturing method is been used mostly and this lecturing method does not give students the avenue to also play active roles during teaching learning exercise, as lecturers dominate the presentation of facts. So I suggest that other teaching methods like discussion method, project based methods, group work should be introduced in teaching because with that, both the lecturer and students will play active roles in the cause of teaching and learning, so students will not be so passive.* ***(FGI-2, P4)***

the lecturing method is been used and this is based on theory while we are not made to experience hand on learning in the environment, which is the biggest resource available to teach EE, everything we have learn is theoretical in the lecture room there is no practical component to learning EE with these SS lectures. I would like teaching of EE within social studies programme to make use of inquiry method and also go to places where these environmental issues take place and also inquire on what can be done to minimize such happening rather than just been theoretical. In other words, PSSSTs are to make to go on excursion, visit some cites of environmental problem and come back to school to discuss way of solving the identified problems. ***(FGI-2, P2)***

in the lecture method the lecturer only participate s, it does not involve the students. Teaching is only based on classroom setting, students should be allowed or taken out for field trips. The students do not participate actively in the teaching-learning processes, the learning process is teacher centered ***(FGI-3, P1)***

Yes, theory rather than practical is a major factor that hinders the learning about we often see teacher does not promote environmental friendly behavior, this in a way hinders learning of EE as the teachers are expected practicalize those things they teach their learners. ***(FGI-3, P4)***

So in contribution to what they have said, I think the major factor that affect the teaching of EE as my colleagues have said is teaching method which is teacher centered. You see, while teaching students about EE, I think they should be able to contribute their own experience, what they have seen because individual leaves in different environment and what happens in my environment may be different from others. That is, the problem we face in my environment may be different from others. In view of this, while sharing ideas we will be able to come up with solutions to the problems. ***(FGI-3, P3)***

Excerpts from the different focus group responses illuminate that the PSSSTs were taught EE mainly through chalk and talk/lecture method. The PSSSTs claimed that the use of the lecture method predominantly to teach them about EE affected the extent to which they learn. They stressed that the lecture method confined them to the classroom whereas there is much to learn

about the environment outside the classroom. Without engaging in outdoor learning, it is difficult for the PSSSTs to be familiar with the environmental issues which are outside the four walls of the classroom. Furthermore, the PSSSTs mentioned that the use of lecture methods to teach them about EE makes the teaching process teacher centered rather than learner centered. In other words, the PSSSTs were passive during teaching and learning processes since the lecturers alone were involved. Hence, rather than making the learning process interactive, a rather informative pedagogy was often used which limited the level of learning by the PSSSTs. Similarly, the PSSSTs stated that besides the fact that the lecture method makes the teaching teacher centered and the confinement of the PSSSTs to the class room make learning about EE more theory rather than practical. Based on the above situations, the PSSSTs were of the view that adequate learning about the environment cannot be achieved using the lecture method as this constituted a factor that constrained effective learning of EE.

The above analysis concurs with the findings of Hassan and Ismail (2011) in a study on infusion of EE in Malaysian schools. These authors argued that the reason why teachers do not involve innovative and practical approaches in teaching of EE in schools was because the teachers were trained using mainly lecture methods as opposed to the involvement of outdoor methods which invariably affected their learning of EE. Similarly, Gwekwerere (2014); Nielsen, Andersen, Hurley, Sabljak, Petereit, Hoskin and Hoban (2012) submitted that more often, pre-service teachers' training programmes in EE lack practical teaching required to acquire sufficient EE knowledge and skills because much of the teaching is theoretical in nature. Whereas, for the pre-service teachers' learning about EE to be adequate, there is need for complete interaction with the environment, which cannot be limited to only class room talking but must involve strategies that would take the pre-service teachers outside the classroom. Additionally, Ashmann et al, (2015) reiterated the above submission that for the pre-service teachers to acquire adequate EE knowledge and have good understanding of their environments and environmental issues, they must interact with the real things happening around them through their learning. Furthermore, Dhull and Verma (2017) stressed the necessity for using appropriate theories and teaching methods aimed at making the teaching and learning of EE practical.

Theme Two: Inadequate EE content knowledge of the SS lecturers

The second theme that emerged from the PSSSTs' responses on factors that constrain the learning of EE was inadequate EE content knowledge of the SS lecturers. Most PSSSTs asserted that many of the SS lecturers involved in their training lack sufficient EE content knowledge. The PSSSTs' responses revealed that without the possession of adequate content knowledge there is no way proper learning could be achieved. Hence their learning of EE was constrained by the lack of EE content knowledge on the part of the lecturers within the Social Studies Teacher Education Programme. The following excerpts from the PSSSTs' affirm the above- mentioned points:

> *In the case of the lecturer, the lack of content knowledge of EE, impacts the way they teach EE. Their lack of knowledge limits the teaching strategies they use, also much of the content knowledge is dated for example Ten years ago, the issues of the environmental issues witnessed were quite different to what we have now. Therefore, the aspect of lack of adequate knowledge of subject matters on the part of lecturers/teachers is actually a problem.* ***(FGI-1, P1)***
>
> *My own opinion is that the SS lecturers are needing some serious professional development- they need to upgrade their content about the EE and also learn how to use resources to enhance their teaching.* ***(FGI-3, P3)***
>
> *let me start by saying that the level of the knowledge of EE by the SS lecturers is a major factor. There is a saying that you cannot give what you do not have, some of the lecturer lack not only theoretical knowledge but also practical knowledge of environmental issues.* ***(FGI-3, P4)***

The above excerpts, show that the lack of sufficient EE content knowledge on the part of the SS lecturers constrains the learning of EE within the Social Studies Teacher Education Programme of AA University. The PSSSTs' responses revealed that some of the SS lecturers demonstrated low levels of EE content knowledge in their teaching perhaps based on the fact that the lecturers were not adequately equipped with EE knowledge and skill during their professional training and the lack of continuous professional development available to the SS lecturers. The PSSSTs equally stressed that insufficient knowledge about the environment and environmental issues on the part of some SS lecturers was evident in the manner of their teaching of EE. The PSSSTs argued that

without the SS lecturers possessing a high level of EE content knowledge it will be impossible for them to teach EE content effectively or engage PSSSTs during their teaching. The PSSSTs attributed the insufficient knowledge about the environment and EE by the SS lecturers to lack of interaction with the environment, that is they have no practical experience about the environment issues. The PSSSTs also said that the reason why some of the SS lecturers demonstrated a low level of environmental knowledge could be linked to change in the levels, occurrences and intensity of environmental problems currently witnessed compared to some years back. Hence the environmental knowledge acquired by some of the SS lecturers some years ago might not meet up with the current realities about environmental issues. Therefore, the insufficient knowledge of EE by the SS lecturers is a factor that constrains the learning of EE by the PSSSTs.

The views expressed by the PSSSTs resonate with the findings of Álvarez-García, Sureda-Negre and Comas-Forgas (2015) in an analysis of preparation of pre-service teachers on EE and ESD. Based on the findings of these authors, they observed that the tutors responsible for the preparation of the pre-service EE and ESD teachers at the different institutions of higher learning do not possess the needed competency about the environment to train the pre-service teachers. In as much as the lecturers lack sufficient knowledge and skills about EE, the result is that the learning of the pre-service teachers will be constrained. Similarly, Ashmann et al. (2015) argued that the productivity of teachers in EE depends on the adequacy of the training received as pre-service teachers through the teacher training programmes. The above authors stressed that without adequate training provided on EE content, the teachers productivity will be limited. Also, Franzen (2017) submitted that for an environmentally conscious population to be raised, teachers and their trainers' roles cannot be adequately underscored. The scholar opined that for sufficiently trained EE teachers to be produced, the teachers who are trainers themselves must be adequately knowledgeable about EE and environmental issues generally. Ashmann (2010) further reiterated the importance of adequate EE knowledge and right disposition on the part of the teacher trainers towards EE in preparing sufficiently knowledgeable EE teachers.

The above arguments and submissions of the different scholars substantiate the fact that inadequate EE knowledge and skill by the SS lecturer as revealed by the PSSSTs constrains the learning of EE.

Theme Three: Insufficient EE Content in Social Studies Teacher Education Programme: The third theme that emerged from the analysis of the factors that constrain the learning of EE from the PSSSTs' perspective is insufficient EE content in the Social Studies Teacher Education Curriculum for EE at AA University. The PSSSTs revealed that the content of EE contained in the SS curriculum used for their training was insufficient, hence this constrains the learning of EE. Without sufficient EE content in the SS Teachers Training Programme the level of EE knowledge and skills that the PSSSTs acquire is inadequate and so the extent of their learning about EE is constrained. The following excerpts from the PSSSTs' responses support the above claim:

> *In my own opinion, the EE knowledge gained as PSSST is not enough because EE content is not spread across our programme from 100l to 400level, so I can say that the knowledge is inadequate.* ***(FGI-3, P2)***
>
> *Emm… in our Social Studies teacher Education programme, we discover that EE content is not much in the sense that if we are to look at our programme, from 100level to 400level, we will only discover that we were taught much about our environment in 100 level with little in 200level, and knowledge gain since that time is no more fresh, but if EE is embedded in our programme may be from 100level to 400l, this knowledge will still be fresh by the time we leave the school as students to the larger society and so we will be able to impact positively on our society.* ***(FGI-2, P3)***
>
> *In our programme, the content of EE is so low. In our 100level, the course that really deal with EE is SSE 106 (Man and his environment). In our 200level, we did a course SSE 214 (The ecosystem), in our 300l, there is no course that is directly related to EE and also in 400level there is no course that is directly related to EE, but more on social studies.* ***(FGI-1, P3)***
>
> *The content of EE in social studies programme let me say it's very low. The reason is that when we look through the curriculum for this four years programme, we can see that more attention is on social aspect to the neglect of other aspects which is somehow responsible for the several problems witnessed in our country. People lack the knowledge of how to relate well with their environment, how well to explore the resources, how to involve in agricultural practices that will lead to better*

productivity without adversely affecting the environment. With proper environmental knowledge, our agricultural productivity will improve thereby reducing the level of food shortage and poverty. So the content of EE in social studies programme is very low. ***(FGI-1, P3)***

From the above excerpts, the responses of the PSSSTs regarding insufficient EE content within the SS curriculum is substantiated. The PSSSTs emphasized that the number of courses that focused adequately on the environment in the teacher education training programme is minimal. They also stressed that the few EE focused courses were not spread across the four -year programme leading to the award of a Bachelor of Education Degree. It was argued that for the PSSSTs to be well groomed as EE teachers of the future, the content of EE exposed to while on training should be rich enough in issues about the environment, its uses and sustainability. The PSSSTs believed the purpose of their professional training in EE is not limited to just teaching in schools in the future but it is also expected that knowledge acquired through the professional training could be transferred to other endeavours like engaging in appropriate agricultural practices that support sustainability of the environment. But these cannot be achieved with the few EE courses available in the SS Education Programme. The PSSSTs claimed such will only lead to having shallow knowledge about the environment. Based on the situation analyzed above, the PSSSTs submitted the learning of EE is constrained.

The submission of the PSSSTs in respect of insufficient EE content within the SS programme as a factor that constrains learning of EE is supported by the argument of Álvarez-García et al. (2015) that the teacher training institutions should provide the pre-service teachers knowledge about environmental issues that would arouse and sustain their interest about their studies. These authors observed very low inclusion of EE content in most of the studies reviewed which constitutes a major reason for insufficient EE knowledge acquired by the pre-service teachers. They stressed that training provided for the pre-service teacher in the different teacher training institutions on EE should be comprehensive enough to make the teachers in training not just find a way of solving environmental problems but rather be agents of achieving the sustainability of the environment. However, based on their findings, the training provided in some of the institutions is not comprehensive enough for the roles expected of the future teachers in their teaching of EE and the poor preparation was linked to the content of EE included in the training modules. Similarly,

Yavetz, Goldman and Peíer (2014) emphasized the need to include sufficient EE content in all pre-service teacher training programmes to prepare the pre-service teachers adequately for their future teaching tasks. Similarly, in a study carried out by Boon (2010), the scholar discovered that inadequate knowledge acquisition by learners based on the fact that the content of the curriculum in use lacks sufficient content of the subject matter to be learnt. The scholar therefore advocated the inclusion of adequately required content of subject matter into the teacher training programmes.

In view of the above findings of scholars that resonate with the submission of the PSSSTs concerning the factors that constrain the learning of EE, insufficient inclusion of EE content into the SS Teacher Education Programme is therefore identified as a factor that constrains the learning of EE.

The use of the Remillard and Heck (2014) model as an analytical framework illuminated that the processes of curriculum enactment are influenced by external factors as revealed by the model, concurs with the findings of Lui and Leung (2013); Pepin, Gueudet, and Trouche; (2013); Xu (2013) in their different studies on curriculum enactment.

7.3. Conclusion:

This chapter presents the analysis of research question three, namely, what factors enable/ constrain the learning of EE from the perspective of SS lecturers and PSSSTs? This research question was answered through the individual interview responses of SS lecturers of AA University and the focus group interview/ open ended questionnaire responses of the PSSSTs. First analysed were the responses of the SS lecturers that enable the learning of EE, from which two themes emerged which are teaching strategies and availability of resources. The SS lecturers submitted that the learning of EE was enabled using teaching strategies such as cooperative discussion, problem-solving, project and field trip methods to teach the PSSSTs about EE. The SS lecturers also mentioned that another factor that enables the learning of EE was the availability of infrastructure in the form of relevant teaching gadgets and teaching materials. Similarly, from the analyses of the PSSSTs' responses in respect of the factors that enable the learning of EE, one theme emerged which is knowledge about the benefits of EE. The PSSSTs said they were motivated to learn about EE because they could foresee benefits that are derivable from having adequate knowledge of environmental issues and EE.

On the other hand, from the analysis of the responses of the SS lecturers in respect of the factors that constrain the learning of EE, two themes emerged which are inadequate respect for the environment by the PSSSTs and insufficient financial resources. The SS lecturers said most of the PSSSTs do not value the environment as a means for the sustainability of human beings. The lack of value for the environment was claimed by the SS lecturers as a constraint to learning of EE. Also, the SS lecturers said lack of sufficient funds to facilitate outdoor learning such as field trips which are highly desired in learning about the environment and environmental issues was another factor that constrains the learning of EE. Similarly, from the analysis of the factors that constrains the learning of EE from the PSSSTs' perspective, three themes emerged which are use of inappropriate teaching methods, inadequate EE knowledge of the SS lecturers and insufficient EE content in the Social Studies Teacher Education Programme. The PSSSTs emphasized the predominant use of the lecture method by the SS lecturers with the teaching being teacher centered. They equally said that some of the SS lecturers demonstrate lack of adequate EE knowledge in their teaching. Also, the PSSSTs said the content of EE in the Social Studies Teacher Education Curriculum for training is scanty. Hence these factors were said to constrain the learning of EE. The above factors that enable/ constrain the learning of EE from both the SS lecturers' and the PSSSTs' perspectives were substantiated by relevant literature. The next chapter is the final chapter of the thesis.

CHAPTER 8

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

8.1 Introduction

This chapter presents a review of the findings, recommendations and conclusions of the qualitative study. The analysis of the data generated aimed to illuminate the intended, enacted and achieved Environmental Education Curriculum within the Social Studies Teacher Education Programme at the AA university in Nigeria. The study responded to three research questions, namely, how is the Social Studies teacher-training intended curriculum on Environmental Education aligned to the National Environmental Education Policy in terms of goals, objectives, competencies development, topics, sequencing and progression of knowledge development? Secondly, what teaching strategies do Social Studies lecturers use to enact Environmental Education and why? Thirdly, what factors enable /constrain the achieved EE curriculum from the perspective of SS lecturers and PSSSTs?

8.2 Summary of key research findings

In the section the key findings for each research question is presented and discussed.

8.2.1 Findings for Research Question 1

Table 8.1 Summary of findings from Research Question 1

Research Question 1	Overall finding	Themes
How is the Social Studies Teacher-Education Curriculum on Environmental Education aligned to the **National Environmental Education Policy** in terms of goals, objectives, competencies development, topics, sequencing and progression of knowledge development?	A reasonable level of alignment exists between the NPEE and the AA University curriculum for training the PSSSTs.	What need is your curriculum responding to? Who is the curriculum aimed at /intended for? What are the goals of the curriculum? What content areas does it focus on?

Theme one: The need responding to the policy documents: The NPEE is responding to issues of environmental crisis in Nigeria occasioned by low level of environmental literacy among the Nigerian population while the AA University's PSSSTs curriculum seeks to address the need identified in the NPEE through the training of the PSSSTs for the teaching of EE in schools.

Theme two: The intended target of the curriculum: The NPEE curriculum is intended for the Nigerian population (informal sector) and the Nigerian schools and universities (formal sector). This is so because every Nigerian citizen has a very important role to play in addressing the nation's environmental crisis.

Theme three: Goals of the curriculum: The NPEE have as part of its goals willingness to raise public awareness about the preservation of the environment, ensure the security of the environment for healthy living, to promote sustainable use of natural resources, promote the need for joint effort within the environment and build partnerships among all stakeholders concerned with environmental issues. On the other hand, the goals of the AA University Social Studies Teacher Education Programme are to prepare specialist teachers that would be adequately qualified to teach SS in secondary schools, to expose PSSSTs to the methodologies for teaching SS, develop the capacity to learn and acquire basic skills in the PSSSTs, ensure the acquisition of a relevant body of knowledge needed to be relevant in the environment in the PSSSTs, inculcate positive values in the PSSSTs, develop the ability for rational utilization of resources in the PSSSTs and to inculcate in the PSSSTs the benefits derivable from diversity and interdependence with the environment.

Theme four: Content areas of focus: The NPEE focuses on conservation and management of natural resources, waste and environmental pollution, climate change, cross sectoral issues, policy implementation and implementation actions while the SS curriculum includes modules such as community studies, man and his environment, principles and concepts of Social Studies, industrialization, population and economic development in Nigeria, ecosystem and the environment, population education, Nigeria and her land, processes and issues of modernization and regional planning and environmental factors.

8.2.2 Findings for Research Question 2

Table 8.2 Summary of findings from research Question 2, strategies used by SS lecturers to enact EE and why.

Research Question 2	Overall findings	Themes
What teaching strategies do Social Studies lecturers use to enact Environmental Education? And Why?	The Social Studies Lecturers submitted that the diverse teaching methods such as cooperative discussion, project, fieldtrips/excursions and lecture methods were used to train the Pre-service Social Studies Teachers in order to achieve the goals and objectives of teaching EE	Teaching strategies intended, planned and enacted Acquire adequate Environmental Education (EE) knowledge Promote an understanding of the relationships between Human activities and Environmental Sustainability

Teaching strategies used by SS lecturers to enact EE and why. The following Three themes emerged:

Theme 1: Intended, Planned and Actual Teaching Strategies for Enactment of EE.

The first theme that emerged from the analysis of responses in respect of research question two focuses on the SS Teacher Education Curriculum for EE used for the training of the PSSSTs in terms of what is intended as per the EE curriculum, the lesson plan of the SS lecturers and the actual strategies employed by the SS lecturers for training the PSSSTs. The SS Teacher Education Curriculum for EE advocated the use of constructive teaching strategies for the training of the PSSSTs. The strategies advocated are discussion, lecture methods/chalk and talk, cooperative group work, project -based teaching and fieldtrip/excursions. The need for these teaching strategies is to ensure the actualization of the goals and objectives of the SS Teacher Training Programme as contained in chapter six above. The analysis of the planned teaching strategies by SS lecturers for enactment of the SS Teacher Education Curriculum revealed that each of the six SS lecturers' lesson plan aligned with what is advocated in the SS curriculum for training of the PSSSTs. In other words, all the SS lecturers planned to use the teaching strategies advocated in the SS Teacher Education Curriculum for EE. Additionally, one of the lecturers planned to use simulation and ICT to teach certain aspect of the curriculum. However, divergence was noted between the advocated strategies for training the PSSSTs and the planned strategies for enactment of the curriculum by

the SS lecturers, and the actual teaching strategies used during the enactment of the curriculum. It was observed that most lecturers predominantly adopted the lecture/chalk and talk method during the lesson thereby giving very little room for interaction/engagement with PSSSTs. That is, a more teacher centered rather than learner centered approach. This means that the teaching strategy used to enact the curriculum is not constructively aligned to the intended curriculum and the lesson plan.

Theme 2: Acquire adequate Environmental Education (EE) knowledge

Acquisition of adequate EE knowledge is another theme that emerged from the analysis of responses to research question two. The analysis of the teaching strategies proposed in the SS lecture pack revealed that it was intended that the PSSSTs should acquire adequate EE knowledge needed to teach effectively about environmental issues in schools. Similarly, the analysis of the SS lecturers' interview responses revealed that the need to acquire adequate EE knowledge by PSSSTs is very important in choosing the teaching strategies to be used. The SS lecturers emphasized that acquisition of adequate EE knowledge will determine how well they are going to affect their future learners through teaching of EE. However, the lack of alignment between the intended strategies and the actual strategies will hinder the actualization of acquiring adequate EE knowledge by the PSSSTs.

Theme 3: Promote an understanding of the relationships between human activities and Environmental Sustainability

The need to promote the level of understanding of the PSSSTs about the relationship between human activities within the environment and environmental sustainability was identified as another concern of the SS lecturer in training the PSSSTs. The SS lecturers believed that if the PSSSTs have adequate understanding about the effect of human activities on the sustainability of the environment, such understanding will guide their actions and activities. The need to promote this understanding among the PSSSTs was claimed by the SS lecturers as one of the factors that determine the teaching strategies used to enact the SS curriculum. However, the divergence between the intended SS curriculum and the enacted curriculum becomes a major challenge in achieving proper understanding about the relationship between human activities and environmental sustainability by the PSSSTs.

8.2.3 Findings for Research Question 3

Table 8.3 Summary of findings from research Question 3, factors that enable/constrain the learning of EE.

Research Question 3	Overall findings	Themes
What factors enable / constrain the learning of EE from the perspective of: SS lecturers PSSSTs?	The SS lecturers and PSSSTs submitted that certain factors enable/ constrain the learning of EE.	**Perspective of SS lecturers.** 1. Availability of resources. 2. Teaching strategies. 3. Inadequate value for the environment by the PSSSTs. 4. Insufficient financial resources. **Perspective of PSSSTs** 1. Knowledge about benefits of EE. 2. Use of inappropriate teaching methods. 3. Inadequate EE knowledge of the lecturers. 4. Insufficient EE contents in Social Studies Teacher Education Programme.

Factors that enable the learning of EE from the perspectives of SS lecturers. The following two themes emerged:

Theme 1 Availability of resources: The availability of resources such as relevant text books, printed media in encyclopaedias, Wikipedia, journals, internet, multi-media gadgets and real objects (realia) were mentioned as some of the factors that enable the learning of EE by SS lecturers. With these resources available to the SS lecturers, the training of the PSSSTs is enhanced.

Theme 2 Teaching strategies: The use of diverse teaching strategies for enacting EE was identified as another factor that enables the learning of EE. Several teaching methods were used by the SS lecturers for the PSSSTs to learn effectively, such as cooperative discussion, project and field trips. The use of diverse methods was claimed to be of importance because learning about the environment cannot be adequately done by using only one teaching method.

Factors that constrain the learning of EE from the perspectives of SS lecturers. The following two themes emerged:

Theme 1 Inadequate value for the environment by the PSSSTs: A major factor that constrains the learning of EE from the SS lecturers' perspective is the fact that the PSSSTs do not show a sense of respect towards the environment. The SS lecturers were of the view that without the PSSSTs having respect for the environment and environmental issues, learning about the environment is constrained.

Theme 2 Insufficient financial resources: Another factor identified by the SS lecturers as a constraint to learning of EE is insufficient financial resources. This factor hinders certain processes that would have made the learning of EE easier. For example, due to lack of financial resources, the frequency of taking the PSSSTs out on field trips was limited thereby hindering the PSSSTs from learning the important aspect of EE that requires visiting the sites where first hand environmental knowledge could be acquired. The views of the SS lecturers resonate with the findings of Ashmann and Franzen (2015) that the reason why less success is often recorded in the training of pre-service EE teacher by most teacher training institutions and universities is affected by the non-availability of resources. Similarly, Erhabor (2016) affirms that poor funding of most EE programmes especially in developing countries constrains the effective training of EE teachers.

Factors that enable the learning of EE from the perspectives of PSSSTs.

Theme 1 Knowledge about benefits of EE: The PSSSTs submitted that the learning of EE was enhanced when it was realized that many benefits could be achieved through learning about their environment. The fact that the PSSSTs have much to benefit individually for personal use and professionally as a teacher from EE knowledge that is acquired served as a motivating factor. The PSSSTs realized that they are better positioned through the knowledge and skill acquired from learning about EE to positively affect their environments.

Factors that constrain the learning of EE from the perspectives of PSSSTs.

The following three themes emerged:

Theme 1 Use of inappropriate teaching methods. The PSSSTs identified the use of inappropriate teaching methods by the SS lecturers as one of the factors that constrains the learning of EE. The PSSSTs in their responses to research question four concerning factors that constrain the learning of EE mentioned that the SS lecturers use the lecture method more often to enact EE. The PSSSTs are of the view that the frequent use of the lecture method makes the teaching more teacher centered rather than learners centered. Additionally, the use of the lecture method hinders the PSSSTs from having access to practical knowledge about environmental issues and the environment at large. This method limits them to only the knowledge passed across by the SS lectures which subsequently constrains effective learning of EE by the PSSSTs. The submission of the PSSSTs resonates with the findings of Gwekwerere (2014); Nielsen et al. (2012) that many pre-service teacher training programmes in EE are theoretical in nature rather than practical. The above findings concur with the assertion of Hassan and Ismail (2011) that many Malaysian teachers could not use innovative and practical approaches while teaching EE in school because the teachers were often trained using lecture methods rather than outdoor methods.

Theme 2 Inadequate EE knowledge of the lecturers: Another factor identified by the PSSSTs which constrains their learning of EE has to do with the possession of inadequate EE knowledge on the part of the SS lecturers. The PSSSTs stated that some of the SS lecturers lack adequate EE knowledge needed to effectively train them. Inasmuch as adequate knowledge about the subject matter in EE to be taught by the SS lecturers is lacking, there is very little chance that effective learning about EE could be achieved. In view of the inadequate EE knowledge possessed by the SS lecturers, acquiring relevant knowledge about the environment as well as sufficient EE knowledge and skills by the PSSSTs is constrained. The views of the PSSSTs resonate with the findings of Alvarez-Garcia et al. (2015) that lack of competency on the part of trainers of pre-service teachers on EE and ESD at the different institutions of higher learning constrains the learning of the pre-service teachers.

Theme 3 Insufficient EE content in Social Studies Teacher Education Programme: The PSSSTs equally identified insufficient EE content within the AA University's Social Studies Teacher Education Programme as another factor that constrains their learning of EE. Lack of sufficient EE content was mentioned by the respondents as it was claimed that EE content is not present in all the modules across the four- year programme. Without the EE content being sufficiently available across all the levels, the learning of EE is constrained. The PSSSTs' view concurs with the arguments of Avvarez-Garcia et al. (2015) and Yavetz et al. (2014) that training provided in some institutions is not comprehensive enough for the roles expected of the future teachers in their teaching of EE due to the content of EE included in the training modules. The need to include sufficient EE content in all pre-service teacher training programmes is therefore emphasized by the above scholars to assist the pre-service teacher to be adequately prepared for their future teaching tasks.

8.3. Discussion on the use of the Remillard and Heck's (2014) model as a theoretical framework

This study adopted the Remillard and Heck (2014) model of the curriculum policy, design, and enactment system for its theoretical framework, depicted in figure 8.1. below.

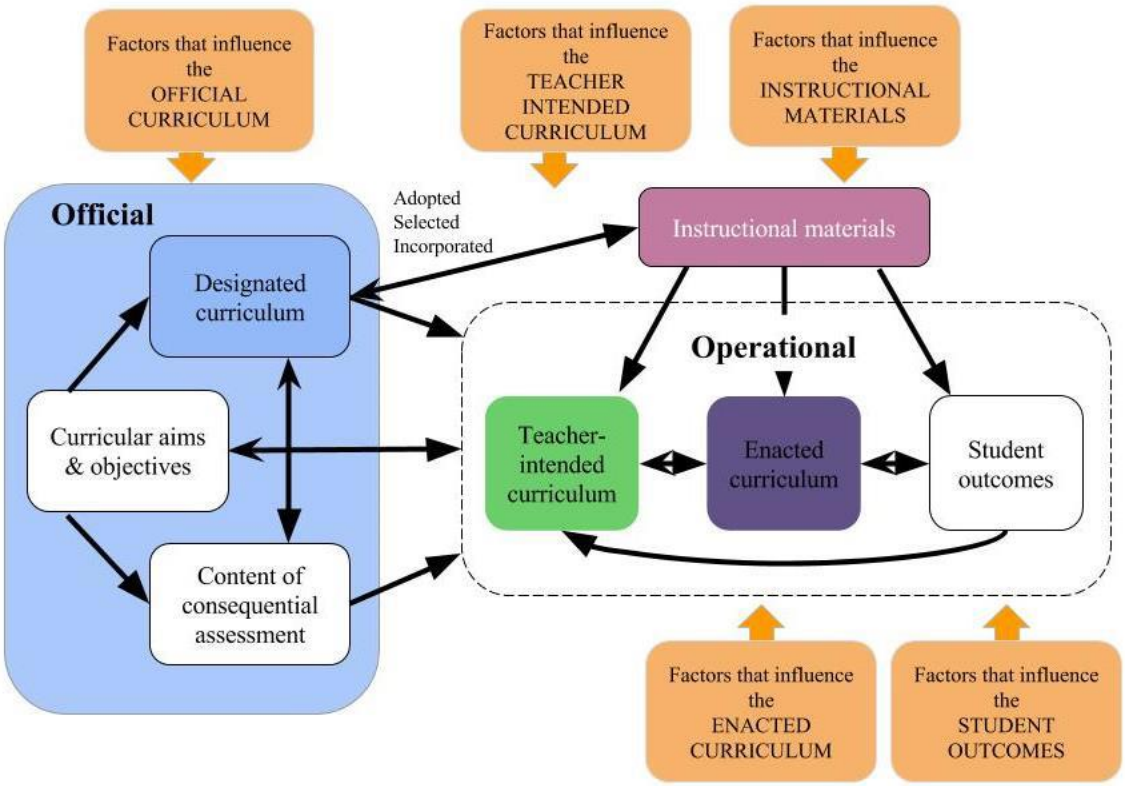


Figure 8.1. Remillard and Heck (2014) model of the curriculum policy, design, and enactment system

The above framework was used to trace the alignment between the official curriculum (represented by NPEE), the teacher intended curriculum (represented by the SS Teacher Education Curriculum for EE at AA University) the enacted EE curriculum (represented by SS lecturers observed lessons) and student outcomes (represented by PSSSTs' perspective on their learning of EE). The framework allowed for such tracing to occur, however, the data for research question two brought to the fore the gap between the teacher intended curriculum (represented by the SS Teacher Education Curriculum for EE at AA University) and the enacted curriculum (represented by the SS lecturers' observed lessons). My findings revealed that the teacher intended curriculum was in place at the AA University and that SS lecturers planned to enact the intended curriculum in particular (see chapter 6 , table 6.2).The Remillard and Heck (2014) model does not cater for lecturers planning as an element of the model. Planning by the teacher according to Reid (2005) is an integral process required for curriculum enactment, as it sets the course for enactment of the

curriculum. Further, teacher planning provides the planned course for the journey that the teacher will take the students on, during curriculum enactment in the classroom. Based on the findings of this study I argue that teacher planning needs to be considered as a separate component in the Remillard and Heck (2014) model. Teacher planning for curriculum enactment should be included with the operational curriculum between the teacher intended curriculum and the enacted curriculum as reflected in figure 8.2. below.

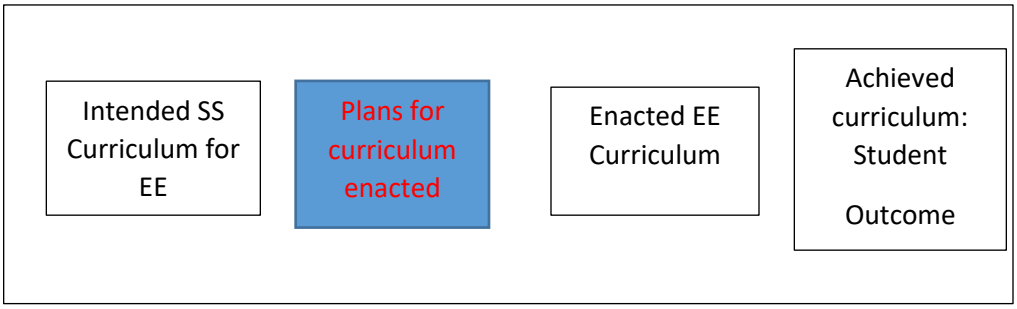


Figure 8.2. Extension of the Remillard and Heck (2014) model (Source, Author, 2020)

8.4: Recommendations

Based on the findings from this study, the following recommendation are made.

8.4.1 Recommendations for University Teacher Education Departments for resources

The study recommends that the University should provide adequate attention and necessary support, by providing relevant resources needed to the teaching and learning of EE within the SS Teacher Training Programme. For example, the provision of sufficient financial resources to the SS Teacher Education Programme will create more opportunities for the PSSSTs to go on field trips. By this, the PSSSTs become more familiar with the environment, thereby enhancing their practical experiences to teach EE in schools. Besides the provision of resources, the Teacher Education Department should ensure that adequate numbers of modules with sufficient EE content are included in the SS programme from the first year to the fourth year of the PSSSTs' professional

training in order to encourage the teachers to acquire adequate EE knowledge and possess enough understanding about the environment.

8.4.2 Recommendations for continuous professional development of university Social Studies lecturers

The findings of this study reveal that the SS lecturers lack content knowledge and pedagogical knowledge needed to engage PSSSTs during the enactment of the EE curriculum. The knowledge of PSSSTs about the environment is highly significant for the development of their content knowledge as well as pedagogical content knowledge in EE. Without adequate environmental knowledge acquired by the PSSSTs, their roles in teaching their learners would suffer a great set back. Considering the fact that EE is not a theoretical subject where issues are discussed in the abstract, but is rather a practical oriented subject where the happenings within the environment equally assist in understanding the teaching about the environment, therefore the methods to be used in training teachers for future roles of teaching learners about EE should be carefully selected. Furthermore, in view of the fact that EE is education about the environment, in the environment and for the environment, teachers must approach teaching of EE to reflect these views by engaging practical methods such as projects, cooperative discussion, and field trips methods. Through the use of these practical approaches by the teachers, the learners in the schools will be able to acquire better understanding about the components of the environment in terms of the different resources and their relevance to sustenance of human life and the general sustainability of the environment. This understanding will further develop in the learners the desire to preserve these resources within their environment for human use. Hence, the Social Studies lecturers should be mindful of the above while planning the teacher professional programme for preparing the PSSSTs for their future teaching task in schools.

8.4.3 Recommendations for Federal Environmental Protection Agency (FEPA)

The need to address the Nigerian environmental crisis requires collective effort by all. FEPA as a government agency provided an update on the spate of environmental crises such as pollution, erosion, flooding, veld fire, deforestation, poor waste management and oil-spillage. FEPA equally provides guidelines on how to evolve a meaningful environment by ensuring that the available resources within the environment are properly used and managed through the development of the National Policy on Environmental Education. The NPEE identify inadequate EE as the bane of

most environmental crises witnessed in Nigeria. Hence, the Nigerian institutions of higher learning and schools have pivotal roles to play in actualizing the goals of FEPA in ensuring that adequate EE is provided to Nigerian citizens. In view of the above, a stronger collaboration between the FEPA and the Nigerian universities (Teacher Education Programme) is recommended. The collaboration is crucial as the professional training of teachers to teach EE in schools lies with the universities. Additionally, the institutions have the responsibility of contributing to the larger community through public enlightenment programmes on acceptable relationships within the environment aimed at the sustainability of the environment.

8.4.4 Recommendations for involvement of Non-Governmental Organizations (NGOs in Pre-service Social Studies Teacher Education Programme.

The training of PSSSTs by the Social Studies Teacher Education Programme can be encouraged through the involvement of NGOs in providing material and financial resources in terms of EE educational resources and financial resources. The provision of such educational resources will aid better learning of EE by the PSSSTs while the financial resources will help in providing more outdoor learning opportunities like going on field trips to the PSSSTs. Through such field trips, the PSSSTs will have better on-site experiences needed by EE teachers. Besides the provision of resources by the NGOs, organizing training/ workshops for PSSST and SS lecturers will equally be a way to improve on training of EE teachers. Fundisa For Change (FFC) is a typical example of a body committed to introducing renovation to learning about the environment in South Africa through teacher education by a way of training classroom teachers and also evolving teaching/learning materials which enhance Environmental and Sustainability Education (Adebayo, 2014).

8.4.5 Recommendations for Further Study

The literature review revealed that there is a paucity of research relating to the training of pre-service teachers to teach EE in Nigerian schools. Therefore, it is recommended that other studies that relate to this study can be conducted in different locations or institutions within the Nigerian context. Findings from different institutions on training of pre-service teachers to teach EE can then be fused to create a comprehensive curriculum for training pre-service teachers on EE in Nigerian institutions.

8.5 Limitations:

The study was carried out at AA University in Nigeria, in the Department of Social Science Education, having the Pre-service Social Studies Teachers as participants. The study relied on the qualitative data generated from the participants within the same context but with diverse backgrounds and experiences. The findings of this study could not be generalized to other teacher education institutions for the training of pre-service teachers. Rather, there would be need for further studies to validate the findings of this study, to be carried out in other teacher training institutions in Nigeria, using a similar population. The trustworthiness of this study is enhanced using various methods.

8.6 Conclusion.

This chapter summarizes the findings that emerged from the study. Based on the findings of the study, recommendations were made to different categories of people that have roles to play in ensuring the enactment of the EE curriculum in Nigerian institutions. Recommendations were made for; Universities/ Teacher Training Institutions, Social Studies lecturers, Federal Environmental Protection Agency (FEPA) and Non-Governmental Organizations on steps to be involved regarding the development of a credible EE curriculum.

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APPENDICES: APPENDIX 1: Ethical Clearance from University of KwaZulu-Natal

30 October 2018

Mr David Toyin Aladejebi 215081776
School of Education
Edgewood Campus

Dear Mr Aladejebi

Protocol reference number: HSS/1672/018D
Project title: An exploration of the intended, enacted and achieved Environmental Education curriculum within the social studies teacher education programme at a Nigerian university

Full Approval – Expedited Application

In response to your application received 19 September 2018, 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

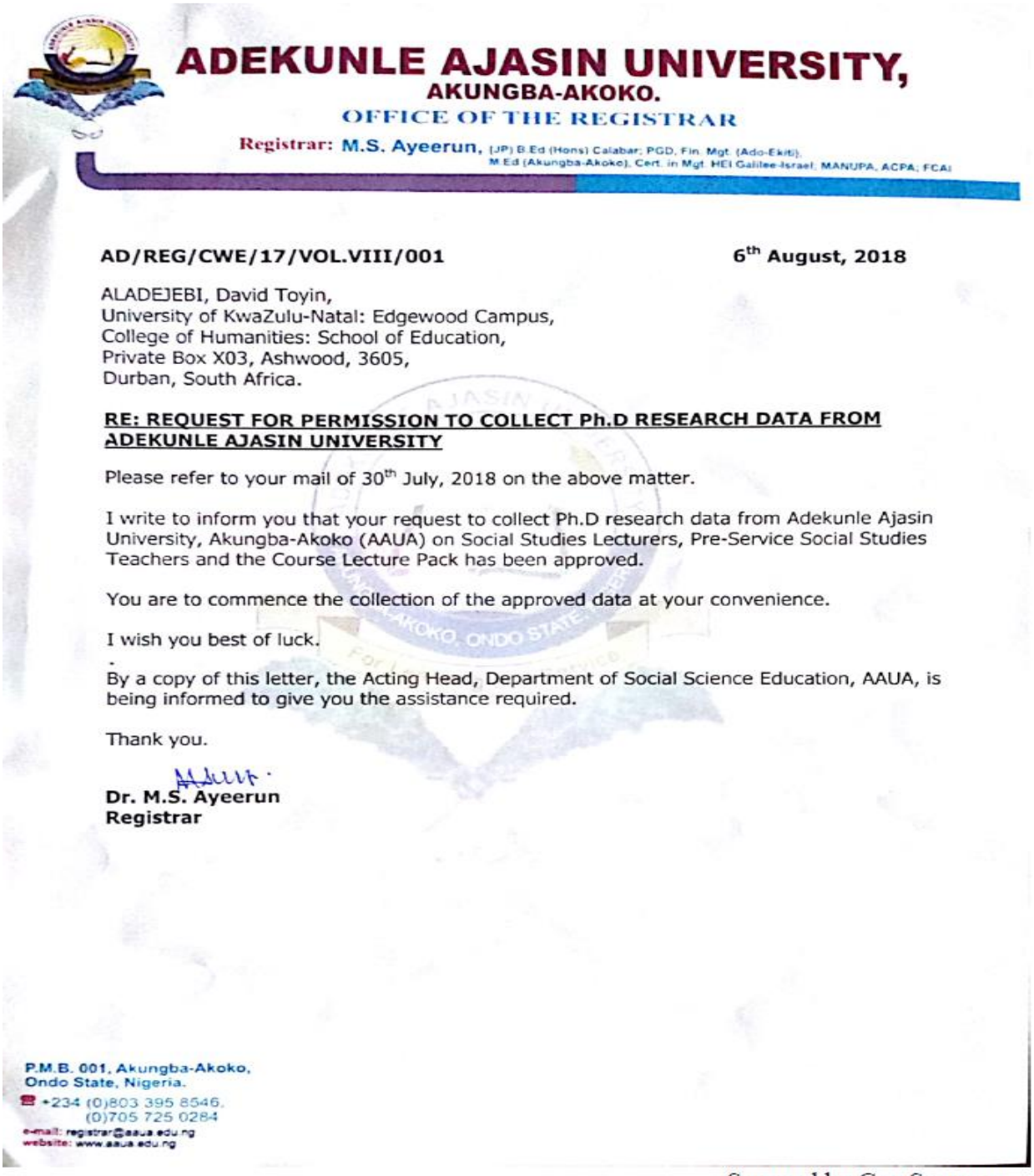
.....
Professor Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

cc Supervisor: Dr A Singh-Pillay
cc Academic Leader Research: Dr SB Khoza
cc School Administrator: Ms Sheryl Jeenarain

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

APPENDIX 2: AA UNIVERSITY'S PERMISSION LETTER.



ADEKUNLE AJASIN UNIVERSITY,
AKUNGBA-AKOKO.
OFFICE OF THE REGISTRAR

Registrar: M.S. Ayeerun, (JP) B.Ed (Hons) Calabar; PGD, Fin. Mgt. (Ado-Ekiti); M.Ed (Akungba-Akoko); Cert. in Mgt. HEI Galilee-Israel; MANUPA; ACPA; FCAI

AD/REG/CWE/17/VOL.VIII/001 **6th August, 2018**

ALADEJEBI, David Toyin,
University of KwaZulu-Natal: Edgewood Campus,
College of Humanities: School of Education,
Private Box X03, Ashwood, 3605,
Durban, South Africa.

RE: REQUEST FOR PERMISSION TO COLLECT Ph.D RESEARCH DATA FROM ADEKUNLE AJASIN UNIVERSITY

Please refer to your mail of 30th July, 2018 on the above matter.

I write to inform you that your request to collect Ph.D research data from Adekunle Ajasin University, Akungba-Akoko (AAUA) on Social Studies Lecturers, Pre-Service Social Studies Teachers and the Course Lecture Pack has been approved.

You are to commence the collection of the approved data at your convenience.

I wish you best of luck.

By a copy of this letter, the Acting Head, Department of Social Science Education, AAUA, is being informed to give you the assistance required.

Thank you.

Dr. M.S. Ayeerun
Registrar

P.M.B. 001, Akungba-Akoko,
Ondo State, Nigeria.
+234 (0)803 395 8546,
(0)705 725 0284
e-mail: registrar@aaua.edu.ng
website: www.aaua.edu.ng

APPENDIX 3: Letter of Informed Consent: The University Registrar.

School of Education,

College of Humanities,

University of KwaZulu-Natal,

Edgewood Campus,

12 July 2018

The Registrar,

Adekunle Ajasin University,

Akungba Akoko, Ondo State,

Nigeria.

Sir,

Permission to conduct research

My name is Mr. Aladejebi David Toyin (215081776), I am a PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in learning more about the enactment of environmental education within Social studies teacher education programme at Adekunle Ajasin University in Ondo State. To gather the information, I need your consent to conduct this study at your institution. I will also need access to Social Studies lecturers from year 1 to 3 in Faculty of Education specifically in the Department of Social Science Education.

To gather data I will need to observe social study lectures for a duration of a week and thereafter conduct an interview with them. The duration of the interview is 30 minutes. The interviews will be scheduled during non-lecturing times. The findings of the research will not be used for any purpose other than the doctoral dissertation. The data will be stored by my supervisor and disposed of at the end of the research.

Pseudonyms will be used to protect the identity of your university as well as the identity of the social study lecturers and the pre-service social studies teachers. All information disclosed will be kept in confidence. Participation in this research is voluntary and should you find that you wish to withdraw or terminate your permission for the research, you may do so without any negative consequences. Informed consent will also be sought from the Social studies lecturers and the pre service social studies lecturers.

- If you are willing to grant me access to your school please indicate (by ticking as applicable)

	Granted	Not granted
Access		

You have the right to withdrawal from the study without any negative consequences

I can be contacted at: Tel. No.: 0652531655

e-mail : davetoyin2003@gmail.com

My supervisor is Dr. A. Singh- Pillay who is located at the School of Education, Science and Technology cluster, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: pillaya5@ukzn.ac.za Phone number: 031-26053672

DECLARATION

I…… (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I am also aware that I have the right to withdraw from the study at any time without any negative consequences.

_____ _____

Signature: Date

Appendix 4: Informed consent letter: Social Studies Lecturers.

School of Education, College of Humanities,

University of KwaZulu-Natal,

Edgewood Campus,

12 July, 2018

Dear Participant

INFORMED CONSENT LETTER

My name is Mr. Aladejebi David Toyin (215081776), I am a PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in learning more about the enactment of environmental education within Social studies teacher education programme at Adekunle Ajasin University in Ondo State.

To gather the information, I will need to observe social study lectures for a duration of a week and thereafter conduct an interview with them. The duration of the interview is 30 minutes. The interviews will be scheduled during non-lecturing times. The findings of the research will not be used for any purpose other than the doctoral dissertation.

In addition I also require permission to audio record our meetings.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- Lecture will be observed for one week
- The interview may last for about 30 minutes.

- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- You have the right to withdrawal from the research at any time without any negative consequences
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to have your lectures observed, be interviewed thereafter and have the observation and interview audio recorded please indicate (by ticking as applicable) whether or not you are willing to allow the recording by the following equipment:

	Willing	Not willing
Audio equipment		

I can be contacted at: Tel. No.: 0652531655

e-mail : davetoyin2003@gmail.com

My supervisor is Dr. A. Singh-Pillay who is located at the School of Education, Science and Technology cluster, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: pillaya5@ukzn.ac.za Phone number: 031-26053672

You may also contact the Research Office through:

P. Mohun

HSSREC Research Office,

Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

I…… (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project and I am aware that I have the right to withdrawal without any negative consequences

_____

Signature **Date**

Appendix 5: Informed consent letter PSSSTs

School of Education, College of Humanities,

University of KwaZulu-Natal,

Edgewood Campus,

12 July, 2018

Dear Participant

INFORMED CONSENT LETTER

My name is Mr. Aladejebi David Toyin (215081776), I am a PhD candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa. I am interested in learning more about the enactment of environmental education within Social studies teacher education programme at Adekunle Ajasin University in Ondo State.

To gather the information, I will need you to complete a questionnaire and participant in a focus group interview that focuses on factors that constrain or enhance the teaching and learning of EE within Social studies. The questionnaire will take about 1-0 minutes to complete and the focus group discuss may take about 20 minutes.. The interviews will be scheduled during non-lecturing times. The findings of the research will not be used for any purpose other than the doctoral dissertation.

In addition I also require permission to audio record the focus group interview.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The focus group interview may last for about 20 minutes.

- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- You have the right to withdrawal from the research at any time without any negative consequences
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to participate and for the focus group interview to be audio recorded please indicate (by ticking as applicable) whether or not you are willing to allow the recording by the following equipment:

	Willing	Not willing
Audio equipment		

I can be contacted at: Tel. No.: 0652531655

e-mail : davetoyin2003@gmail.com

My supervisor is Dr. A. Singh-Pillay who is located at the School of Education, Science and Technology cluster, Edgewood campus of the University of KwaZulu-Natal.

Contact details: email: pillaya5@ukzn.ac.za Phone number: 031-26053672

You may also contact the Research Office through:

P. Mohun

HSSREC Research Office,

Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

I…… (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project and I am aware that I have the right to withdrawal without any negative consequences

_____

Signature **Date**

Appendix 6: Observation schedule:

The following schedule will be used during observation of enactment of the EE curriculum at a Nigerian university

Factor observed	**Researcher comment**
Orientation to teaching EE Process Rigor Strategies used activities	
Objectives /learning outcome for lesson: How do these relate to the intended curriculum?	
Content: type of content? Elaboration of content Topic Depth of topic beyond the intended curriculum goals? Breath beyond intended goals	
Instructional strategy used	
Knowledge of curriculum Vertical Horizontal	
Knowledge of PSSSTs Misconception Learning difficulties Learning styles Motivation Needs Background	
Assessments: types of assessment	
Materials and resources what is available and used	

Appendix 7: Post observation Interview schedule

The following are possible questions for the post observation interviews, these question may change during the interview in line with the observation.

1. How do the objectives, goals and aims of the lecture relate to the intended curriculum?
2. Do you use specific approaches for teaching the different topics – please elaborate
3. Which strategy works best for you , kindly explain
4. Which strategy works best for PSSSTs
5. Do you plan your lecturing and learning activities simultaneously- please elaborate
6. What resources do you use to enhance your teaching?
7. What you intend the students to learn about this idea?
8. Why is it important for students to know this?
9. What else might you know about this idea (that you don't intend your students to know yet)?
10. What were the difficulties/limitations connected with teaching this idea?
11. What Knowledge about students' thinking do you know of which influences your teaching of this idea?
12. What other factors influence your teaching of this idea?
13. What teaching strategies did you use and Why? (and particular reasons for using these to engage with this idea)?
14. What specific ways of ascertaining students' understanding or confusion around this idea (include likely range of responses).

APPENDIX 8

Questionnaire for Pre-service Social Service Teachers (PSSSTs)

Dear participant,

The researcher is carrying out a study on the intended, enacted and achieved Environmental Education Curriculum within the Social Studies Teacher Education Programme in Nigerian University with a view to ascertaining how the PSSSTs are prepared to teach EE.

You have been selected as one of the participants for the study. All information provided will be treated with utmost confidentiality and will be used purely for academic purposes. Please, spare some of your valuable time to respond to these questions.

Thank you.

.

Yours sincerely,

David T. Aladejebi
University of KwaZulu-Natal: Edgewood Campus
College of Humanities: School of Education
Private Box X03, Ashwood, 3605
Durban, South Africa
Tel: (+27) 652531655 or +2348024581860
Email: davetoyin2003@gmail.com or 215081776@stu.ukzn.ac.za

Information of participants

Level of participant:

Sex of participant:

1. What is your understanding of Environmental Education (EE) as a PSSST?

_____

_____

_____

_____

2. What do you enjoy about learning EE? Please elaborate.

_____

_____

_____

_____

3. What teaching method used facilitates your learning?

_____

_____

4. What teaching methods used inhibit your learning?

_____

_____

5. Does the availability of resources affect your learning of EE? Please elaborate

_____

_____

_____

_____

6. How well have you been prepared to teach EE through your training as a PSSST?

_____

_____

_____

_____

Appendix 9: PSSSTs Focus group interview schedule

The following are possible questions for the focus group interviews, these question which emerge from responses to the open-ended questionnaire may change as the interview progresses.

1. What is your understanding of Environmental Education (EE)?

2. What do you as PSSST like about learning EE?

3. What teaching strategies used support your learning of EE/ what strategies do you think will enhance your learning of EE?

4. As PSSSTs, what skills have you acquire in the cause of learning about EE?

5. How are you assessed as PSSSTs? Are you okay with the method of assessment?

6. How do you view the content of EE included in the social studies Education programme?

7. What is the link between the teaching of EE and its assessment?

8. What factors inhibits/hinders your learning of EE as PSSSTs?

Appendix 10: Individual interview transcripts

Q1	**How do the objectives, goals and aims of your lecture relate to the intended EE curriculum within the social studies Teacher Education Programme?**
P1	Well, the objective of our lecture relate well to the intended EE curriculum within the social studies teacher education programme as it reflects the objective of the social studies education programme for training the PSSSTs.
P2	Well, to start with, when we are talking of Social Studies we look at man within his immediate environment. And when we are talking about the immediate environment, I think for man to survive, there is need for man to really study the environment. So the holistic approach about the environment is actually paramount for the survival of every individual. So when we are talking about environment, some will realize that the environment goes beyond what some people can think of. The environment determines so many things. What we eat, the air we breathe, what we wear and emm, general hygiene of the environment is very important because looking at the environment we are talking about the environmental possibilities, environmental probability, environmental determinism, so it is the environment per say that determines individual existence.
P3	The objectives, goals and aims of my lecture is well related to the intended EE curriculum because it is patterned towards what the social studies teacher education programme intends to achieve.
Q2	**Do you use specific approaches for teaching the different topics? Please elaborate.**
P1	Yes, generally learners centred approaches such as cooperative method, project method, and discussion method.
P2	: Emm, yes, yes. Teaching per say is a didactic approach, that is emm it flows from teachers to students and from students to teachers and asides that, we also look at individual differences. It is the topic you want to teach that determines the method to used, so each time you want to teach, its difficult for every individual to assimilate at the same paste and there must be an approach which must be put in place to ensure that the slow learners are also put to consideration and not just about yes you have come to do this or you have come to do that, but that approach is also paramount. Eh, looking at the topic per say, the topic will determine the approach to be adopted. So when you are talking about certain topics in social studies, we cannot use the same approach, we cannot use the same method of teaching, So the peculiarities of that very discipline determines what to be adopted, the method to be used so as to encourage the learners to assimilate what must have been taught.
P3	Well, since there are different knowledge/skills to be taught in the different topics, different approaches are involved but with the consciousness of being learner centred.
Q3	**Which strategy works best for you? Please explain**

P1	Cooperative method in small group; project, discussion, field trips; programmed instruction.
P2	So the peculiarities of that very discipline determines what to be adopted, the method to be used so as to encourage the learners to assimilate what must have been taught
P3	Like I said earlier, it depends on the topic to be taught, but generally discussion method combined with project method. Field trips also for hands on learning, it allows for identification of real problems in the environment and for solutions to be found to address these challenges, it creates awareness of environmental challenges and can change their attitudes towards the environment
Q4	**Which strategy works best for PSSSTs?**
P1	The strategies such as field trips ……. Must be planned in advance with set goals and learning activities, planning is critical for the success of this learner centered teaching strategy
P2	Well, I will not say there is a particular method that works best for the PSSSTs because they equally show good understanding of some topics that were taught with lecturing method or any other methods
P6	for them to actually understand what to be taught, the teacher must be well equipped with facts, with evidences and many more. Very important point is that relevant teaching methods for better teaching and learning processes were always used
P3	Since the strategies I mentioned earlier produce results, I have no doubt that they work for the PSSSTs in learning about EE
Q5	**Do you plan your lecturing and learning activities simultaneously? Please elaborate.**
P1	To some extent, both are planned simultaneously, but learning activities require more elaborate, yet critical planning as they are learner centred rather than teacher centred.
P2	Yes, looking at this for a teacher to be successful, there is need for people to actually plan. You plan ahead, and when you plan ahead it is easier for you to disseminate information, and for them to actually understand what to be taught, the teacher must be well equipped with facts, with evidences and many more. Very important point is that relevant teaching methods for better teaching and learning processes were always used.
P3	Yes, both are planned simultaneously since I plan my lectures with the intention of making my students learn what they are expected to know.
Q6	**Which resources are available for teaching the PSSSTs? How do these resources enhance your teaching?**
P1	A number of resources are available for teaching of the PSSSTs using the chalk and talk method, they include printed media in encyclopedias, Wikipedia, text books, journals; multi-media gadgets; models; cardboards for: drawing, flash cards, or any required representation
P2	I think emm, this time around there are so many methods, so many approaches that need to be adopted or apply. There are also sources in the environment that can actually be used to teach the environment because they are also products of the environment……. that can be used because they are readily available
P3	Some resources such as text books, journals, real objects as well as online resources and presentations on slides are available for teaching the PSSSTs

Q7	**What do you intend the PSSSTs to learn about the idea of EE?**
P1	I intend the PSSSTs to learn some ideas about EE which include value of environment with respect to human and material resources; ecosystem; how all biological organisms relate and depend on each other; need to preserve the natural environment by man; exploitation of all resources by man; safety/ security of man; development of the environment comprehensively
P5	The EE is emm important. In this regard because of the need to protect individual's lives, properties, and animals, because most of the animals this time around are gradually going into extinction and it was due to the fact that our inability to protect the environment has wrecked a lot of havoc on the environment generally and looking at……..
P3	Some of the ideas the PSSSTs are intended to learn has to do with the fact that the sustainability of man within his or her environment depends on attitude towards the environment where he or she lives, therefore the need to develop environmental friendly behavior is very important. As a result of this consciousness, man will work towards proper use and management of resources within the environment
Q8	**Why is it important for PSSSTs to know this?**
P1	The PSSSTs should know these issues to enable them teach them effectively after graduation, the only way to do this is by chalk and talk
P2	Since we are training the PSSSTs to be able to teach in schools, it is important to teach them in a way that they can gain all the content and teaching methods needed to teach when they get to the school later
P3	It is important that the PSSSTs know these in order to be knowledgeable to teach their learners after they might have completed their teacher trainings programme here
Q9	**What were the difficulties/ limitations connected with teaching PSSSTs about EE?**
P1	Teaching the PSSSTs about EE is faced with difficulties of logistics or need to finance field trips; water trips; value holding to change for better and consequently refined attitude towards environment
P3	The problem of non-availability of sufficient funding that will assist to expose the PSSSTs to enough practical experiences which the teaching of this course requires is a major challenge. The learners are supposed to be made to embark on several field trips to places that will help them learn better but this requires availability of good transportation arrangement among other things
Q10	**What knowledge about students' thinking do you know of, which influences your teaching of this idea?**
P1	I observe in the students' inadequate value for the environment especially the natural environment
P2	Yes, I still want to go back to the previous question. For them to really understand what the environment is all about, and how they perceive the environment, and also when it comes to teaching and learning what methods are we using that can influence them positively in preserving the society, in preserving the environment, …….. If you catch them young, then the need to also protect your environment is also important, and as a matter of fact, we realize that as soon as they understand everything they need to know, the better for our society. Killing of animals, hunting and all these kind of a thing should be discouraged

P3	I notice that the students do not have sufficient knowledge about the relationship between the effect of their actions on their environment and the sustainability of man within the environment. Also they need to know that man have to manage the resources around well for the survival of present and future generations
Q11	**What other factors influence your teaching of the idea?**
P1	I observe in the students' inadequate value for the environment especially the natural environment. I intend the PSSSTs to learn some ideas about EE which include value of environment with respect to human and material resources; ecosystem; how all biological organisms relate and depend on each other; need to preserve the natural environment by man; exploitation of all resources by man; safety/ security of man; development of the environment comprehensively
P2	"…….. the students do not have sufficient knowledge about the relationship between the effect of their actions on their environment and the sustainability of man within the environment. Also they need to know that man have to manage the resources around well for the survival of present and future generations. Some of the ideas the PSSSTs are intended to learn has to do with the fact that the sustainability of man within his or her environment depends on attitude towards the environment where he or she lives
P3	And as a matter of fact, we realize that as soon as they understand everything they need to know, the better for our society …….and so many other things. Killing of animals, hunting and all these kind of a thing should be discouraged ….. In this regard because of the need to protect individual's lives, properties, and animals, because most of the animals this time around are gradually going into extinction and it was due to the fact that our inability to protect the environment has wrecked a lot of havoc on the environment
Q12	**How do you ascertain students' understanding or confusion about EE?**
P1	the understanding of the students about EE is ascertained through practical questions and answers session under discussion method; making them write essays on topics; carry out projects; taking them to sites on field trips for practical experiences.
P2	: Alright. Emm… you see, these learners are usually made to write tests and also do some assignments which serve as their continuous assessment. Their performances in these tests, assignments that are both theory and practical works plus the end of semester examinations will show if they understand those things that have been taught. Also, there participation during the teaching learning processes usually show if they understand or not.
P3	The students usually write tests and later examination to ascertain the levels of theoretical knowledge acquired. Additionally, the learners are made to carry out practical work either as group assignments or individual works.

Appendix 11: Focus group interview transcripts

Q1	**What is your understanding of Environmental Education (EE)?**
FG1:P1	P1.When we are talking about the concept of EE we see It as the way in which we get familiarized with the environment. What we gain or what we can achieve in the environment as we keep on or as we been exposed to that environment, the ways in which we affect the environment and the ways in which the environment affect us either positively or negatively that has an impact to do in our lives, which has a tangible impact in our lives, we can refer to that as EE.
FG1:P2	EE is the ways or skills we acquire to find solutions to basic environmental problems
FG1:P3	EE is the acquisition of skills, awareness about environmental issues and environmental problems and how it can be solved or curbed in other not to cause much damage or harm to us.
FGI 2:P1	. In my own view, EE simply means having the knowledge of how to maintain our environment, how to improve it in order to sustain healthy living in our various environments. When we have such knowledge, we will know how to handle things in our environment, for instance the issue of refuse disposal, don't drop refuse here or there, then our environment will be okay for our living and it will be more beneficial to man.
FGI2:P3	. As he has rightly said, EE is acquiring knowledge about the environment, knowing what to do on how to better ones environment and determining what happen in our environment. We can easily determine what happens by the time we gain knowledge about our environment.
FGI2:P2	EE is the process of gaining knowledge on how people can live in their environment in order to be able to provide solutions to problems within ones environment.
	In my own view, when we talk about EE it is just how man gain the knowledge and how man is interacting with the environment so as to be able to manage the environment and also interact with the resources within the environment, use them in a judicious way. The process where we gain this knowledge is EE.
Q2	**What do you as PSSST like about learning EE?**
FGI2; P4	Emm.., another thing I like about EE is that it widen my knowledge for instance, if I want to engage in agriculture/farming , the knowledge I gained in EE can help me in the decisions I have to make in terms of soil Ph, soil type, soil erosion, crop rotation, irrigation, planning seasons, natural pesticides,
FGI2:P1	Another thing is that the knowledge of EE will make us to be conscious of how we use and conserve things in our environment and with that we will also be able to contribute towards the improvement of our environment and natural resources. It helps one to be conscious of how we interact with our environment what we need to do to act as responsible environmental citizens, this knowledge empowers us to be agents of change in our communities.

FGI1:P4	I believe the study of EE is of importance because it gives us certain knowledge about our environment and environmental issues. It also provides us with some skills to tackle environmental problems.
FGI1:P1	What I like about learning EE is that it is about reality, that is what we are taught is what we can see. For example, effects of pollution, population explosion and so on
FGI1:P2	Education is meant to make individuals functional in his environment, likewise, EE make an individual functional by equipping individuals with skills that are needed to be functional in his environment. That is, it makes an individual functional in his environment
Q3	**What teaching strategies used support your learning of EE/ what strategies do you think will enhance your learning of EE?**
FGI3:P1	A strategy that help my learning of EE as a PSSST is discussion method. This is because it enables us as students to rub minds together as student in other to share our opinion on any issue
FGI3:P4	Let me add to my colleague's point, the discussion method really give the students chance to say what is on their minds in other to jointly find solution to environmental issues
FGI3:P2	The discussion method gives each student the opportunity to express his or her view thereby allowing other to make their input.
FGI3:P3	Really, the method been used is lecturing method , it focus much attention on the teacher where the lecturer just come and pass across the information he needs to pass across believing that we should just have imagination of what he is saying, but I believe the best strategy to be used is student centered method like discussion or project method
Q4	**As PSSSTs, what skills have you acquire in the cause of learning about EE?**
FGI1:P3	In response to the question, as earlier said, the environment comprises of so many thing which include where we live down to where our teaching and learning processes are taking place. In view of this, I can say that I have gain the skill to manage resources within my environment. Aiso, additional skills that I have gained is what I referred to as conservative and preservative skills. With knowledge of EE, am quite aware that some resources are renewable will some other are non-renewable, so am conscious that care must be taken on how I use resources available within the environment that I live
FGI1:P1	P2. As a teacher to be, I have acquired analytical skill along with teaching skills. This will help me as I move out to analyze the benefit of using our environment well to people and also teach them about things that they must do to get the best from our environment and also enjoy the resources in it well.
FGI2:P2.	Emm… Skill of identification of issues and problems within my environment is acquired through my learning of EE

FGI2:P3	. Well, through my learning of EE as a PSSST, I have acquired the skill of interaction. I have discovered that to be able to affect my environment positively, I need to effectively interact with my environment.
Q5	**How are you assessed as PSSSTs? Are you okay with the method of assessment?**
FGI2:P1	Let me say the way we are assessed here is through written test, more of the times test conducted shortly after the lecture where the student may not be too prepared for it, thereafter, the students are made to also write examination. In my own view, this method of assessment is not okay.
FGI2:P2	Yes, based on system of assessment, I can even say that I do not enjoy it. Well, I don't know may be it is as a result of our educational policy, but what I observed is that theoretical aspect is focused on during assessment while the pragmatic aspect of it is neglected, so the ability to implement what one has gained is not assessed. Whereas, talking about social studies, it is not supposed to be a theoretical subject but a practical one because it deals with issues that happens within our environment where practical approach is require, but I noticed that we are only assessed on the cognitive aspects mostly, may be you understand the theoretical aspects using biro and paper without the practical aspects.
FGI1:P1	Am not too okay with the method of assessment in the sense that since EE is not just taught theoretically alone, then the assessment should also be both theory and practical, but this has not been so.
FGI1:P2	I also want to share the view of the first participant that am not satisfied with the way in which we are assessed. I feel we could be given some projects to be carried out or ask to proffer solution to an identified problem within the environment as a way of finding out if we have actually learn rather than just examining us in the class.
Q6	**How do you view the content of EE included in the social studies Education programme?**
FGI3:P2	In my own opinion, the EE knowledge gained as PSSST is not enough because EE content is not spread across our programme from 100L to 400level, so I can say that the knowledge is inadequate.
FGI2:P3	Emm… in our Social Studies teacher Education programme, we discover that EE content is not much in the sense that if we are to look at our programme, from 100level to 400level, we will only discover that we were taught much about our environment in 100 level with little in 200level, and knowledge gain since that time is no more fresh, but if EE is embedded in our programme may be from 100level to 400l, this knowledge will still be fresh by the time we leave the school as students to the larger society and so we will be able to impact positively on our society.
FGI1:P3	In our programme, the content of EE is so low. In our 100level, the course that really deal with EE is SSE 106 (Man and his environment). In our 200level, we did a course SSE 214 (The ecosystem), in our 300l, there is no course that is directly related to EE and also in 400level there is no course that is directly related to EE, but more on social studies.
FGI1:P2	The content of EE in social studies programme let me say it's very low. The reason is that when we look through the curriculum for this four years programme, we can see that more attention is on social aspect to the neglect of other aspects which is

	somehow responsible for the several problems witnessed in our country. People lack the knowledge of how to relate well with their environment, how well to explore the resources, how to involve in agricultural practices that will lead to better productivity without adversely affecting the environment. With proper environmental knowledge, our agricultural productivity will improve thereby reducing the level of food shortage and poverty. So the content of EE in social studies programme is very low.
Q7	**What is the link between the teaching of EE and its assessment?**
FGI2:P1	Yes, want to say there is relationship between the teaching of EE and the way we are been assessed since we are been assessed based on what we are taught within the social studies teacher education programme.
Q8	**What factors inhibits your learning of EE?**
FGI2:P4	in my own view, and based on my experience, chalk and talk or lecturing method is been used mostly and this lecturing method does not give students the avenue to also play active roles during teaching learning exercise, as lecturers dominate the presentation of facts. So I suggest that other teaching methods like discussion method, project based methods, group work should be introduced in teaching because with that, both the lecturer and students will play active roles in the cause of teaching and learning, so students will not be so passive. **(FGI-2, P4)**
FGI2:P2	the lecturing method is been used and this is based on theory while we are not made to experience hand on learning in the environment, which is the biggest resource available to teach EE, everything we have learn is theoretical in the lecture room there is no practical component to learning EE with these SS lectures. I would like teaching of EE within social studies programme to make use of inquiry method and also go to places where these environmental issues take place and also inquire on what can be done to minimize such happening rather than just been theoretical. In other words, PSSSTs are to make to go on excursion, visit some cites of environmental problem and come back to school to discuss way of solving the identified problems.
FGI3:P1	in the lecture method the lecturer only participate s, it does not involve the students. Teaching is only based on classroom setting, students should be allowed or taken out for field trips. The students do not participate actively in the teaching-learning processes, the learning process is teacher centered.
FGI3:P4	Yes, theory rather than practical is a major factor that hinders the learning about we often see teacher does not promote environmental friendly behavior, this in a way

	hinders learning of EE as the teachers are expected practicalize those things they teach their learners.
FGI3:P3	So in contribution to what they have said, I think the major factor that affect the teaching of EE as my colleagues have said is teaching method which is teacher centered. You see, while teaching students about EE, I think they should be able to contribute their own experience, what they have seen because individual leaves in different environment and what happens in my environment may be different from others. That is, the problem we face in my environment may be different from others. In view of this, while sharing ideas we will be able to come up with solutions to the problems.

Appendix 12: Questionnaire responses

Q1.	**What is your understanding of Environmental Education (EE) as a PSSST?** **R1.** EE simply means the knowledge of individuals about his environment. That is the knowledge on how to explore environmental issues, engage in problem solving and action on how to improve the environment. **R2.** EE is the process of teaching, learning and gaining awareness about someone's environment. **R3.** EE creates an awareness to the study and learning of various environmental problems and its benefits to human kind. **R4.** EE is a process that allow individuals to explore environmental issues, engage in problem solving and take actions to improve the environment. **R5.** EE is a process that gives room for individuals investigate environmental issues, certain problem solving and make move to improve the environment. **R6.** In my own perspective, I can refer to EE as the study of environment and how the environment can be affected by human being. **R7.** EE is the sensitization of man to his immediate environment as man use the environment and not the other way round. **R8.** EE is the study of our natural environment and its functions, creating awareness and understanding about our environment, solving problems that relate to the environment and to manage our behavior towards it in order to have a sustainable environment. **R9.** EE is a process that allows individuals to explore environmental issues. **R10.** EE is the knowledge and understanding and also learning experiences we acquire from or about our social environment or society. **R11.** EE is a process whereby individuals engage in problem solving of his environment or the effort to know how environment functions. **R12.** EE is a process in which individual gain awareness of their environment and acquire knowledge, skills, experiences also the determination which will enable them to act individually and collectively to solve present and future environmental problems. **R13.** EE is an organized effort to empower people and communities to work towards the development and improvement of the environment and towards a more sustainable future through education about how can manage their behaviour to live sustainably. **R14.** EE refers to organized effort to teach how natural environment functions and particularly how human being can manage behavior and ecosystem to live sustainably. **R15.** EE is the study of how natural environment functions and particularly how human beings can manage behavior and ecosystem to live sustainably. **R16.** EE is the awareness, skill and knowledge of building the environment and the understanding of solving critical environmental issues.

	R17. EE is a process in which individuals find solutions to environmental problems. **R18.** EE deals with how man study his environment in good or bad habit. **R19.** EE means educating people or an individual about their environment. That is how environment influences them and how in turn they influence their environment. **R20.** EE is the process of describing things around your immediate surrounding that influences man and which are influenced by man from time to time. **R21.** EE is the process of studying the environment and its fundamental aspects. **R22.** EE is the process that involve individuals to explore environmental issues, engage in problem solving, and also taking action in improving the environment. It allows individual develop deeper understanding of environmental issues and have the skills to make informed decisions. **R23.** EE is the knowledge you acquire about the totality of your environment and issues with it. **R24.** EE is the act or sensitization of an individual or students to study about his habitatand his physical and social environment.
Q2	**What do you enjoy about learning EE? Please elaborate.** **R1.** The knowledge of how to relate within the environment and to explore the resources for the benefit of mankind. **R2.** It makes one know how to determine for my environment which is environmental determinism. **R3.** I enjoy the study and learning of EE because it helps me to know more about my environment, the benefits within it and also know environmental problems and the way out of it. **R4.** It creates awareness and sensitivity about the environment and environmental challenges. It also develops attitude and skills to identify and help resolve environmental challenges. **R5.** EE gives adequate knowledge about my immediate environment, ways of solving problems and avenues to improve my ways of living. **R6.** I enjoy a lot of things about EE because it has really sharpened my knowledge to what is around me that am ignorant of. **R7.** What I enjoy in EE is the breakdown of what I never had the knowledge in my immediate or local environment. **R8.** I enjoy learning about the natural resources in EE, natural resources such as vegetation which includes trees, timbers and all green plants. Also the oceans and the living creatures such as fishes, shark etc **R9.** I enjoy a lot of things about EE because it has really open my knowledge to what is around me that am ignorant of. **R10.** What I enjoy about learning EE is how it teaches us about our natural environment, the way it functions and how we can manage the environment.

	R11. It's because it helps an individual to develop a deeper understanding of his/her environmental issues and have the skills to make responsible decisions. **R12.** EE is aimed at producing citizen that is knowledgeable concerning the biophysical environment and its associated problems and how it can be solved. **R13** *I* enjoy a lot of things about EE because it has really added to my knowledge to know about things i was ignorant of around me. **R14.** What I enjoy about learning EE is how it teaches us about our natural environment, the way it functions and how we can manage the environment. **R15.** Interactive learning that enhances the imagination and give room for creativity. **R16.** What I enjoy most in learning EE is its systematic way of solving environmental issues. **R17.** I enjoy a lot of things about EE because it has really added to my knowledge to know about things i was ignorant of around me. **R18.** What I enjoy about learning in EE is that it enable me know how the environment what it means for the environment to be in good or bad condition. **R19.** What I enjoy about learning EE is that it helped me a lot about learning and understanding of those things that I do not knowledge about and it really help me so much that it brightens my life. **R20.** I enjoy EE because it has enlightens me on how to influence the environment positively for my favourable condition. **R21.** It helps me understand the basic issues in the environment, it brings about the full understanding of the society management and it helps me to have a full knowledge and idea of what the environment needs. **R22.** Development of understanding towards environmental issues, taking action in improving the environment, responsible decision making skills and awareness and sensitivity to the environment. **R23** Experience about the nature of the premises, acquisition of knowledge in any situation, testing individual capability of learning, responding to the pattern of learning. **R24.** What I enjoy about learning EE is that it helped me a lot about learning and understanding of those things that I do not knowledge about and it really help me so much that it brightens my life. .
Q3	**What teaching method used facilitates your learning?** **R1.** Inquiry method. **R2.** Lecturing method which is used often. **R3.** Demonstration, inquiry and lecturing methods. **R4.** Discussion and lecturing methods. **R5.** Inquiring method. **R6.** E-learning method.

	R7. Discussion method. **R8.** Discussion method. **R9.** Discussion method and field trip. **R10.** Collective participation of both teacher and students. **R11.** Discussion method. That is student-student interaction and teacher-students interaction. **R12.** Discussion method. **R13.**Discussion method. **R14.** Discussion method and application method. **R15.**Discussion method. **R16.** Play role method. **R17.** Processing of structuring the environment **R18.** Debate, presentations by students. **R19.** Discussion method. **R20.** Discussion method. **R21.** Group interaction **R22.** Sharing of idea with other students **R23.** Discussion method. **R24.** Formal and informal.
Q4	**What teaching methods used inhibit your learning?** **R1.** Story telling. **R2.** Play-away method. **R3.** Play-away method. **R4.** Teacher centered method **R5.** Lecture method **R6.** Lecture method **R7.** Discussion method. **R8.** Lecture method; where the teacher/lecturer only do the teaching, no contribution from students, the teacher dictate and dominate. **R9.** Lecture method **R10.** Lecture method **R11.** Teacher centred method, e.g lecturing method. **R12.** Story telling method and lecturing method. **R13.** Lecturing method. **R14.** Instructor/teacher centred method. **R15.** Teacher centred method/ lecturing method. **R16.** Play role method **R17.** Lecture method **R18.** The lecture method of teaching **R19.** Lecturer dominating in the class **R20.** Inadequate organization of learning programme.

	R21. Lecture method, problem solving method. **R22.** Teacher centered approach **R23.** Inquiry method, this is because it is difficult and very strenuous. **R24.** Lecture method
Q5	**Does the availability of resources affect your learning of EE? Please elaborate** **R1.** Yes, availability of some basic facilities that can assist students to reason logically and creatively such as E-leaning facilities, conducive environment, adequate personnel etc **R2.** Yes, when there are availability of resources, it will aid easy learning and will help people to understand their environment more. **R3.** Yes, when there is availability of resources, the learning of EE be interesting in such a way that the available resources will arouse the interest of the learners. **R4.** Yes. There are limited facilities to enhance using problem solving method, e.g E-learning facilities like computer, free internet connection. **R5.** It affects but in a positive way- availability of resources helps in deep exploitation of the environment, more understanding about the subject matter and also a real experience. **R6.** Yes. If there is adequate resources on ground, it would help program to improve and assisting the learners to learn a lot about the course **R7.** Yes as it helps me to understand and remember well. **R8.** Yes; the availability of resources do affect my learning positively. When there are resources such as equipped laboratory, teaching aids, it makes teaching or learning sticks to my brain. **R9.** Practically yes, it affects it positively because it has served as a wheel for faster and easier learning for me. **R10.** Yes because when studying and learning about EE it requires some learning resources in order to make EE more effective. **R11.** Yes, it improves individual's knowledge and skills about the ways of treating our environment against pollution. **R12.** Yes. Resources available and presented well do facilitate my learning because it helps in picturing the subject matter and it gives more knowledge. **R13.** Yes. Availability of necessary teaching resources on EE helps me to reason critically and also helps me to think vividly on how to contribute my own quota towards the improvement of my environment. **R14.** Yes, it has really affected my learning because it widens my knowledge and help me to gain more knowledge. **R15.** Yes, it does because availability of resources enhance practical learning. **R16.** No because the availability of resources itself is a problem to our learning in EE. **R17.** Practically yes, it affect it because it serves as wheel for faster learning. **R18.** Yes because without the research on the environment man cannot know what is going on in his or her environment.

	R19. Yes, it does. It help to better understand the concept and helps to impact the knowledge into others. **R20.** Partially yes because without the resources there is no environment, even man on his own is a resource. When man has nothing to influence and there is nothing to influence the environment, EE will be affected. **R21.** Yes. **R22.** Yes, the availability of resources enhances learning through of E-learning facilities, projected material and presentations. **R23.**Yes, it affected my learning of EE because with the resources available, it enhances my level of understanding quickly. **R24.** Yes it does as the availability of regular electricity, projectors, computers and good library is important.
Q6	**How well have you been prepared to teach EE through your training as a PSSST?** **R1.** I have gained environmental knowledge to teach about EE in school **R2.** To help people know and solve the problems facing their environment. **R3.** I am prepared to teach EE by creating the awareness for the learners as a PSSST about environmental issues affecting the society such as pollution, depletion of the ozone layer. **R4.** Well prepared to teach individual critical thinking, well prepared to enhance individual problem-solving skill, well prepared to enhance decision making skill, well prepared to increase public awareness and knowledge of environmental issues. **R5.** Right from my training, EE has been part of me, any academic or learning environment I meet myself, I have try to share my little knowledge about the environment for them to be aware of EE. **R6.** Through this knowledge of seminar, I learnt a lot of things about EE and with this process I can be able to teach the learners and illiterates how to keep the environment tidy. **R7.** Very well. **R8.** Pretty well, I have spent four years as an undergraduate studying social studies which is the study of man in his entire environment. I have attended two sections of teaching practice at two different locations to acquire more knowledge of the environment and how to teach it. **R9.** I have prepared so well. **R10.** Preparation of EE is matter most because as a PSSST, ability to teach EE must be considered by impacting something reasonable unto learners. **R11.** I have been prepared well in such a way that am exposed to different areas of fighting against environmental pollution, and enhance environmental protection. **R12.** During the course as a PSSST, I have been exposed to some environmental problems like pollution, over-population, and how all of these can be over population and how all these can be controlled. **R13.** I have prepared to teach EE through the knowledge I have gathered on EE and its impacts on the improvement of man's environment and how human behavior can be managed for sustainable living in our environment.

	R14. I have prepared well, been exposed to some environmental problems and solutions to them. **R15.** Well enough to make other generations know the importance and function of their environment and how to manage resources as well as human. **R16.** Prepared a lot. **R17.** I have prepared adequately through my experience in EE. **R18.** Fully and well prepared. **R19.** I have prepared adequately through my experience in EE. **R20.** Very well. **R21.** Am prepared to teach individual critical thinking, to teach individual attitude and motivation to improve and maintain environment and also to teach the improvement of skills to identify and help resolve environmental challenges. **R22.** Well, I have been prepared a lot to teach EE in order to share my experiences and the understanding I have gained. **R23.** I am well prepared because I have gone through a course which is social studies education that comprises all subjects that deal with EE. Therefore I have the knowledge of my environment.

Appendix 13: Content of the Nigeria National Policy on Environment

TOPIC	DESCRIPTION
Conservation and Management of Natural Resources	Air and Atmospheric Resources; Fresh Water and Wet-land Ecosystems; Coastal and Marine Ecosystem; Mountain Ecosystems (Mambilla/ Plateau); Arid and Semi- Arid Ecosystems; Forest Ecosystems; Biodiversity and Wildlife Resources; Livestock and Fishery; Land Resources and Land Use (Desertification, Land Degradation and Drought); Soils; Oil and Gas; Minerals.
Waste and Environmental Pollution	Air and Noise Pollution; Waste; Industry and Environment.
Emerging issues	Climate Change; Transboundary Water Resources; Disasters; Conflicts and Environment; Genetically Modified Organisms (GMO) & Biosafety
Cross-sectoral Issues	Human Settlement; Environmental Health; Energy; Infrastructure (Transport, ICT, Housing etc); Trade and Environment; Poverty and Conflicts; Gender; Production and Consumption Patterns; Environmental Education.
Policy Implementation	Legal Framework; Institutional/Governance Framework; Funding; Science and Technology; Partnership and Stakeholders Involvement including the role of Civil societies; Regional and International cooperation; Monitoring and Evaluation.
Implementation Strategies and Actions	Mainstreaming Environmental Concerns into Policy, Planning and Development processes; Roles and Responsibilities; Environmental Compliance; Monitoring Compliance.

Source: National Policy on Environment (2016, p. 4-5).

Appendix 14: content of AA University Social Studies Teacher Education Curriculum

Year one

COURSE CODE/ TITLE	COURSE DESCRIPTION	UNIT(S)	STATUS
SSE 101:Introduction to Social Studies Education and Nation Building	Some aspects of Social Studies Education: Development and Self Reliance. Definitions of development and self-reliance; dimensions of self-reliance. Education for nation building: definition of education; the main task of education; how education develops (builds) a nation. Responsibilities in relation to self-reliance. Social institutions: general patterns of social institutions; functions of social institutions.	3	Compulsory
SSE 102:The Family	Theories of evolution of the family; functions of the family; comparative study of the family; varieties of family groupings; industrial and non-industrial societies. How the family has changed in the past 50 years; world perspectives but with emphasis on Nigeria with respect to social, economic, and technological factors.	2	C
SSE 103:Community Studies	Meaning of community; application of ideas of community; urban and rural contacts. Countries of the world; samples and their distinguishing characteristics. Case studies of	2	E

	communities; patterns of social interaction in communities; changes in communities. Nigerian ethnic groups (communities): location, history, features, and organizations. Functions of community: past, present, future.		
SSE 104:Religion and Belief Systems	Meaning of religion; origin of religion; belief as expression of religion; religion and behaviour. Major religions in different parts of the world; African traditional religion; religion in Nigeria. Variations among belief system/religion; taboos and superstitions. Religious intolerance; religious wars and clashes; jihads. The positive and negative aspects of religion on national development.	2	C
SSE 106:Man and His Environment	The meaning of environment; man's physical environment; elements of physical environment. Relief features; climatic features. Mineral resources, oceans, and seas. Influence of physical environment on man's activities; influence of man on physical environment. Man's social environment: family institution: structure, functions, and problems; social groups: membership, formation, and roles on man's activities. Man's environmental problems, consequences, and	3	C

	remedies. The role of environmental education on sustainable development of an environment.		
SSE 107: Social Culture and Political Differenced	History and Social Studies relationships. Use of historiography in Social Studies, Social interactions in early Nigeria up to 1500. Social Studies topics in world history (the modern world). Peoples of Nigeria. Concept of culture and pattern of culture in Nigeria.	2	C
SSE 109: Elements of Social Studies	The course introduces students to Social Studies. It emphasizes the field. Philosophy behind its introduction, the rationale, general and specific objectives, its evolution, scope and sequence are given special attention.	2	C
SSE 111: Social Economic Environment of Nigeria	Man as the focus of Social Studies. Socialization agencies and institutions; marriage, religion, health, legal and civic obligations. Civic rights and obligations.	2	C

Year 2

COURSE CODE/ TITLE	COURSE DESCRIPTION	UNIT(S)	STATUS
SSE 201:Principles and Concept of Social Studies	Meaning of social studies; development of social studies thought. The various disciplines that form social studies and the emphasis therein. The concepts/conceptions of social studies; social studies approach: practices, types, methods (social studies methodology); theoretical and empirical situations; practices in citizenship education as models. The values and prospects of social studies. How social studies develops the desired citizen.	3	C

SSE 203:The Origin of Man	Various schools of thought, namely: man as animal, man as human being, and man as spirit; sources of man's origin and their assessment; myths/legends, belief/religion, science/evolution; lessons from evolution theory; notable developments of the early man.	3	C
SSE 204:Industrialization	Meaning and scope of industrialization; the industrial revolution and changes in society; emergence of industrial revolution. Factors responsible for Japan's industrialization. Living and working conditions in pre-industrial societies. International relations in the context of industrialization.	2	E
SSE 205:Social Integration in Nigeria	The background or Ethnological survey of the peoples of the world including Nigeria; Concept of social group or society; Social groups and their stratifications in Nigeria; Concept of settlement of social groups; Analysis of types and classification; Causes of social problems; Factors affecting social integration treated under beliefs cultural factors affecting them; Different types of social problems.	2	E
SSE 207:Laws, Crime, and Society	Meaning of law; differences and similarities between regulations; conventional law and edict. Functions of the law; making laws; law enforcement and agencies for enforcing it: Military, Police, Prison, Traffic Wardens, Civil Defense Corps, Road Safety, NDLEA. The law and the citizen. Penal system; courts and their functions; aims of the penal system. Universal law, morality and law; changes in law. The law in Nigeria: traditional, Islamic, British law reviews. The judiciary; meaning of crime; delinquency and criminality. Statistics of crimes in parts of the world with focus on Nigeria; crime prevention.	3	E
SSE 208:Inventions, Technology and Man	The history of technology; stone-age technology. The rise of cities; Greek and Roman technologies. Influence of the Far East especially China. Introduction of Coke; the industrial revolution. Major inventions that shaped the history of this world: telephone, electricity, vehicles, airplane/aircraft, computers, electronic communication.	2	C

	Technology, society, and man; technology and development; technology and world power.		
SSE 209: Teaching Social Studies in Junior Secondary School.	A consideration of the major approaches to the teaching of social studies in junior secondary school drawn principally from specific educational, social and psychological theories; Consider the development of instructional aids and analysis of leaning units.	2	C
SSE 210: Culture and Stability	The concept of culture and identity: Common heritage and national symbols. Cross cultural influences. Social change, alienation and social stability.	2	C
SSE211: Nigeria Socio Political Institutions	Nigerian culture, identity, socialization of man; Marriage and Kinship groups; Primary, Secondary and Communities.	2	C
SSE 212: Population and Economic Development in Nigeria.	The concept of population and its relationship with economic development; The meaning of economic development as it relates to poverty, inequality and per capital income; The concept of population dynamics, birthrate, death rate, etc	2	C
SSE 213: Research Methods in Social Science Education	Concept of research methods in social science education; Basic approaches to scientific gathering of data; Definitions of methodologies, collation and analysis of materials for research in various areas of social science education, following both historically and practically; The latest and best models for scholarly rediscovery and recording of information from archives, libraries, field work; Guidelines for reporting B.Ed. long essays or project.	2	C
SSE 214: Ecosystem and the Environment.	A study of physical features and the interrelationships and interactions between climate, land forms, soil and vegetation, organisms interactions and their study as related to ecosystem studies in general.	2	E

Year 3

COURSE CODE/ TITLE	COURSE DESCRIPTION	UNIT(S)	STATUS
SSE 301: Nigerian Cultural Environment: Values, Science and Technology	Analysis of the concepts of Values; Values vital to the acquisition of Science and Technology; Choice of Values and directions of Development; Utilization and conservation of World Resources.	2	C
SSE 302:Social Changes and Problems	Meaning of social changes: various schools of thought. Agencies/factors/explanations of social changes in Nigeria. Economic, political, religious, educational, health, and socio-cultural activities. Social changes in the world; the stages/phases of modernization; the 18^{th} century revolutions; aspects of modernization. Certain characteristics of urban life. Categorization of the world's nations. Some concepts of social change namely, innovation, growth, development, modernization. Concepts of social problems; varieties of social problems; origin of social problems; case studies on social problems such as poverty, prostitution, human trafficking, drug abuse, race relations, each treated from historical, comparative, economic, political, and social perspectives; handling of social problems.	2	C
SSE 303: Nationalism and Patriotism in Nigeria	The indigenous political organization; the growth and development of political parties in Nigeria. Goals and strategies of nationalists in pre-independence Nigeria. Politics and crises in Nigeria 1960 up to date.	2	C
SSE 305:Peoples of the World	Meanings of world, planet, earth. Races of the world and their characteristics; definition of race. The origin of man according to science/evolution. Factors responsible for common distinct, biological features. The Euro-Afro-Asian land mass where man originated; three original races: European (Caucasoid), African (Negroid) and Asian (Mongoloid). The subsequent five races namely: Amerindians in North and South Americas, Australoid (Australian Aborigines), Polynesians, Melanesians, and Micronesians (Pacific Island peoples). The most important	2	C

	enlightenment from this course is that no race is superior to the others in intellectual capacity. Therefore, Africans are challenged to meet the two other major races in development.		
SSE 306: Attitude, Stereotypes and Prejudices.	Meaning of attitudes, stereotypes and prejudices. How attitudes develops. Types and forms of development. Prejudices and human interaction. Stereotypes and human interactions. Stereotypes and human behavior. Prejudices in national and international perspectives. Ethic relations. Race relations and conflicts. Religious conflicts. Methods of changing attitude.	2	E
SSE 307:Population Education	Theories of population; determining factors in population and their effects: social, economic, and political. Infant and maternal mortality rates in countries at different stages of development; population control measures.	2	C
SSE 308:Political Structure and Forms of Government	Meaning of political structure; formal institutions of government; political elites, political parties: formation and functions. Political decision-makers; political arrangement e.g. Prime Minister/President, Presidential system, opposition, electorate; electioneering. Pressure and interest groups; political behaviour; political power; delegation of power. Meaning of government; historical and comparative studies of feudalism, monarchy, and totalitarianism.	3	C
SSE 309:Social Services in Nigeria	Meaning of social service: definition of social service; social structure, scope of social service. Education services; comprehensive definition of education; informal education; traditional education, non-formal education, modern education; similarities in traditional and modern education; differences between traditional and modern education; structure and functions, the main task of any education. Health, housing, electricity, posts and telecommunications, and fire services.	2	C
SSE 310:Economic Structure and	Meanings of wealth and poverty; scope of wealth and poverty; capital and its power; scarce resources; production in simple	2	E

Comparative Economics Systems	societies; cottage industries. Comparative studies of slavery. Feudalism, capitalism, socialism/communism and economic structures associated with them. The modern industrial society. The term economic system; international trade. Banking and monetary policies of different nations compared. Differences and similarities among economic systems; export policies and regulations.		
SSE 311: Finance and Financial Institutions in Nigeria	The Economic system of Nigeria. Factors of production; money- history, functions and types.	2	C
SSE 312: Nigerian Cultural Patterns and Historical Origin.	A study of Nigerian social and cultural relations. Sports, arts and culture. Utilization and conservation of resources and loyalty to the nation.	2	E
SSE 313:Labour, Income, and wealth	Meaning and purpose of labour; labour and nations, both developed and underdeveloped. Division of labour; labour and production; sources of labour. Trade Unions: meaning, origin, and development. Strikes and lockouts: purpose, process, bargaining/negotiations; labour laws/acts; compensation. Meaning of income; sources of income; personal income and national income; inequalities in income: causes and effects. National resources and their utilization with examples from both developed and developing nations. Revenue allocation; national and international loans; The IMF, World Bank; resources of Federal, State, and Local Governments.	2	C
SSE 314: Social Studies Education and Theories of Nation Building	Theories of self-reliance development. Social change alienation and personality. The role of religion in society; politics and political institutions. Value, technology and development education for peace; a new dimension in Social Studies.	2	C
SSE 316: Comparative Trends in Social Studies Education.	Analysis of programmes and practice, investigation and trends in Social Studies. Current trends and issues in Social Studies. This will involve exposing students to different methods and materials of teaching Social Studies.	2	C

Year 4

COURSE CODE/ TITLE	COURSE DESCRIPTION	UNIT(S)	STATUS
SSE 401: Nigeria and Her Lands	An in-depth geographical study and analysis of Nigeria's physical features; Vegetation products, natural resources, transportation, communication, people and industries	2	E
SSE 402:Processes and Issues of Modernization	The concept: modernization; rationalization and secularization as vital concepts under modernization. The phases/stages of modernization; the 18thcentury revolutions: political: democracy supported by the principle of self-determination and economic: the industrial revolution. Features of modernization: general, economic, political, and social. Issues accompanying modernization: science and technology, urbanization including forms/regional, planning: methods, effects, problems. Categorization of the world's nations; problems and prospects of modern civilization.	2	C
SSE 403Major World Revolutions and their Impact	Revolution as concept; causes of revolutions. War of independence; French Revolution, Russian Revolution. World Wars I &II; Cold War. The Super Powers and developing nations.	2	C
SSE 404:Man and International Relations	Politics and international relations; international organizations. Nigeria and international relations; Nigeria and the international order. World economic crisis; OPEC and oil politics.	3	C

SSE 405:Regional Planning and Environment Factor	Concept and Principles of Regional Planning; Regional planning in Nigeria before independence; Post-independence efforts at regional planning and integration; Social justice and equitable distribution of resources; Oil production in Nigeria and its effects- economic, social and political; The world environment-vegetation, climate, physical resources, formation of rivers, lakes and their significance to the environment; Transportation and communication patterns In the world.	2	E
SSE 406:Colonialism and Neo-Colonialism	Colonies of the world and their masters; the race for Africa; the colonial experience. Struggles for independence by the various colonies; political independence. Neo-colonialism: economic exploitation and the technological dependence of the third world nations.		
SSE 407:Nigeria: From Settlement to independence	An in-depth historical analysis of Nigeria since 1800: pre-colonial and post-colonial Nigerian political development; roles of missionaries. Nigeria and the struggle for independence: nationalism and nationalist movements; the attainment of independence.	3	C
SSE 408: Nigeria and International Organizations.	An analysis of selected International organizations with Nigeria's membership; UN, AU, ECOWAS, OPEC etc. The purposes of these organizations, their objectives achievements etc.	2	C
SSE 409:Citizenship Education	Meaning and practices of citizenship education; democracy: as a concept, as	2	C

	a form of government; standards and facilitating conditions of democracy; democracy and fundamental human rights. Nationalism and patriotism and their inter-relationships; means of exercising rights and responsibilities: positive and negative means. Social studies in relation to citizenship education and the affective domain.		
SSE 411: Social Issues as Emerging Priorities for Social Studies Education.	The analysis of social groups and organizations and issues relating to such collective behaviours as riots, thuggery problems; alcoholism, drug abuse, internet crime, social deviance and other issues such as inequality, gender, under-representation of minorities, underutilization of skills etc.	2	C
SSE 413: Social Studies Theories, Resources and Strategies.	Current theories, resources and strategies of teaching social studies. It should also involve selection of materials and activities appropriate for teaching Social Studies in secondary schools.	2	C

Appendix 15: Certificate of Editing

Angela Bryan & Associates

6 Martin Crescent
Westville

Date: 28 April 2020

To whom it may concern

This is to certify that the Doctoral Thesis: An Exploration of the Intended, Enacted and Achieved Environmental Education Curriculum Within the Social Studies Teacher Education Programme at a Nigerian University written by David Toyin Aladejebi has been edited by me for language.

Please contact me should you require any further information.

Kind Regards

Appendix 16

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