Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District, Uganda.

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Declaration

I, Odida Peter, hereby declare that this dissertation titled *"Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District"* is my original work and that it has not been submitted for any academic award at any other University or Institution. Any content or replication that is not my original work is appropriately credited.

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This is to confirm that the dissertation titled *"Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District"* was written under our supervision and submitted for examination with our approval:

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Dedication

This dissertation is dedicated to my three siblings, Mr. Okello Jimmy, Mr. Odong Denis, and Ms. Ajok Lilly, as well as my children, Omara Marvin and Lakica Prosper.

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Abstract

The primary objective of this investigation was to assess the influence of the implementation of secondary school curricula on environmental conservation practices within the context of Northern Uganda, with Lamogi Sub County in Amuru District serving as a representative case study. The specific aims included an assessment of the level of secondary schools' curriculum implementation of environmental conservation practices in Lamogi sub-county, an exploration of the environmental conservation activities undertaken within secondary schools in Lamogi Sub County, and the establishment of a correlation between the implementation of secondary school curricula and environmental conservation practices. The research design integrated both cross-sectional survey and descriptive methodologies, employing a combination of quantitative and qualitative approaches. The determination of the sample size utilized Krejcie and Morgan's (1970) sample size table. Data acquisition involved the distribution of self-administered questionnaires to 232 participants, supplemented by interviews with 23 individuals guided by structured interview guides. The study yielded significant findings, indicating a statistically significant influence of secondary school curriculum implementation on environmental conservation practices ($R2 = .711$; $p = .000 < .05$). Additionally, it revealed a shortage in the implementation of curricular elements pertaining to environmental conservation activities within secondary schools in Lamogi Sub County. Furthermore, the investigation exposed human induced activities, specifically agricultural practices and human settlement, as detrimental to the environmental conservation. Despite the awareness within both educational institutions and the broader community regarding the imperious of environmental conservation, harmful human actions, demonstrated by deforestation through tree cutting, persistently inflict harm upon the ecosystem. Consequently, it is recommended that governmental authorities explore alternative

sustainable energy sources to mitigate the adverse impacts on the environment over the long term. Moreover, a pertinent suggestion emanates from the study, advocating for the incorporation of a distinct course on environmental education within the National Curriculum Development Centre's framework. Such an addition aims to augment the dissemination of information concerning environmental preservation within curricula, thereby influencing behavioral patterns and enhancing educators' comprehension of the principles underlying environmental conservation practices.

Chapter One

Introduction

1.1 Overview

The quest for energy stands out as a paramount catalyst for environmental destruction (Fashina et al., 2018). The entire spectrum of energy processes, encompassing generation, processing, conversion, transportation, and ultimate utilization carries inherent potential for adverse environmental impacts and introduces various health and safety concerns (Benti et al., 2021). In alignment with governmental policy directives articulated in 2009, a compelling need for formal environmental education within the national educational framework was recognized at all educational levels and subsequently integrated into specific courses within school curricula (MoES, 2009). The overarching objective was to cultivate public awareness regarding the advantageous dimensions of environmental preservation. The infusion of cross-curricular initiatives into the national curriculum assumes a pivotal role in facilitating secondary school students' comprehension of environmental protection principles. The National Environment Management Authority (NEMA), in collaboration with numerous civil society organizations, has assumed the responsibility of instructing educators at the school level. This collaborative endeavor is designed to ensure the effective implementation of the curriculum, fostering an environment wherein individuals can scrutinize environmental issues, partake in problem-solving endeavors, and undertake initiatives to conserve the environment (Alex et al., 2017). The fundamental aim of this educational initiative is the cultivation of environmentally conscientious individuals, contributing to a populace characterized by heightened environmental awareness and ethical responsibility.

This chapter included the following sections: introduction to the study, background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, overarching question, scope of the study, significance of the study, and conceptual framework.

1.2 Background of the Study

Environmental conservation measures have been promoted in the United States of America due to serious global concerns such as climate change, the extinction of biological variety, and energy poverty (Müller *et al.,* 2021). In 2011, the Department of Education created the Green Ribbon Schools initiative to reform policies, change the way students learn, equip instructors with a solid knowledge basis, allow students more agency, and apply environmental sustainability measures (Usman *et al.,* 2020). To decrease environmental impact through rigorous environmental education that combines civic skills, schools, districts, and postsecondary institutions, both public and private, were necessary to take the lead (Zafar *et al.,* 2020).

In Germany, environmental education began in the 1970s (Strubell *et al.*, 2020). The German Federal Ministry of Education's ESD (Education for Sustainable Development) National Action Plan gave schools the freedom to implement numerous environmental awareness projects and incorporate them into legal educational materials such as Education Acts and school curricula (Müller *et al.,* 2021). School gardens have been established to promote recycling, environmental conservation, energy conservation, and water conservation. Biology and geography were the two fields that focused the most on energy issues.

Nigeria has expanded its educational policies and curriculum to address current challenges such as environmental conservation, clean energy creation, and consumption (Wojuola & Alant, 2019). By ensuring that school curriculum reflects environmental conservation, colleges are

substantially guaranteeing that students grasp the need of sustainable practices, such as the use of environmental conservation (Dimnwobi *et al.,* 2022). These offer students with the information and resources they need to encourage pro-environmental behavior in their cultures (Durrans *et al., 2020*).

Kenya prioritizes teaching and training its citizens in resource preservation and conservation for current and future generations. Gordon (2018) describes a multimodal (infused) method to teaching environmental conservation in public primary and secondary schools. All educational institutions and other public organizations in Kenya are obligated under the Basic Education Act to integrate environmental education and awareness in their everyday activities. By cooperating with schools, a personalized curriculum that integrates conservation within the core curriculum is aimed to improve environmental conservation and carry out positive conservation actions (Evans *et al.*, 2020).

Uganda has defined specific national objectives, addressing sensible utilization of the environment, power, and energy resources, as outlined in the National Education for Sustainable Development Strategy and supported by broader national legislation (Nkundabanyanga et al., 2020). This commitment materialized in 2009 when environmental education was mandated across all levels of Uganda's formal education curriculum, though confined to specified disciplines (MoES, 2009). Emphasizing the pivotal role of environmental conservation, the 2009 government policy statement extended this mandate to encompass the entire spectrum of secondary school education. Secondary school students engage in practical environmental protection activities through cross-curricular initiatives embedded in the national curriculum, including actions such as cultivating grass and trees, facilitating the acquisition of skills relevant to their contexts. Aligning with its mission to support environmental education, the National

Environment Management Authority (NEMA) proactively extends opportunities for teacher and teacher-educator training, as clarified in the Preliminary Learning Network for Reorienting Uganda's Education for Sustainable Development (PRELNOR) report of 2021.

This study was theoretically based on Jack Mezirow's transformational learning theory, which he created in 1991. The idea is based on four broad scientific assumptions:

i. Learning entails a shift in meaning structures, i.e., schema and viewpoints.
ii. Reflection on content, procedures, or premises leads to modifications in meaning structures.
iii. Learning comprises learning new schema, adjusting viewpoints, or adding significance to pre-existing plans or programs.
iv. Individuals discern the reason or impact of certain events or circumstances, acquire communicative abilities, and learn how to communicate their wishes, sentiments, and emotions.

The concept of "perspective transformation," covers three dimensions: psychological (changes in self-awareness), convictional (revision of belief systems), and behavioral (modifications in lifestyle). Transformative learning represents an extension of awareness enabling individuals to introspectively challenge their thoughts, beliefs, assumptions, and perspectives, fostering the development of new sensitive viewpoints. This process often empowers individuals to critically evaluate aspects they may have previously taken for granted or overlooked, making intentional judgments about them. According to this perspective, successful education can initiate a transformative process wherein individuals undergo favorable modifications in their feelings, beliefs, assumptions, and perceptions related to the knowledge they have acquired (Mezirow,

1991). This implies that when individuals receive appropriate education on environmental conservation, they undergo positive transformations and are capable of translating their acquired knowledge into practical applications. Consequently, the study posits that the manner in which environmental conservation is imparted may significantly influence the post-school behavior of secondary school graduates, impacting actions such as environmental degradation in the pursuit of firewood and charcoal.

This theory was chosen because

i. It assists learners in developing the cognitive and emotional abilities required for reflective analysis and the development of innovative perspectives.
ii. Allow students to encounter different points of view in order to better understand new ideas and concepts.

Curriculum implementation and environmental protection were two major concepts in this study. According to Ngwenya (2020), curriculum implementation comprises putting the formally recommended courses of study, syllabuses, and topics into practice. Implementation happens when the learner acquires the anticipated or desired experiences, abilities, information, ideas, and attitudes that will enable the same learner to perform successfully in society (Ngwenya, 2020). Curriculum implementation, according to Nevenglosky (2018), refers to the ways teachers use to provide instruction and measure student learning while using curriculum-provided resources. Curriculum designs often comprise lesson plans, teaching methodologies, instructional recommendations, and assessment possibilities when they relate to a set of objectives (Nevenglosky, 2018). Such designs lay a great emphasis on consistency in order to help instructors successfully execute and maintain the curricular framework in order to achieve

various goals. This initial definition of curricular implementation was used in this study. As a consequence, the curriculum's implementation was evaluated in terms of how instructors design, present, interpret, and evaluate their environmental conservation instruction.

The paper's second concept was on environmental conservation. Environmental conservation, according to Brown and Pierce (2023), is the activity of saving the natural world from collapse as a result of human activities such as unsustainable agriculture, deforestation, and the use of fossil fuels. Environmental conservation is a practice that paves the way for environmental and natural resource protection (Asiaei et al., 2022). The most common environmental conservation techniques include recycling, reducing water usage, lowering energy consumption, planting a tree, and growing vegetables (Asiaei et al., 2022). This study looked into environmental conservation measures such as raising environmental awareness, planting trees, adopting more environmentally friendly practices, and upgrading abilities.

Contextually, within the Ugandan educational context, environmental education has been implemented in schools to instill the principles of environmental protection among learners, as outlined by the Ministry of Education and Sports in 2009. These educational initiatives have been integrated into various disciplines, including Geography, Agriculture, and Biology, across all educational levels in Uganda. The broader awareness of environmental conservation benefits, such as mitigating global warming, enhancing public health, ensuring a sustainable energy supply, stabilizing energy costs, and fostering reliability, becomes more widely recognized through educational efforts (Alex et al., 2017). In Amuru District, schools actively operationalize the curriculum, emphasizing project-based learning and learner-centric educational approaches. To oversee school performance, the district administration and the Department of Education have established a committee of monitors and supervisors (NEMA, 2021).

Despite these educational endeavors, substantial environmental degradation is evident in Amuru District (NEMA, 2021). In 2000, the district was covered by 56 percent of trees, but this declined by 38,700 hectares between 2001 and 2021, primarily due to wood and charcoal fuel production, with only 290 hectares of new tree cover established (National Forestry Authority [NFA], 2021). This extensive deforestation has been linked to the region's increasingly erratic climate conditions (Project for the Restoration of Livelihood in the Northern Region [PRELNOR], 2021). Despite efforts to curb tree cutting, illicit logging persists, posing a substantial threat to climate change mitigation. Without decisive measures, the situation is likely to persist. Research indicates that effective planning, delivery, and assessment of teaching enhance learning outcomes (Stronge, 2018). Failure to observe proper environmental actions, such as unsustainable resource use and ecosystem harm during charcoal and firewood collection, may be indicative of inadequate learning (Drosos et al., 2021). This underscores the necessity and benefits of the conducted research.

1.3. Statement of Problem

Education serves as a pivotal social instrument, contributing significantly to the dissemination of knowledge and fostering awareness conducive to the adoption of environmentally sustainable practices (NEMA, 2016). This perspective aligns with the Uganda National Environment Management Policy of 2014, which underscores the integration of environmental education and public environmental awareness within the ongoing curriculum implementation activities across all tiers of the educational system.

Despite the emphasis placed by national curriculum implementation policies on the integration of environmental conservation practices, there exists a paucity of information regarding the adherence to these policy provisions at the secondary school level. The National Environment Management Authority's (NEMA) report of 2021 reveals a concerning trend wherein individuals, including those with a secondary education background, contribute to environmental degradation. This scenario prompts an inquiry into whether secondary education sufficiently empowers individuals with the requisite knowledge and skills pertaining to environmental conservation practices. Consequently, this study aims to assess the extent to which secondary schools implement curriculum initiatives focused on environmental conservation practices.

1.4 Purpose of the Study

The purpose of this study was to assess the influence of secondary schools' curriculum implementation on environmental conservation practices: A case study of Lamogi Sub County in Amuru District, to improve the teaching of environmental conservation and sustainable environmental usage.

1.5 The Study's Objectives

The study was guided by the following objectives:

i. To assess the level of secondary schools' curriculum implementation of environmental conservation practices in Lamogi sub-county.

ii. To examine the practices of environmental conservation in secondary schools' in Lamogi sub-county.

iii. To establish the relationship between secondary schools' curriculum implementation and environmental conservation practices in Lamogi sub-county.

1.6 Research Questions

i. What is the level of secondary schools' curriculum implementation of environmental conservation practices in Lamogi Sub County?

ii. What are the practices of environmental conservation in secondary schools' in Lamogi Sub County?

iii. What is the relationship between secondary schools' curriculum implementation and environmental conservation practices in Lamogi Sub County?

1.7 Overarching Question

What is the influence of secondary schools' curriculum implementation and environmental conservation practices?

1.8 Scope of the study

1.8.1 Geographical Scope

Lamogi Sub County is located in Amuru District, which is on the Gulu-Nimule Road and is approximately 55 kilometers west of Gulu City and approximately 113 kilometers southwest of Elegu, which serves as the international boundary with South Sudan. The capital of Uganda, Kampala, lies 352 kilometers to the northwest. It's at 2° 49' 07.0 N, 31° 51' 51.0 E (latitude: 2.8186, longitude: 31.8642). Guru Guru Sub County in the west, Pabbo Town Council in the north, Gulu City in the south, the districts of Omoro and Nwoya in the south and southwest, and Gulu District in the east are its neighbors.

1.8.2 Time Scope

The research was done in all five secondary schools in Lamogi Sub-County between October 2022 and September 2023 on the implementation of secondary school curricula and environmental conservation measures. The research concentrated on the decade 2000-2020. This was because environmental education was legislated and implemented into Ugandan classrooms in 2009, but unfortunately, environmental degradation has worsened since then. The goal of the research was to investigate the connection between environmental conservation and district-wide techniques for implementing secondary school curricula.

1.8.3 Content *Scope*

This study focused on the introduction of environmental conservation techniques in secondary school curricula and their impact on environmental conservation practices. In this study, school internal variables were confined to the application of environmental conservation practices in secondary school curriculum and how instructors prepare, present, and assess environmental

conservation content. Environmental conservation practices, on the other hand, were defined in this research as the sustainable use of the environment and its resources, which included less tree cutting, more replanting, less bush burning, and so on.

1.9 Significance of the Study

The envisaged significance of the study lies in its potential to offer valuable insights to a diverse array of stakeholders, with a primary aim of enhancing environmental conservation efforts. Local government policymakers and individuals within the Ministry of Education and Sports are expected to derive utility from the study, utilizing its findings to inform decision-making processes and the formulation of policies that support the effective implementation of curricula, particularly in the context of environmental conservation.

The study's outcomes are anticipated to be of practical importance to various supervisory roles, including inspectors, district education officers, head teachers, and teachers. This audience can leverage the provided data to draw informed conclusions, leading to the enhancement of practices conducive to heightened environmental conservation within the educational framework.

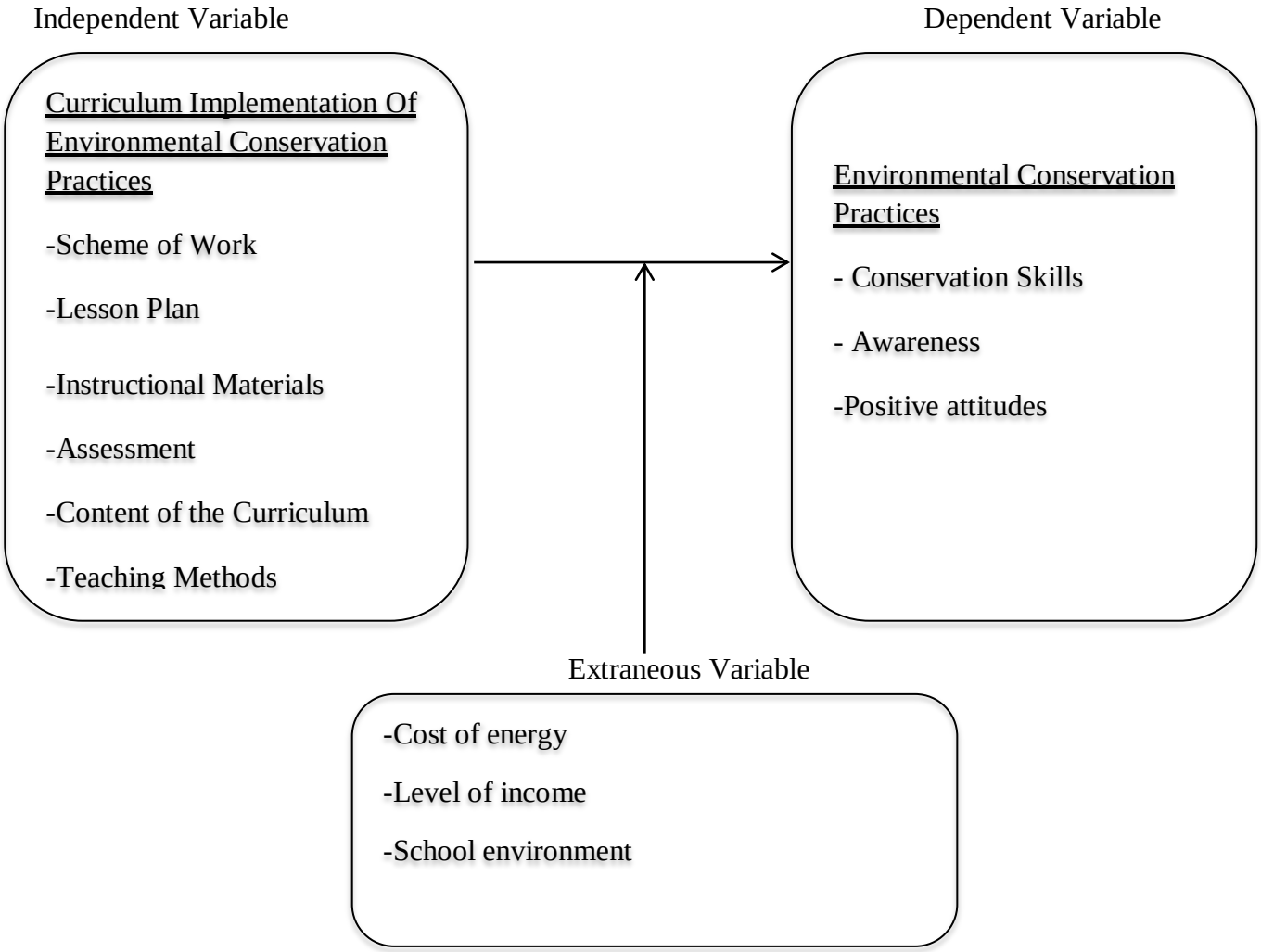
Furthermore, the study is envisioned to function as a catalyst for further inquiry into the broader subject of secondary schools' curriculum implementation. It is anticipated that the findings will not only validate existing data but will also stimulate original suggestions for more effective and improved curriculum implementation strategies. This potential for further investigation underscores the study's role in contributing to the scholarly discourse surrounding secondary school curricula and its implications for environmental conservation.

1.10 Conceptual Framework

The study posits an investigation into the anticipated influence exerted by the introduction of secondary school curriculum on environmental conservation activities. It systematically anticipates that extraneous variables, comprising factors such as income level, energy cost, and the holistic school environment, will concurrently play a distinct role in shaping and influencing environmental conservation practices. The resultant dissertation systematically outlines and defines the envisioned relationship between the implementation of the secondary school curriculum and the demesne of environmental conservation. The study aims to scrutinize not only the direct impacts of the curriculum on environmental conservation activities but also the complex interaction and variation introduced by external variables. This particular investigation seeks to contribute substantively to the scholarly understanding of how the implementation of educational curricula at the secondary school level interfaces with diverse contextual factors, ultimately influencing and shaping environmental conservation actions.

Figure 1

Conceptual framework



Source: Author, September. 2023

The link between the independent and dependent variables, which were secondary school curriculum implementation and environmental conservation actions, is depicted in Figure 1. In this study, the researcher looked at the relationship between secondary school curriculum implementation as the independent variable and environmental conservation practices as the dependent variable. The study looked into how curriculum implementation approaches such as assessment, lesson design, and lesson delivery impact environmental conservation. According to

the concept, secondary school curriculum implementation measurements comprise a scheme of work, lesson plan, content, assessment, and teaching approaches. Environmental conservation practice is the dependent variable, and it covers numerous measures of environmental conservation abilities, awareness, and attitudes.

As previously established, it was also stated that characteristics such as income level, energy cost, and school environment influence the association between secondary school curriculum implementation and environmental conservation. These aspects can have an impact on the link between environmental conservation and an effective secondary school curriculum implementation process, either positively or negatively. The available income and cost of energy may have an impact on how successfully the curriculum and environmental conservation measures are implemented. Curriculum implementation and efficacy, as well as environmental conservation efforts, may be influenced by the school environment.

Chapter Two

Literature Review

2.0. Introduction

This chapter's main topic was a review of the literature on environmental conservation practices and secondary schools' curriculum implementation. The chapter was divided into three sections according to the following subheadings: the secondary schools' curriculum implementation of environmental conservation practices, the practices of environmental conservation, and the relationship between secondary schools' curriculum implementation and environmental conservation practices.

2.1. The Secondary Schools' Curriculum Implementation of the Environmental Conservation Practices

Mwendwa (2017) discovered that the majority of environmental conservation was taught largely through the geography curriculum and, to a lesser extent, through biology when she examined the courses utilized to teach environmental education in secondary schools. These were provided to the students through interactive learning and guided investigation. Students and instructors explored fundamental environmental problems. Significant hurdles to implementing environmental education have been found, including a lack of environmental education competence as well as cultural beliefs and attitudes. In contrast to the present study, which was a mixed study, the prior study was qualitative, utilizing a cross-sectional survey, specifically stratified sampling.

The integration of environmental information into the curriculum has led to the cultivation of ecological sensitivity among students, emphasizing the significance of addressing environmental

concerns for the general populace. Alex et al. (2017) argue that environmental sustainability can be attained through education. In contrast, the prevailing educational process heavily relies on material, forming the basis for teaching and learning. The inclusion of environmental themes in the official curriculum has proven beneficial, enhancing the overall quality of education and facilitating the retention of environmental concepts. The challenge lies in the need for teachers to adeptly separate environmental conservation knowledge from other background issues. Consequently, learners, equipped with environmental knowledge from both classroom and co-curricular activities, are better prepared. It's important to note that Alex et al.'s (2017) study focused solely on the curriculum implementation of the geography subject in secondary schools in western Uganda, differing from the current study, which examines the entire curriculum implementation in secondary schools in Lamogi Sub County.

Environmental education is critical; so, environmental education activities are entrenched in the secondary school curriculum, mostly in diverse science courses such as ecology and wildlife (Chapman & Sharma, 2001). Students participate in a practical session and are evaluated to identify the link between the environmental education provided and the environmental awareness produced. This school's environmental instruction helped shape environmental attitudes. The curriculum has been established with specific primary approaches for teaching the fundamentals of environmental conservation activities (Chapman & Sharma, 2001). However, the study was conducted both in primary and secondary schools in Asian cities, unlike the current study, which was conducted in only secondary schools in Lamogi sub-county in northern Uganda.

Secondary school regulations mandate that social studies courses contain a full and obligatory analysis of the concept of environmental protection (Martinez et al., 2019). In the framework of

environmental education, students may build their sustainability competencies by applying environmental concepts that are taught and learned realistically in science and society (Martinez et al., 2019). More effort is needed to promote sustainability at all levels of education to solve current and future environmental concerns (Martinez et al., 2019). In contrast to the last research, which used descriptive and exploratory designs, the current one was conducted in northern Uganda, specifically in the Amuru District employing descriptive and in particular cross sectional survey and correlational methods.

At an early age, attitudes and values are formed, as well as the passion and ability necessary to preserve and safeguard the environment (Said *et al.,* 2003). As a result, education has a considerable influence on people' formation of new behavioral habits. As a result, the issue of environmental conservation has been introduced at all levels of education in all subjects in order to increase knowledge, environmental care, and ecological consciousness (Said *et al.,* 2003). As a result, the pupils were very concerned about the environment. The study, however, employed a drop-and-collect method to perform a survey, as opposed to the current study, which used simple random, purposive, and convenience sampling to choose the study's population.

Environmental protection is a topic that is extensively covered in the Serbian school curriculum. Environmental education is highlighted in recent adjustments to school policy and curriculum (Stanišić & Maksić, 2014). Formal environmental education is provided in educational systems as a required topic, a component of a required subject area, or as an interdisciplinary issue. A theme- based, interdisciplinary approach is used in the delivery of environmental education. Finally, even when it is taught as a separate topic, environmental education is always taught differently, frequently blended into other courses (Stanišić & Maksić, 2014). The research, however, was conducted in Serbia, which has a significantly more modest economy focusing

policy changes and its influence on curriculum implementation of environmental education, while the current study focused on the secondary school curriculum implementation and environmental conservation practices.

Environmental education has been incorporated into the Tanzanian education and training policy. All courses in the school curriculum now include environmental education (Kimaryo, 2011). Environmental conservation topics have been clearly demonstrated in courses such as science, social studies, and geography (Kimaryo, 2011). These were taught using hands-on and participatory approaches. Many learners are able to replicate the skills they learn in class at home. However, the study was qualitative in nature, and data were collected using interview and lesson observation methods, unlike the current study, which was a mixed study and used interview and observation methods to gather information.

Schools play an important role in producing environmentally conscious pupils. In the Philippines, environmental conservation measures have been included as a separate subject in the curriculum. As a result, pupils are well-versed in environmental concepts, the status of the environment, and environmental challenges and difficulties. They frequently practice taking action to remedy environmental concerns (ROGAYAN & Eveyen, 2019). To maintain pupils' ecological consciousness, the school has run information distribution programs on environmental ideas, the status of the environment, ecological difficulties, and challenges. Environmental advocacy and the eco-movement were entrenched at the school through student groups such as YES-O and scientific clubs. The ecological management plan was designed and implemented to strengthen students' commitment to environmental protection (ROGAYAN & Eveyen, 2019). This study was a qualitative study employing descriptive methodology, whereas the current

study was a mixed study employing both descriptive and cross-sectional survey design during the study.

2.2. The Practices of Environmental Conservation

To improve awareness and attitudes among students and community members, students conduct essential environmental activities such as clean-up campaigns, and green environment. Because of their positive character, activities aimed at raising environmental awareness, knowledge, and attitudes among all instructors are actively supported in schools (Mlipha & Manyatsi, 2005). This was identified as an important step in facilitating environmental education in local schools. As a result of these initiatives, students may plant and care for trees in schools while also keeping the environment clean (Mlipha & Manyatsi, 2005). The previous study was a quantitative investigation, but the present study was a mixed study done in the Amuru area of northern Uganda.

Educational institutions are collaborating on research on environmental conservation strategies to help students learn new skills and manage environmental challenges (Zacchia et al., 2022). This has led to the development of a new academic curriculum with extracurricular activities focused on environmental conservation techniques. Greening schools involve students participating in tree planting and maintaining surrounding schools. Awareness of green fuel sources is also stressed for environmental degradation mitigation. The aim is to promote environmental sustainability and awareness among students (Zacchia et al., 2022). In contrast to the previous research, this was conducted in environmental conservational practices among the university students, unlike the current study which was carried out in secondary schools in the Amuru District.

Secondary schools in southern Kenya are encouraging environmental protection via curriculum and extracurricular activities (Kioko & Kiringe, 2010). The formation of environmental clubs, with major activities such as community sensitization and tree planting, has increased student support and improved their knowledge, attitudes, and actions toward environmental conservation. Unlike the current study, which employed simple random, purposive and convenience sampling, the study population was recruited via stratified sampling, and data were acquired through interviews.

According to Manju *et al.* (2017), interactive and real-life case demonstrations have been used in schools to teach and sensitize students about environmental protection. These hands-on teaching approaches stimulate student participation, and as a result, learners have obtained practical knowledge from the training utilizing a secondary school curriculum on the subject of environmental and home energy conservation. Practical skills minimize cooking energy use while also enhancing environmental conservation (Manju *et al.*, 2017). Students have been able to sustainably manage the school's environment as a result of this. The previous study, on the other hand, focused exclusively on document analysis to acquire information on energy policy, but the present study also included interviews and a questionnaire to investigate the real process of curriculum implementation in secondary schools.

Environmental conservation awareness has been expanded in schools to improve environmental stewardship (Senthil, 2022), and other environmentally friendly energy sources have been introduced in schools to prevent global warming, enhance the environment, and provide clean, inexpensive energy education (Senthil, 2022). Environmental sustainability metrics have been developed as a result of research. Concurrently, pupils in schools have been instructed to operate tree seedlings in order to gain tree planting skills (Senthil, 2022). In contrast to the previous

study, which used a systematic literature analysis on SDG 7, the current study used interviews and a questionnaire to obtain data on curriculum implementation in secondary schools in the Amuru District.

Education and training are crucial in increasing environmental consciousness because they inculcate the attitudes and concepts needed for students to acquire a feeling of social and moral responsibility for environmental protection. Environmental practices and activities are already in place in schools (Seema et al., 2014). Some of the most significant environmental projects seen at schools are the use of natural manure, the planting of trees and grasses around schools, the recycling of rubbish and water, and the reduction of pollutants. Environmental conservation organizations were also compared (Seema et al., 2014). The study, however, sampled just 28 people, as opposed to the present study, which employed 255 respondents to reach a result.

The goal of implementing green environmental measures in schools was to keep schools healthy. Many students were able to successfully implement environmental conservation principles as a result of these activities (Chan, 2013). Among the numerous environmental conservation initiatives carried out in schools are a green school feature, outdoor green environments, indoor green environments, green gardens, energy conservation, water conservation, other green school design elements, and the use of recycled materials (Chan, 2013). This study varies from the present one in that it sampled 30 secondary schools, whereas the current study only sampled 5 secondary schools in the Lamogi sub county of the Amuru district.

Under the supervision of the teachers, students participate in environmental programs, which include tasks such as preparing tree seedlings within the school, recycling waste, water, soil, and energy conservation, non-use of harmful products, creative possible solutions, particularly for

erosion, and social media solutions (Cruz & Tantengco, 2017). They seldom carry out the chores of tree planting and joining the school's environmental groups. Students engage in environmental behaviors at home with the help of their parents. As a result, instructors worked harder and integrated environmental concepts, principles, and practices into numerous educational curricula. These promoted positive attitudes among learners and members of the community (Cruz & Tantengco, 2017). The previous study utilized interviews to obtain data from teachers, but the present study used a questionnaire survey and interviews to acquire data from learners, teachers, and others.

2.3. The Relationship between Secondary Schools' Curriculum Implementation and Environmental Conservation Practices

Education is an important institution for conveying correct knowledge about this problem and, as a result, giving focused action alternatives (Dieterle *et al.*, 2023). There were significant differences in environmental consciousness across all levels of students, and this gap between knowledge and action prompted the inclusion of environmental protection measures in the curriculum of all examined courses on an individual but consistent basis (Dieterle *et al.*, 2023). As a result of their incorporation, people's views about the environment have shifted. This led to a rise in environmental conservation measures. However, the previous study used a quantitative technique and included 317 participants, whereas the present study was a mixed study and involved 255 individuals from Lamogi Sub County, Amuru District.

Recognizing the pivotal role of education in shaping environmentally literate individuals, the integration of environmental sustainability into the official curriculum marked a significant initiative (Gugssa in 2023). The approach adopted involved teachers delivering the environmental curriculum in a hands-on, place-based, and action-oriented manner, emphasizing

that understanding the instructions is essential for the effective conceptualization of the topic. This innovative teaching method contributed to a noteworthy transformation in environmental conservation practices within schools and communities, empowering students to autonomously implement sustainable initiatives (Gugssa, 2023). It's worth noting that the current study diverges from Gugssa's research, which focused solely on 17 teachers. In contrast, the present study adopts a more comprehensive approach by including a diverse sample of participants, encompassing teachers, students, and other community members, totaling 255 participants. This broader sampling strategy enhances the study's scope and provides a more inclusive understanding of the impact of environmental education on various stakeholders.

The obstruction of environmental conservation expansion is attributed, in part, to a shortage of educated human resources (Lucas et al., 2018). The growing interest in environmental education, however, presents an opportunity to address the skill gaps within the sector. Notably, data on environmental protection reveal discrepancies between the output of the educational system and societal expectations, as well as inconsistencies in curriculum content and implementation. This disparity prompted curriculum modifications, particularly in scientific fields like biological science, emphasizing environmental conservation techniques. The reform imperative not only facilitates formal learning but also accommodates individuals in acquiring and applying knowledge both officially and informally (Lucas et al., 2018). Teachers are tasked with preparing and delivering realistic lessons to facilitate the straightforward dissemination of environmental knowledge, contributing to an increase in environmental literacy. It is worth noting that, in contrast to the present study that gathered data through interviews and questionnaire surveys, the previous study relied on a systematic literature review for data collection. This divergence in

research methods underscores the multifaceted approach and varied insights available within the realm of environmental education and conservation.

The active involvement of young individuals in the implementation of environmental conservation policies underscores their pivotal role, prompting the utilization of education as a significant tool for their empowerment with practical instruction in environmental conservation. This strategic approach aimed to enhance content comprehension among this demographic. The outcomes, as indicated by Keramitsoglou in 2016, demonstrated a notable augmentation in the knowledge, attitudes, utilization, and overall understanding of environmental conservation among adolescents. The instructional process incorporated the promotion of local learning resources, facilitating a direct and uncomplicated application of the acquired knowledge (Keramitsoglou, 2016). It is noteworthy that the study conducted by Keramitsoglou specifically focused on two high schools in Nigeria, contrasting with the current research, which encompasses a broader scope with an investigation conducted in five secondary schools in northern Uganda. This distinction in geographical and institutional context highlights the potential variability in outcomes and implications, enriching the broader understanding of the role of education in environmental conservation across diverse settings.

Environmental education has been integrated into various academic disciplines within the Philippines, encompassing life and physical sciences, social studies, geography, civics, and moral education, as documented by Punzalan in 2020. This incorporation has yielded a heightened level of environmental awareness and practical engagement among students. The extent of students' involvement in environmental practices demonstrates a highly significant correlation with their environmental consciousness (Punzalan, 2020). The strategic

implementation of environmental education programs, designed to preserve and enhance students' understanding and capacities concerning environmental issues and sustainability principles, emerged as a crucial initiative. Notably, the antecedent study, conducted in the Philippines with its relatively developed economy, diverges from the current research, which took place in northern Uganda, specifically in Lamogi sub-county of the Amuru district. This contrast in geographical and economic contexts underscores the need for a nuanced understanding of the impact of environmental education across diverse settings.

Educational institutions have intensified their endeavors to instill awareness of environmental protection among students, aiming to mitigate the repercussions of environmental degradation. In this context, teachers assume a pivotal role in imparting knowledge about environmental preservation to children and adolescents, utilizing the curriculum content as a tool for effective instruction, as elucidated by Esa in 2010. The content serves as a resource, enabling teachers to acquaint themselves with environmental conservation techniques, a prerequisite for delivering impactful instruction. The meticulous preparation of teachers plays a crucial role in seamlessly integrating environmental education into the classroom and effectively disseminating the content. The acquisition of environmental knowledge by students, facilitated by this instructional approach, translates into observable pro-environmental behavior and attitudes, thereby fostering a beneficial shift in environmental conservation practices (Esa, 2010). Noteworthy, the divergence between the current study and Esa's research lies in the theoretical underpinnings employed, with the latter relying on the integration of field theory, theory of planned behavior, and lifelong developmental theory, while the present study adopts Jack Mezirow's transformational theory. This methodological distinction underscores the varied frameworks utilized to comprehend the dynamics of environmental education and its transformative potential.

Educators strategically integrated topics such as waste management, pollution, forest conservation, and climate change into their classroom teachings, leading to the adoption of sustainable practices within schools, including proper waste disposal, recycling, composting, tree planting, and energy conservation, as outlined by Labog in 2017. The infusion of environmental awareness within the classroom setting is shown to have enduring effects on long-term environmental conservation activities. To bolster sustainability, this integration and practical application can be further fortified by extending outreach to communities beyond the school and strengthening existing collaborations with environmental organizations. This collaborative approach envisions environmental conservation practices as a collective effort involving students, educational institutions, local communities, and both governmental and non-governmental organizations with environmental interests (Labog, 2017). Such interconnectedness not only enhances the scope and quality of sustainable environmental conservation practices within educational institutions but also permeates into the broader community. It is noteworthy, however, that Labog's study adopted a quantitative methodology, diverging from the current research, which employs a mixed-methods approach designed to yield comprehensive insights through triangulation of data sources. This methodological distinction underscores the diverse strategies employed to capture the nuances of environmental education and conservation practices.

Educational institutions and the broader education system have emerged as pivotal actors in responding to the global ecological crisis through a myriad of environmental conservation initiatives. Integrating ecological instruction, promoting plant seed production, and facilitating the conversion of recyclable waste into organic fertilizer exemplify some of the environmental conservation methods imparted to students within the curriculum, as elucidated by Irawan in

2022. Learners, in turn, have actively contributed to environmental protection endeavors, notably by initiating reforestation and natural conservation projects through clubs and extracurricular activities (Irawan, 2022). It is noteworthy; however, that Irawan's investigation was qualitative in nature and conducted in Indonesia, differing from the current study, which adopts a mixed-methods approach within Lamogi Sub County in the Amuru district. This methodological divergence emphasizes the varied research designs employed to comprehend the multifaceted aspects of environmental education and conservation practices across different geographical and contextual settings.

Chapter Three

Methodology

3.0 Introduction

The overall research approach was described in this chapter. According to Bougie and Sekeran (2020), research methodology is the process by which a researcher deliberately builds a study to produce accurate and dependable findings that fulfill the research's aims and objectives. It consists of the following components: research approaches, research design, study population, sample size and sample size determination, sampling methodologies, data sources, and data collection instruments; data analysis; ethical consideration; quality control; administrative procedures; study assumptions; and study limitations (Kumar, 2018).

3.1 Research Orientation

In this investigation, a mixed-methods approach was applied. The confluence of qualitative and quantitative methodologies is known as the mixed-method approach (Bougie & Sekeran, 2020). The intersection was founded on the pragmatist theory that a situation cannot be comprehended in its entirety from just one perspective (Saunders et al., 2020). A quantitative approach uses measurements and statistics to explain things rather than words (Cohen et al., 2018). It was applied since it is generalizable and deductive (Saunders et al., 2020). It made it possible for the research to create well-structured questions to gather quantitative information from students, teachers, and other stakeholders. That has made it possible for the study to fulfill its research objective 3. The qualitative method, on the other hand, sought to comprehend people's experiences, attitudes, and behaviors in rich and complicated ways (Cohen et al., 2018). It made it possible for the study to examine how respondents' ideas, experiences, feelings, beliefs, attitudes, and other qualities that couldn't be measured are interpreted (Cohen et al., 2018). Key

informants were interviewed using interview guides as part of the qualitative design. Also, it allowed the study to evaluate Research Questions 1 and 2. Using a variety of data collection techniques was essential since they provided triangulation and best enabled in-depth knowledge of a study subject (Cohen et al., 2018).

3.2 Research Design

The study made use of descriptive research design, with mainly cross-sectional surveys, and correlational research methods. The descriptive research design describes events in their natural state without making any attempts to change them (Bougie & Sekeran, 2020). This was due to the concurrent transformative mixed method's ability to collect both qualitative and quantitative data about the prevalence of variables and identify their correlations from a large number of individuals at once (Bougie & Sekeran, 2020). The descriptive design of the study made it easier to answer research questions 1 and 2, which dealt with the secondary schools' curriculum implementation of environmental conservation practices. According to Bougie & Sekeran (2020), the cross-sectional survey design entailed gathering data from a representative sample at one moment in time (snapshot), evaluating this data, and generalizing the findings to the intended population (Bougie & Sekeran, 2020). The study employed a cross-sectional survey research methodology since it enables one to record a particular instant in time and enables the researcher to gather information from a sizable number of participants and compare variations between groups (Bougie & Sekeran, 2020). In contrast, the correlational design of the study made it easier to calculate research question 3, which deals with the link between secondary schools' curriculum implementation and environmental conservation practices.

3.3 Study Population

The study's target audience included all the students in the five (05) secondary schools in the Lamogi Sub County, as well as all the District School Inspectors, the Lamogi Sub County Chief, the Sub County Chairperson, Parish Chiefs, Local Council 2, the heads of the schools, teachers, Local Council 1, and learners. The group of people to whom the study extrapolated its sample results was the target population (Bougie & Sekeran, 2020). District Inspectors of Schools were targeted because they are the watchdog and inspection agency for the government, whereas the head teachers oversee, monitor, and interpret the curriculum. On the other hand, the Sub-County Chief, Parish Chiefs, Local Council three, Local Council two, and Local Council one were very important stakeholders in curriculum implementation, and at the same time, they were the products of curriculum implementation. In contrast to that, the students were targeted because they are the essential and core participants in the course enactment practice, and the teachers were targeted because they are the curriculum implementers (Ministry of Education and Sports, 2009).

3.4 Sample Size and Sample Size Determination

In Lamogi Sub County, the research was carried out in five (05) secondary schools. Lamogi Sub County has a target population of 3107 respondents, with currently (01) District Inspector of Schools, (01) Sub County Chairperson [Local Council three], (01) Sub County Chief, (05) headteachers, (136) teachers, (06) parish chiefs, (10) Local Council one, (06) Local Council two, and (2941) learners. A total of 255 respondents from the study population participated, comprising: (01) District Inspector of Schools; (01) Lamogi Sub County Chief; (01) Sub County Chairperson; (04) Parish Chiefs; (05) Local Council Two; (05) Headteachers; (79) Teachers; (06) Local Council One; and (153) Learners. This decision was made with the presumption that

secondary school learners were the direct beneficiaries of the curriculum, while teachers, heads of schools, and other education managers are directly involved in implementing it through supervision, inspection, interpretation, and implementation (Ministry of Education & Sports, 2009). On the other hand, the Sub County Chairperson, Sub County Chief, Parish Chiefs, Local Council Two, and Local Council One were the products of curriculum implementation and were also vital stakeholder groups in curriculum implementation. Israel and Morgan & Krecjie sample size determination tables were used to determine the specified population size, while simple random sampling was used to determine the sample size of teachers and learners to participate in the study. While the Inspector of Schools, Sub County Chairperson, Sub County Chiefs, and Headteachers were purposefully sampled. On the other hand, parish chiefs, local Council Two, and local Council One were conveniently sampled.

Table 1 *Sampling Frame*

Category	Population	Sample	Sampling Techniques
District Inspector of Schools	01	01	Judgmental
Sub County Chairperson LC3	01	01	Judgmental
Sub County Chief	01	01	Judgmental
Parish Chiefs	06	04	Convenience
Headteachers	05	05	Judgmental
Teachers	136	79	Simple Random
Local Council 2	06	05	Convenience
Local Council 1	10	06	Convenience
Learners	2941	153	Simple Random
Total	3107	255	

3.5 Sampling Techniques

The study included all five secondary schools in Lamogi Sub-County. Using simple random, convenience, and judgmental sampling procedures, the sample size for the various respondent

categories was established concurrently. The District Inspector of Schools, Sub County Chairperson, Lamogi Sub County Chief, and headteachers were assessed using a judgment sampling method due to their vital roles in course enactment practices. When the researcher selects respondents with the expectation that they will have the necessary data for the study, this is known as judgmental sampling (Chawla & Sondhi, 2018). The study believed that when sampled critically, they might offer valuable, trustworthy information regarding the research topic (Chawla & Sondhi, 2018). In the interim, teachers and learners were chosen using simple random sampling. Meanwhile, Local Council 2, Parish Chiefs, and Local Council One were conveniently sampled. Every member of the target population has an equal probability of being chosen by simple random sampling (Chawla & Sondhi, 2018). Using the lottery system or random numbers, each person was separately chosen. Every person in the population was given a number using the lottery technique, and the study chose numbers that represent various people during the selection process (Chawla & Sondhi, 2018).

3.6 Data Sources

The study gathered primary data (field data) from the research setting using conventional or customized instruments. The district education managers, sub-county chiefs, local council 1 and local council 2, parish chiefs, headteachers, teachers, and students served as the study's informants, providing information about secondary schools' curriculum implementation and environmental conservation. Based on the information gathered from the respondents, the study was able to draw a clear conclusion about the research problem. Secondary data was gathered by looking up pertinent materials on the internet and in textbooks, which were then analyzed to elicit secondary data relevant to the research topic and study subjects. This complemented the information gathered from primary sources. It has improved the literature assessment of how

secondary schools in Amuru District execute their curricula and use environmental conservation. Also, secondary data was gleaned via a literature study and examination of the instructional materials.

3.7 Data Collection Methods

During the study, questionnaire surveys, and interview techniques were employed. Large-scale surveys with a lot of individuals participating are called questionnaire surveys (Cohen et al., 2018). The survey helped to gather information from a large number of respondents in a short amount of time, enabling subjects to comment on their understandings and sentiments and helping to maintain the respondents' confidentiality (Bougie & Sekeran, 2020). Face-to-face conversations between the investigator and the informant are called interviews. It is a flexible approach that helps the researcher do enough research into the issues being investigated (Cohen et al., 2018). So, the data from the discussions supplemented information gathered through other means. Also, it made it possible to comprehend information from those who possess crucial facts in detail (Cohen et al., 2018).

3.8 Data Collection Instruments

Information was gathered and clarified using the interview guide. It made it possible for the research to delve deeper into specific facts, such as people's ideas, attitudes, sentiments, beliefs, and behaviors that cannot be witnessed (Cohen et al., 2018). There was a framework for the interview guide. The district inspector of schools, Sub County chairperson, Sub County chief, headteachers, parish chiefs, and local councils 1 and 2 were subjected to predetermined questions from a structured interview guide (Chawla & Sondhi, 2018).

Also, questionnaires were employed since some of the data needed for certain of the variables, such as respondents' opinions, sentiments, insights, and viewpoints, cannot be collected voluntarily (Cohen et al., 2018). During the study, it protected respondents' privacy. Closed-ended questions were included in the surveys (Bougie & Sekeran, 2020). When answers are forced into predetermined categories, closed-ended questions are utilized (Chawla & Sondhi, 2018).

The questionnaire had four sections: Section A (demographic information), Section B (secondary schools' curriculum implementation of environmental conservation), Section C (environmental conservation practices), and Section D (influence of moderating variables). The questionnaire was scored as follows: Strongly Agree (5), Agree (4), Neither Disagree nor Agree (3), Disagree (2), and Strongly Disagree (1) The number of items that appeared within each section is: Section A (four items), Section B (seven items), Section C (six items), and Section D (three items).

The questionnaires were delivered to the teachers and the learners by the research assistants and collected that day to avoid the loss of the document. While the interview guides were self-administered.

3.9 Quality Assurance/Control

The data collection tool was pre-tested before the real data gathering when it was created. Pre-testing of the tool was done on a sample chosen to be comparable to the actual sample (Bougie & Sekeran, 2020).

To determine the instrument's reliability and validity, pre-testing was done. Validity is the degree to which a tool measures what it purports to measure (Bougie & Sekeran, 2020). Validity comes in four types: face validity, content validity, construct validity, and criteria validity (Bougie &

Sekeran, 2020). A content validity test was conducted in this study. Measures of how closely an instrument's content matches the content of the theoretical notion it is intended to assess are known as content validity tests (Bougie & Sekeran, 2020). The validity was then determined using the formula:

$$\text{CVI} = \frac{\text{number of items rated relevant by all judges}}{\text{Total number of items in the instrument}}$$

Where:

C = Content

V = validity

I = Index

$\frac{17}{20}$ = 0.85 =85 %

Source: Yusoff (2019).

The content validity index was found to be 0.85 (85%), which is highly acceptable, as stated by Cohen *et al. (2018), who stated* that research instruments are said to be valid if the content validity index is 0.70 or 70% and above.

The study was also a pre-test to establish the reliability of the instrument. Reliability refers to the extent to which a data collection instrument consistently measures a given concept (Bougie & Sekeran, 2020). The types of reliability include test-retest reliability, equivalent forms of reliability, split-half reliability, and inter-rater reliability (Bougie & Sekeran, 2020). The study determined the split-half reliability because it helps establish the internal consistency of the instrument (Bougie & Sekeran, 2020). A tool is said to have internal consistency when the scores

of the other set of questions are highly related to the scores of the other set of questions within the same tool (Bougie & Sekeran, 2020). To determine the internal consistency reliability, the study conducted Cronbach's alpha inter-consistency test using SPSS version 25.0. This method was used since it is widely considered a method of measuring reliability (Amin, 2005).

Table 2 *Reliability test*

Cronbach's Alpha	Number of Items
.905	20

The Cronbach's Alpha was found to be 0.905 which indicates that the research instruments were reliable as Bougie & Sekeran, (2020) stated that instruments are valid when the Cronbach's Alpha value appears to be from 0.70 and above.

3.10 Data Analysis

The study used both qualitative and quantitative data analysis methods, utilizing descriptive and inferential statistical techniques to organize, summarize, and interpret numerical data, enabling a more comprehensive understanding.

To analyze data for objectives 1 and 2, thematic data underwent transcription, and content analysis was implemented. Mathematical values and simple statistics, including frequencies, percentages, means, and standard deviation, were employed for a statistical analysis of the collected data, facilitating a comprehensive grasp of the themes and content linked to these objectives. For research objective 3, the analysis took place at the bivariate level, utilizing Pearson product-moment correlation and regression analysis to scrutinize the relationship between two variables.

3.11 Administrative Procedure

When the research proposal was approved and an introductory letter was issued by the Faculty Dean, Faculty of Education & Humanities, permission was sought from the District Education Officer [DEO] and the head teachers of the schools, allowing the researcher to collect data from their schools. Thereafter, two research assistants were recruited and trained. School pre-visits were carried out to establish relationships and appointments with the school management. Questionnaires were then administered to the DEO and head teachers by themselves, while research assistants administered questionnaires to the teachers and students in their respective schools at their convenience. The questionnaires were collected that same day to avoid loss and damage.

3.12 Ethical Considerations

Research ethics are the code of conduct to which researchers adhere as they carry out research (Bougie & Sekeran, 2020). The ethical issues adhered to in this study include:

Confidentiality and privacy: respondents who accepted to be part of the study were protected, and the information they gave was treated as confidential. The study bears the responsibility of preventing the use of such information to harm the respondent (Bougie & Sekeran, 2020).

Anonymity: The data collected was kept anonymous by excluding the actual names of the respondents and other forms of identification. This was done by using code and symbols, among others, to represent individuals and institutions (Bougie & Sekeran, 2020).

Voluntary and informed consent was also adhered to. It involves the respondents' willingness to participate in the study. This was done by disclosing the real purpose of the study so that the

respondents would give voluntary consent. These ethical considerations were adhered to provoke the active participation of the participants (Bougie & Sekeran, 2020).

3.13.0 Assumptions and Limitations

3.13.1 Assumption

Through the literature review, there was evidence that the independent variable has a link with the dependent variable (secondary school curriculum implementation and environmental conservation practices).

3.13.2 Limitations and Delimitations

Inadequate study resources, especially functional computers with internet connectivity, are needed to allow review of other important related literature.

3.13.3 Control of Extraneous Variables

The extraneous variables were controlled by randomization to get a representative sample in each school without bias. Randomization refers to the process of subjecting all study populations to random selection, and this is suggested by scholars to control the extraneous influence of variables on the assumed linkage between the independent and dependent variables (Amin, 2006).

Chapter Four

Data Presentation, Analysis, and Interpretation

4.0 Introduction

The presentation of data, analysis, and interpretation of results based on the questionnaires and interviews were covered in this chapter following the study objectives, which centered on: 1) assessing the level of secondary schools' curriculum implementation of environmental conservation practices in Lamogi sub-county; 2) examining the practices of environmental conservation in secondary schools in Lamogi sub-county; and 3) establishing the relationship between secondary schools' curriculum implementation and environmental conservation practices in Lamogi sub-county. This chapter also provided answers to the research questions, which were: 1) What is the level of implementation of secondary schools' curriculum on environmental conservation practices in Lamogi Sub County? 2) What are the practices of environmental conservation in secondary schools in Lamogi Sub County? 3) What is the relationship between secondary schools' curriculum implementation and environmental conservation practices in Lamogi Sub County? To keep the study up-to-date, the respondents' biodata were covered in the first stage of the analysis.

4.1 Response Rate

Table 3 *Distribution of Response Rate*

Category	Targeted sample	Actual Sample	Percentage
Schools	05	05	100%
DIS	01	01	100%
Headteachers	05	05	100%
Teachers	91	79	86.81%
LC3 Chairperson	01	01	100%
Sub County Chief	01	01	100%
Parish Chiefs	06	04	66.66%
Local Council two	06	05	83.3%
Local Council one	10	06	60%
Learners	160	153	95.6%
Total	281	255	89.237%

Source: Primary data 2023

Respondents included the District Inspector of Schools of Amuru District, the Chairperson of Local Council 3 of Lamogi Sub County, the Sub County Chief of Lamogi Sub County, the Parish Chiefs of Pagoro, Lwalakwar, Gira Gira, Coke, and Agwayugi, the Head Teachers, Teachers, and Learners of secondary schools of Lamogi Sub County, Local Councils 2 of Pagoro, Lwalakwar, Coke, Gira Gira, and Agwayugi parishes, and Local Council 1 of Pukure, Opok, Lamola, Ayila, Kal, and Pakiri villages. The response rates were 100% for the District Inspector of Schools, Amuru District, 100% for the sub-county chairperson LC3, 100% for the sub-county chief of Lamogi sub-county, 66.66% for parish chiefs, 100% for the head teachers, 86.81% for the teachers, 83.3% for the local council two chairpersons of Lamogi sub-county, 60% for the local council's one, and 95.6% for the learners. There was a high degree of collaboration and engagement from the respondents (255, or 89.23%), which reflects the general opinion of the public.

4.2. Demographic Information

Respondents were asked about their demographic information, consisting of gender, age group, duration of service, level of education, and the responses presented in the table below.

Table 4 *Demographic Characteristics of the Respondents (N=232)*

Variables	Frequency		Percentage (%)	
	Teachers	Learners	Teachers	Learners
Gender				
Male	53	87	67	56.9
Female	26	66	33	43.1
Age Groups of the Respondents				
15-20	00	104	00	67.97
21-25	44	49	55.7	32.03
26-30	19	00	24	00
31-35	03	00	3.8	00
36 & above	13	00	16.5	00
Level of Education				
PLE	00	139	00	90.85
UCE	00	14	00	9.15
UACE	09	00	11.39	00
Diploma	18	00	22.79	00
Bachelor	52	00	65.82	00
Number of Years in the Institution				
Less than 1 year	13	45	16.5	29.4
Between 1-2 years	22	56	27.8	36.6
More than 3 years	44	52	55.7	34

Source: Primary Data, 2023

The distribution of respondents by gender Table 4 showed that of the teachers who participated in the study, 53 (67%) were male and 26 (33%) were female. On the other hand, 87 (56.9%) of

the learners were male, with 66 (43.1%) being female. This showed that male were the dominant gender during the data collection.

Respondents' ages, as shown in Table 8, range between 15 and 20 years, with 104 (67.97%) of the learners under the age of 20, and 49 (32.03%) between the ages of 21 and 25. While 44 (55.7%) of the teachers were between the ages of 21 and 25, 19 (24%) were between the ages of 26 and 30, 3 (3.8%) were between the ages of 31 and 35, and 13 (16.5%) were over the age of 36. This suggests that the majority of respondents were young people.

According to the academic qualification, those with the highest academic qualification were teachers, as shown in Table 6, where of the 79 teachers, only 9 (11.39%) had a UACE, 18 (22.79%) had a diploma, and 52 (65.82%) had a bachelor's degree. On the other hand, most of the students, 139 (90.85%), possess PLE, and the remaining 14 (9.15%) possess UCE. This revealed that every one of the teachers in the Lamogi sub-county, Amuru District, possesses the necessary academic qualifications and background knowledge to instruct secondary school learners. At the same time, most of the respondents went through secondary education and must have received instruction on environmental conservation practices.

The respondents in Table 10 who lasted longer in the institutions were those who have stayed for more than 3 years, 44 (55.7%), followed by those who have stayed for between 1-2 years, 22 (27.8%), and 13 (16.5%) stayed for less than a year. Most of the students were those who have stayed in the school between 1-2 years, 56 (36.6%), more than 3 years, 52 (34%), and less than 1 year, 45 (29.4%). This therefore means that the majority of the respondents in the Lamogi sub-county, Amuru District, had been in their institution for more than three years.

4.3: Descriptive Statistics

4.3.1 Descriptive Statistics for Secondary School Curriculum Implementation of Environmental Conservation Practices.

This section investigated the level of secondary school curriculum implementation of environmental conservation practices in Lamogi Sub County. This was guided by the research question, "What is the level of implementation of secondary schools' curriculum on environmental conservation practices in Lamogi Sub County?" The respondents were asked to express their views on questionnaire items based on a Likert scale ranging from 1 = strongly disagree (SD) to 5 = strongly agree (SA). The summary of the descriptive findings was presented in Tables 8 and 9.

Table 5

Mean and Standard Deviation of Teachers' Responses on the Secondary Schools' Curriculum Implementation of Environmental Conservation Practices

Questionnaire Items	Mean	S.D	Level of Curriculum Implementation
The scheme of work is used for every lesson on environmental conservation practices conducted in the school	3.84	1.159	High
The lesson plan is used for every lesson on environmental conservation practices conducted in the school	3.43	1.474	Moderate
Learners are assessed on every topic covered on environmental conservation practices in the school.	3.29	1.273	Moderate
Teachers use learning materials during the teaching and learning process of environmental conservation practices in the school.	2.97	1.090	Moderate
Teaching and learning are practical in school on environmental conservation practices	2.99	1.091	Moderate
There are specific topics on environmental conservation in some subjects in the school.	3.37	1.411	Moderate
These specific topics relating to environmental conservation are taught in some subjects in the school.	2.77	1.170	Moderate

Key: 0-1.8=Very Low, 1.81-2.60=Low, 2.61-3.60=Moderate, 3.61-4.00=High, 4.01-5.00=Very High

The table above shows that one of the indicators of the level of curriculum implementation was high among the teachers, for instance, scheme of work (M = 3.84, S.D. = 1.159), implying that most teachers scheme environmental conservation concepts in their school since it is supervised by the Headteacher, who is the academic head of the school. The table also shows that most of

the indicators were moderate, namely: lesson plan (M = 3.43, SD = 1.474); content (M = 3.37, S.D. = 1.411); assessment (M = 3.29, S.D. = 1.474); practical teaching (M = 2.99, S.D. = 1.091); learning aids (M = 2.97, S.D. = 1.090); and teaching of environmental topics (M = 2.77, S.D. = 1.170). This implies that the level of secondary schools' curriculum implementation of environmental conservation practices is moderate in Lamogi Sub County. This was due to a play of factors, notably low motivation of teachers on assessment, absenteeism by teachers, inadequate text books, inadequate preparation by teachers, inadequate content in the curriculum, limited use of learning materials, and inadequate spaces for conducting practical environmental conservation practices.

Table 6 *Mean and Standard Deviation of Learners' Responses on the Secondary Schools' Curriculum Implementation of Environmental Conservation Practices*

Questionnaire Items	Mean	S.D	Level Of Curriculum Implementation
Learners are assessed on every topic covered on environmental conservation practices in the school.	3.28	1.269	Moderate
Teachers use learning materials during the teaching and learning process of environmental conservation practices in the school.	2.78	1.258	Moderate
Teaching and learning are practical in school on environmental conservation practices	2.62	1.083	Moderate
There are specific topics on environmental conservation in some subjects in the school.	3.54	1.570	Moderate
These specific topics relating to environmental conservation are taught in some subjects in the school.	3.37	1.530	Moderate

Key: 0-1.8=Very Low, 1.81-2.60=Low, 2.61-3.60=Moderate, 3.61-4.00=High, 4.01-5.00=Very High

The table above shows that all of the indicators of the level of curriculum implementation were moderate among the learners, for instance, content (M = 3.54, S.D. = 1.570), teaching of environmental topics (M = 3.37, 1.530), assessment (M = 3.28, S.D. = 1.269), learning aids (M = 2.78, S.D. = 1.258), and practical teaching (M = 2.62, S.D. = 1.083). This implies that the level of secondary schools' curriculum implementation of environmental conservation practices is moderate among the learners in Lamogi Sub County. This was due to a number of factors, for instance, inadequate assessment, inadequate text books, inadequate practical teaching, inadequate content in the curriculum, limited use of learning materials, and inadequate spaces for conducting practical environmental conservation practices.

Table 7 *Independent Sample t test on Secondary Schools' Curriculum Implementation of Environmental Conservation Practices; Students (N=153) Teachers (N=79)*

	Category	Mean	Std. Dev.	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Upper	Lower
Curriculum Implementation	Student	3.39	.809		.048	-.442	-.002
	Teacher	3.61	.793	-1.991	.047	-.441	-.003
Learners are assessed on environmental conservation practice topics covered in our school.	Student	3.28	1.269	-2.003	.000	-1.075	-.414
	Teacher	4.03	1.086	-4.439	.000	-1.059	-.429
Teachers use learning materials during their teaching of environmental conservation practices in their school	Student	3.01	1.458	-4.665	.036	-.795	-.028
	Teacher	3.42	1.297	-2.112	.030	-.781	-.041
There are specific topics on environmental conservation in some subjects in our school.	Student	3.93	1.083	-2.192	.002	.188	.807
	Teacher	3.43	1.227	3.169	.003	.175	.821
There are specific topics relating to environmental conservation practices taught in some subjects in our school.	Student	3.34	1.470	3.045	.178	-.127	.680
	Teacher	3.06	1.497	1.350	.182	-.130	.684
In our school, teaching and learning on environmental conservation practices are practical	Student	3.37	1.530	1.342	.000	-1.124	-.359
	Teacher	4.11	1.109	-3.818	.000	-1.088	-.395

The table above shows the output of the independent sample t test, which shows that there was a significant difference in the level of curriculum according to teachers and students on the following indicators: Assessment, environmental practices, and environmental conservation were significant ($P<0.01$) for both categories. The significant values show that learners and teachers differed in their responses about the level of curriculum implementation, with the students reporting that the level of curriculum implementation was moderate while the teachers reported that it was the scheme of work ($P<0.001$). The study therefore concluded that the level of curriculum implementation was moderate in secondary schools in Amuru District, much as environmental conservation practices exist in the secondary school curriculum and these topics are being taught to the learners. This is noted in the inadequate secondary school curriculum implementation on environmental conservation practices, especially in the use of learning materials and practical teaching, which are essential and core to effective curriculum implementation. This was in support of the findings of the interview administered:

Table 8 *Distribution of Head Teachers' Responses on Secondary School Curriculum Implementation of Contents on Environmental Conservation practices*

Interview items	Agree	Disagree
Teachers use scheme of work and lesson plans prepared on environmental conservation practices for their lesson	3 (60%)	2 (40%)
Teachers assess learners on all concepts of environmental conservation practices taught	4 (80%)	1 (20%)
There are topics on environmental conservation practices in the curriculum	5 (100%)	0
Teachers teach those topics on environmental conservation practices in schools	5 (100%)	0
Teachers use learning materials prepared on environmental conservation practices while teaching	2 (40%)	3 (60%)
Teachers use practical methods to teach environmental conservation practices during their teaching	1 (20%)	4 (80%)

Source: Primary data 2023

Most of the head teachers 3 (60%) agreed that teachers use the scheme of works and lesson plans prepared, while 2 (40%) do not use the scheme of works and lesson plans prepared on environmental conservation practices. The majority of the head teachers also agreed 4 (80%) that teachers assess learners on all the concepts taught, while 1 (20%) disagreed that teachers do not assess the learners. On whether there are topics of environmental conservation in the secondary school curriculum, all five head teachers (100%) agreed that they exist. While all five head teachers (100%) also agreed that environmental topics in the curriculum are being delivered to the learners. However, as far as the uses of learning aids are concerned, only 2 (40%) of the head

teachers agreed that teachers use learning material for their lessons, while 3 (60%) disagreed that most teachers do not use the aids or vary prepared on environmental conservation practices. At the same time, only 1 (20%) agreed that teachers use practical teaching methodology, while 4 (80%) disagreed prepared on environmental conservation practices. This is further confirmed by one of the headteachers who stated that;

"Teachers develop lesson plans and schemes of work for each topic and class, ensuring that they are curriculum-aligned. These schemes of work and lesson plans are reviewed and approved by the school administration before being used in the classroom to ensure that teachers' teaching practices are successfully executed. Environmental conservation is covered in a few areas, including Agriculture, Geography, and Biology. Ecology is covered in Biology; soil is covered in Agriculture, while vegetation, weather, and climate are covered in Geography. These subjects are taught to students at various stages of secondary education. However, the techniques used to teach these concepts, such as chalk and talk and lectures, are theoretical and teacher-centered rather than learner-centered".

Table 9 *Distribution of Local Council Members' Response to Secondary School Curriculum Implementation of Environmental Conservation*

Interview items	Agree	Disagree
Teachers use scheme of work and lesson plans prepared on environmental conservation practices for their lesson	9 (75%)	3 (25%)
Teachers assess learners on all concepts of environmental conservation practices taught	8 (66.7%)	4 (33.3%)
There are topics on environmental conservation practices in the curriculum	3 (25%)	9 (75%)
Teachers teach those topics on environmental conservation practices in schools	4 (33.3%)	8 (66.7%)
Teachers use learning materials prepared on environmental conservation practices while teaching	12 (100%)	0
Teachers use practical methods to teach environmental conservation practices during their teaching	12 (100%)	0

Source: Primary data 2023

The majority of the local council members 9 (75%) agreed that teachers use the scheme of works and lesson plans prepared, while 3 (25%) do not use the scheme of works and lesson plans prepared. Most 8 (66.7%) of the local councils agreed that teachers assess learners on all the concepts taught, while 4 (33.3%) disagreed. Only 3 (25%) agreed that teachers use practical teaching methodology, while 9 (75%) disagreed that most of the teaching is theoretical. However, only 4 (33.3%) of the local councils agreed that teachers use learning material for their lessons, while 8 (66.7%) disagreed that most teachers use the aids or vary. On whether there are topics of environmental conservation in the secondary school curriculum, all twelve local

councils (100%) agreed that they exist. All twelve local councils (100%) agreed that environmental topics in the curriculum are being delivered to the learners. In addition, a local council member mentioned that;

"Some schools do not have adequate demonstration areas where practicals are held though some of the principles should be applied realistically. When schools are visited, children are observed engaging in activities such as tree planting along the school boundary. Environmental protections are in Geography and Agricultural classes in school where children are educated about environmental issues in school beginning in primary school and continuing through secondary school. However, some teachers do not prepare adequately, and as such, they do not employ practical teaching methods and use limited learning materials.

Table 10 *Distribution of Sub-County and Parish Chiefs' Responses on Secondary School Curriculum Implementation of Contents on Environmental Conservation*

Interview items	Agree	Disagree
Teachers use scheme of work and lesson plans prepared on environmental conservation practices for their lesson	4 (80%)	1 (20%)
Teachers assess learners on all concepts of environmental conservation practices taught	4 (80%)	1 (20%)
There are topics on environmental conservation practices in the curriculum	2 (40%)	3 (60%)
Teachers teach those topics on environmental conservation practices in schools	1 (20%)	4 (80%)
Teachers use learning materials prepared on environmental conservation practices while teaching	5 (100%)	0
Teachers use practical methods to teach environmental conservation practices during their teaching	5 (100%)	0

Source: Primary data 2023

Most of the 4 (80%) parish and sub-county chiefs agreed that teachers use the scheme of works and lesson plans prepared, while 1 (20%) do not use the scheme of works and lesson plans prepared. The majority of the 4 (80%) teachers assess learners on all the concepts taught, while 1 (20%) does not assess the learners. 3 (60%) of the parish and sub-county chiefs agreed that teachers use learning material for their lessons, while 2 (40%) disagreed that most teachers do not use the aids or vary. However, only 1 (20%) of the parish and sub-county chiefs agreed that teachers use practical teaching methodology, while almost all 4 (80%) disagreed. On whether there are topics of environmental conservation in the secondary school curriculum, all five parish

and sub-county chiefs (100%) agreed that they exist. All five parishes and sub-county chiefs (100%) agreed that environmental topics in the curriculum are being delivered to the learners. In line with that, the sub-county chief stated:

"Teaching and learning methods that encourage interaction between students, students, and teachers, and students and the learning environment are not being employed by the teachers. We must find ways to encourage learners' involvement and active participation during the teaching and learning process so that learners excel at completing several activities in class throughout teaching."

According to the District Inspector of Schools, *"There are topics in the curriculum about environmental conservation in certain subjects such as Geography, Agriculture, and Biology, among others." Teaching and learning activities are observed during school inspections, including coverage and subjects taught in schools, as well as preparation by teachers before entering the classroom to carry out a lesson. Teachers' assessment records are observed to see if students are being assessed on concepts given by the teachers. Teachers are encouraged to offer remedial lessons when it is recognized that there was minimal learning."*

This confirms that there is inadequate curriculum implementation of environmental conservation practices especially in the use of learning materials and practical methods during teaching and learning in secondary schools in Lamogi Sub County, Amuru District.

4.3.2 Descriptive Statistics on the Practices of Environmental Conservation

This section analyzed the environmental conservation practices in secondary schools in Lamogi Sub County. This was guided by the research question, "What are the practices for

environmental conservation in secondary schools in Lamogi Sub County?" The findings were as stated below.

Table 11 *Mean and standard deviation of Learners' Responses on the Practice of Environmental Conservation*

Questionnaire Items	Mean	S.D
Learners are aware of the practices of environmental conservation in the schools.	3.61	1.160
People are aware of the indigenous practices to enhance environmental conservation in the community	3.59	1.355
Learners have developed practical environmental conservation skills in the school.	2.73	1.654
Learners have positive attitudes toward environmental conservation.	2.58	1.407
The community members need more information on environmental conservation	3.01	1.458
Learners in their schools take environmental conservation information and practices to the respective communities.	3.85	1.281

Key: 0-1.8=Very Low, 1.81-2.60=Low, 2.61-3.60=Moderate, 3.61-4.00=High, 4.01-5.00=Very High

The table above shows that two of the indicators of the level of environmental conservation practices were high among the learners, for instance, awareness (M = 3.61, S.D. = 1.160) and learners taking information to their community (M = 3.85, S.D. = 1.281). This implies that the learners are receiving the concepts of environmental conservation practices in the secondary schools, and they are taking such information to their communities. The table also shows that there was a moderate level of environmental conservation practices, for instance, indigenous knowledge (M = 3.59, S.D. = 1.355), the need for more information (M = 3.01, S.D. = 1.458), and practical environmental conservation skills (M = 2.73, S.D. = 1.654). Implying that there is a

need for more knowledge to increase awareness and environmental conservation skills. While the table also shows that one of the indicators of environmental conservation practice is low, that is attitude (M = 2.58, S.D. = 1.407), this implies that people are not conserving the environment due to inadequate awareness and conservation skills toward the environment. Therefore, the level of secondary schools' curriculum implementation of environmental conservation practices is moderate among the learners in Lamogi Sub County. This was due to a number of factors, for instance, inadequate skills, inadequate awareness, and negative attitudes toward environmental conservation.

Table 12 *Mean and standard deviation of Teachers' Responses on the Practice of Environmental Conservation*

Questionnaire Items	Mean	S.D
Learners are aware of the practices of environmental conservation.	3.62	1.180
People in the community are aware of the indigenous practices to enhance environmental conservation	3.78	1.411
Learners have developed practical environmental conservation skills.	2.45	1.549
Learners have positive attitudes toward environmental conservation.	3.75	1.607
The community members need more information on environmental conservation	3.09	1.512
Learners in the schools take environmental conservation information and practices to their respective communities.	3.75	1.267

Key: 0-1.8=Very Low, 1.81-2.60=Low, 2.61-3.60=Moderate, 3.61-4.00=High, 4.01-5.00=Very High

The table above shows that most of the indicators of the level of environmental conservation practices were high among the teachers, for instance, indigenous knowledge (M = 3.78, S.D. = 1.1411), learners taking information to their community (M = 3.75, S.D. = 1.267), positive

attitude (M = 3.75, S.D. = 1.607), and awareness (M = 3.62, S.D. = 1.180). This implies that the learners are receiving the concepts of environmental conservation practices in the secondary schools, and they are taking such information to their communities, which has improved their awareness. The table also shows that there was a moderate level of need for information on environmental conservation practices (M = 3.09, S = 1.512). This revealed that there is inadequate knowledge on environmental conservation in Lamogi Sub County. The table also showed that there were low environmental conservation skills (M = 2.45, S = 1.549). Implying that people have not acquired the intended environmental conservation skills. Therefore, the level of environmental conservation practices is moderate among the teachers in Lamogi Sub County. This was due to a number of factors, for instance, inadequate skills, inadequate awareness, and negative attitudes toward environmental conservation.

Table 13 *Independent Sample t test on Environmental Conservation Practices; Students (N=153) Teachers (N=79)*

	Category	Mean	Std. Dev.	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
Environmental Conservation	Student	3.33	.821	.197		-.199	.243
	Teacher	3.31	.788	.200	.844	-.197	.241
In our school, learners have adequate awareness of the practices to environmental conservation	Student	3.61	1.160	1.136	.842	-.140	.520
	Teacher	3.42	1.297	1.096	.257	-.153	.533
In our community, people have adequate awareness of the indigenous practices to enhance environmental conservation	Student	3.59	1.355	3.659	.275	.333	1.110
	Teacher	2.87	1.547	3.508	.000	.315	1.128
In our school, learners have developed practical environmental conservation skills.	Student	2.73	1.654	-4.580	.001	-1.343	-.535
	Teacher	3.67	1.059	-5.242	.000	-1.292	-.586
The community members needs more information on environmental conservation	Student	3.20	1.607	-1.527	.000	-.725	.092
	Teacher	3.52	1.249	-1.653	.128	-.694	.061
Learners in our school take environmental conservation information and practices to their respective communities.	Student	3.01	1.458	-.274	.100	-.465	.351
	Teacher	3.06	1.564	-.268	.784	-.475	.362
Our school always carries out routine environmental conservation awareness education for the community.	Student	3.85	1.281	2.806	.789	.159	.908
	Teacher	3.32	1.532	2.651	.005	.136	.931

The table above shows the output of the independent sample t test, which shows that there was a significant difference in the level of environmental conservation practices according to teachers

and students on the following indicators: practical environmental conservation skills, need for more Environmental conservation information and environmental conservation were significant ($P<0.01$) for both categories. The significant values show that learners and teachers are similar in their responses about environmental conservation practices ($P > 0.001$). The study therefore concluded that the level of environmental conservation practices was moderate in secondary schools in Amuru District.

According to the teachers found in Table 18 above, the community of Lamogi sub-county in Amuru district has adequate awareness but mainly the indigenous practices of environmental conservation such as rotational bush fallowing, and the students, on the other hand, have little necessary skills for environmental protection. This is backed by evidence gathered from the field via qualitative interviews, in which respondents claimed that there are inadequate environmental conservation practices in the region, as shown below:

Table 14 *Frequencies (%) of the Distribution of Head Teachers' Responses on the Practices of Environmental Conservation*

Interview items	Agree	Disagree
People are aware of the indigenous practices to enhance environmental conservation	3 (60%)	2 (40%)
Learners have developed practical environmental conservation skills.	1 (20%)	4 (80%)
People have positive attitudes toward environmental conservation.	1 (20%)	4 (80%)
The community needs more information on environmental conservation	3 (60%)	2 (40%)
Learners take environmental conservation information and practices to their respective communities.	1 (20%)	4 (80%)

According to the qualitative interview, the majority 3 (60%) of the head teachers agreed that people are aware of the indigenous practices to enhance environmental conservation, while 2 (40%) disagreed. Of most of the headteachers 4 (80%) disagreed that learners have developed practical environmental conservation skills, while 1 (20%) disagreed. On the other hand, only 1 (20%) agreed that people have positive attitudes toward environmental conservation, and 4 (80%) disagreed. At the same time, the majority 3 (60%) of the head teachers agreed that people need more information on environmental conservation, and 2 (40%) disagreed. However, only 1 (20%) of the head teachers agreed that learners take environmental conservation information and practices to their communities, while 4 (80%) disagreed.

This is evidenced by a Headteacher who stated that *"some of the learners do not take the information gained to their communities; our negative actions toward the environment have not*

altered despite the awareness. Parents do not advocate environmental sustainability practices, and few community members urge children to engage in these activities at home. There is therefore more need for awareness, especially on mindset change."

Table 15 *Frequencies (%) of the Distribution of local Councils' Responses to the Practices of Environmental Conservation*

Interview items	Agree	Disagree
People are aware of the indigenous practices to enhance environmental conservation	7 (58.3%)	5 (41.7%)
Learners have developed practical environmental conservation skills.	4 (33.3%	8 (66.7%)
People have positive attitudes toward environmental conservation.	1 (8.3%)	11 (91.7%)
The community needs more information on environmental conservation	9 (75%)	3 (25%)
Learners take environmental conservation information and practices to their respective communities.	5 (41.7%)	7 (58.3%)

Source: Primary data 2023

According to the qualitative interview, most of 7 (58.3%) of the local council members agreed that people are aware of indigenous practices to enhance environmental conservation, while 5 (41.7%) disagreed. The majority 8 (66.7%) disagreed that learners have developed practical environmental conservation skills, while 4 (33.3%) agreed. On the other hand, only 1 (8.3%) agreed that people in the community have positive attitudes toward environmental conservation, and 11 (91.7%) disagreed. The majority 9 (75%) also agreed that people need more information on environmental conservation, and 3 (25%) disagreed. The majority 5 (41.7%) agreed that

learners should take environmental conservation information and practices to their communities, while 7 (58.3%) disagreed.

In addition, one of the local council members said; *"Despite the strict instruction and awareness campaigns that have been given to them, people are nevertheless able to ruin the environment in pursuit of a specific energy source. This means more awareness needs to be created to educate people on the values provided by the environment to man".*

Table 16 *Frequencies (%) of the Distribution of parish and sub-county chiefs' Responses on the practices of Environmental Conservation*

Interview items	Agree	Disagree
People are aware of the indigenous practices to enhance environmental conservation	3 (60%)	2 (40%)
Learners have developed practical environmental conservation skills.	1 (20%)	4 (80%)
People have positive attitudes toward environmental conservation.	1 (20%)	4 (80%)
The community needs more information on environmental conservation	4 (80%)	1 (20%)
Learners take environmental conservation information and practices to their respective communities.	2 (40%)	3 (60%)

Source: Primary data 2023

According to the qualitative interview, most 3 (60%) of the parish and sub-county chiefs agreed that people are aware of practices to enhance environmental conservation, while 2 (40%) disagreed. Only 1 (20%) agreed that learners have developed practical environmental

conservation skills, while the majority 4 (80%) disagreed. On the other hand, only 1 (20%) agreed that people have positive attitudes toward environmental conservation, and 4 (80%) disagreed. The majority 4 (80%) agreed that people need more information on environmental conservation, and 1 (20%) disagreed. At the same time, 2 (40%) of the parish and sub-county chiefs agreed that learners take environmental conservation information and practices to their communities, while the majority 3 (60%) disagreed.

This is noted as a parish chief stated; *"The majority of students do not bring the information home to their parents. "This would encourage the locals to become more conscious of their surroundings. Few community members engage in environmental protection for the benefit of our offspring. The students from the schools are acting in opposition to what has been emphasized in our schools to foster communal understanding, such as removing trees and burning shrubs".*

According to the District Inspector of Schools, *"Our attitudes and opinions do not reflect this awareness. Schools, organizations, and government officials all spearhead awareness campaigns, but our main goal is to devastate the environment by destroying areas suitable for farming, habitation, and the production of wood fuel. Community groups educate the populace about these ideals, but because they are not upheld, there is a substantial amount of vegetation cleared to make way for power plants."*

This shows that even though environmental protection is taught in both formal and informal curricula, inhabitants of Lamogi Sub County in Amuru District continue to have negative attitudes and perspectives.

4.4 Inferential Statistics

4.4.1 Correlation Analysis between Environmental Conservation and Curriculum Implementation

Research Question Three: What is the relationship between secondary schools' curriculum implementation and environmental conservation in Lamogi Sub County?

Research question three sought to establish a relationship between environmental conservation and curriculum implementation in Lamogi Sub County, Amuru District. The researcher asked the District Inspector of Schools, the Chairperson of Local Council 3 in Sub County, the Sub County Chief, the Parish Chiefs, the Head Teachers, the Teachers, Local Councils 2 and 1, and the Learners of Lamogi Sub County in Amuru District are asked to give their opinion on how they think environmental conservation is influenced by curriculum implementation.

Inferential statistics on environmental conservation and curriculum implementation are presented in the table below.

Table 17 *Correlation between Curriculum Implementation and Environmental Conservation*

		Curriculum Implementation	Environmental Conservation
Curriculum Implementation	Pearson Correlation	1	.687**
	Sig. (2-tailed)		.000
	N	232	232
Environmental Conservation	Pearson Correlation	.687**	1
	Sig. (2-tailed)	.000	
	N	232	232

**. Correlation is significant at the 0.01 level (2-tailed).

The association between curriculum implementation and environmental conservation is positive and strong, as shown in Table 23 (r = 0.687) at a 5% significant level. This implies that the implementation of secondary school curricula is necessary for environmental conservation. Environmental conservation increases by the same percentage when curriculum implementation rises by 69% (rounded to 0.687). This further suggests that students will be able to apply the knowledge acquired, leading to environmental conservation, when schools properly interpret the curriculum, implement practical problem-solving teaching methods, and prepare effectively for lessons on environmental conservation.

4.4.2 Regression Analysis of Curriculum Implementation on Environmental Conservation

The regression analysis was done to assess the effect of curriculum implementation on environmental conservation and the results are presented below.

Table 18 *Regression Analysis of Curriculum Implementation on Environmental Conservation*

Variable Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.829[a]	.711	.709	.45612	.711	282.320	2	229	.000

a. Predictors: (Constant), Curriculum Implementation, Extraneous

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5086.737	2	2543.369	282.320	.000[b]
	Residual	2063.017	229	9.009		
	Total	7149.754	231			

a. Dependent Variable: Environmental Conservation

b. Predictors: (Constant), Curriculum Implementation, Extraneous Variables

According to the findings, secondary school curriculum implementation explains environmental issues to an extent of (0. 709), which is 71% as the adjusted R squared in Table 24. This means that the remaining percentage, which is 29 percent, is a result of other factors that this study didn't investigate. These could be the role of cost of energy, income level, and school environment. This implies that secondary school curriculum implementation is a statistically significant predictor of environmental conservation.

The coefficient of determination (R squared) is 0.711, which indicates that the predictor variables in the model (assessment of learners, use of schemes of work and lesson plans, adequate preparation by teachers) can account for around 71.1% of the variation in the dependent variable (environmental conservation).

The model's predictor variables (assessment of learners, use of schemes of work and lesson plans, adequate preparation by teachers) demonstrate a statistically significant prediction with the dependent variable (environmental conservation), which may be inferred. A sizable part (71.1% of the variation) of the variance in environmental conservation is explained by the model.

This is in line with one respondent's assertion that *"educating the people is one of the ways we may pass along values, traditions, culture, and customs. Education is meant to be a tool that can affect how individuals act and think. This is possible through the integration of both official and informal education. It will enable learners to apply what they have learned in class at home. As a result, to increase environmental conservation, there is a need to raise the quality of education provided to people by implementing secondary school curricula of environmental conservation effectively".*

Chapter Five

Summary, Discussions, Conclusions and Recommendations

5.0 Introduction

This chapter reviewed the study's findings, summarized them, drew implications, and offered suggestions for how to increase environmental conservation. These were based on the following themes: 1) secondary school curriculum implementation of environmental conservation; 2) the practices of environmental conservation in Lamogi Sub County; and 3) the relationship between secondary school curriculum implementation and environmental conservation in Lamogi Sub County.

5.1.0 The Summary of the Findings

5.1.1 Secondary Schools' Curriculum Implementation of Environmental Conservation Practices

Findings in Tables 10 and 11 revealed that the secondary school curriculum contains information on environmental conservation. This was found in essential subjects such as Agriculture, Biology, and Geography. Teachers extract topics such as tree planting, soil conservation, and land reclamation and prepare schemes of work, lesson plans, and assessments of learners. However, it was discovered that some secondary school teachers do not use relevant and adequate learning materials or practical methods of teaching such as field trips and demonstrations, which are core to the curriculum implementation of environmental conservation; hence, the study concludes that there was inadequate curriculum implementation of environmental conservation in secondary schools in Lamogi Sub County.

5.1.2 Environmental Conservation Practices

This study revealed that there was awareness of environmental conservation practices such as tree planting, soil conservation, and land reclamation. The study further revealed the need for more information on environmental conservation besides the one obtained from learners, as indicated in Tables 17 and 18. However, limited practical skills in environmental conservation and negative attitudes towards environmental conservation were discovered among learners. This was evidenced through illegal tree cutting, bush burning, and charcoal burning. This implies that there was inadequate environmental conservation.

5.1.3 Relationship between Secondary School Curriculum Implementation and Environmental Conservation Practices

The study revealed a substantial, positive correlation between environmental conservation and secondary school curriculum implementation, as shown in Table 27. The Pearson correlation value of 0.687, which was found at a 95% level of confidence, demonstrated that environmental conservation and the implementation of secondary school curricula are strongly positively correlated. The relationship between secondary school curriculum implementation and environmental conservation was also found to be statistically significant because the p-value (sign) was less than 0.05 (=0.000), indicating that environmental conservation will improve as secondary school curriculum implementation improves and will decline as it declines.

5.2 Discussions

This section discussed the research findings and research question by research question.

5.2.1 Secondary Schools' Curriculum Implementation of Environmental Conservation Practices

The study revealed that teachers prepared and used schemes of work for their lessons, as shown in Table 12. This was confirmed through qualitative interviews, where the majority of the headteachers stated that teachers prepare schemes of work for all their lessons. For example, one of the headteachers mentioned that the majority of teachers, as shown in Table 12, draw a scheme of work for each class, ensuring that they adhere to the curriculum to guarantee consistency in delivery, conceptual mastery, and methodical application of the subject taught in the school. The use of schemes of work facilitated the sequencing of information given to learners, and this therefore means that teachers prepared adequately for their lesson and delivered the intended content on environmental conservation to the learners. This finding agrees with Catling (2017), who found that teachers used schemes of work to determine the approaches and techniques to employ. When developing a scheme of work, teachers consider their knowledge and practical abilities, as well as their students' needs, interests, and ways of learning, as dynamic and evolving process. Within this curriculum-making perspective, instructors used their passion and enthusiasm to design stimulating and engaging schemes of work. This research conclusion is further consistent with Hoque et al. (2020), who found that a scheme of work was used by teachers as a tool to properly direct instruction at all times. In contrast to the above finding, Obiaje (2018) found that many teachers do not prepare and refer to the scheme of work document while teaching environmental conservation, although the scheme and record of work are required for effective curriculum implementation. Unlike the syllabus, the scheme of work is not rigid but rather flexible to encourage a smooth flow of content, and teachers must use it; hence, it must be used by teachers for a smooth flow of content.

The study also revealed that the majority of the teachers prepared and used lesson plans for every lesson conducted in their school, as shown in Table 13. This was confirmed by the responses obtained through the interview, where the majority of the headteachers responded that most of their teachers, as shown in Table 14, develop lesson plans for each topic in the classroom to ensure those teachers' teaching practices are successfully executed. Lesson planning enables a proper and logical flow of content during the teaching and learning process. This therefore indicates that teachers are giving proper content on environmental conservation to the learners. This was in agreement with Nagro et al. (2019), who discovered that teachers developed lesson plans to promote learning about environmental awareness for all students, including learners with disabilities, which helped save time and increase student involvement. Furthermore, the above findings confirmed the findings of Pentimonti et al. (2017), who observed that teachers used lesson plans, which offer teachers a written plan to follow while providing instructions. The adoption of a lesson plan assures an improvement in the quality of education and learning.

The study discovered that the majority of the teachers, as shown in Tables 12 and 13, assessed their learners on every topic learned. Findings from the qualitative interview also confirmed this, where the majority of the parish and sub-county chiefs, as shown in Table 15, stated that teachers assess learners on topics taught during a certain period. Children in the schools in our community are given examinations to assess the extent of learning; other examinations are also administered if inappropriate learning has been discovered. Assessment serves to find out whether learning has taken place during the teaching process. This means teachers were able to assess the learning and administer remedial instruction where learning has not taken place on environmental conservation. Along With this finding, Tosuncuoglu (2018) asserted that teachers assess their learners. Teachers classify and evaluate their learners, provide feedback, and arrange their

instruction using suitable evaluation. As assessment forms have evolved, educators and scientists have become more interested in the requirements of assessment procedures in the context of teaching and learning. This finding supported Westwood (2018), who found that adequate assessments are being administered, which has allowed teachers to determine and assess students' progress and instructional requirements.

The study found that few teachers used learning resources in their classes, as shown in Tables 13 and 12. During the interviews, administrators' viewpoints supported the aforementioned findings. One respondent, for example, noted that many teachers do not use learning aids during instruction, making items presented abstract and difficult for pupils to visualize. Learning aids help learners conceptualize the concepts taught and make learning real. As a result, it is always difficult to convey certain ideas to students in depth. This means that there is inadequate implementation of environmental conservation since teachers are inadequately using learning materials. This is in support of Ahmadi (2018), who discovered that learning materials are not often used by some teachers, yet the use of learning resources aids in the improvement of learning. Learning aids allow teachers to modify classroom activities, therefore improving the learning process. Learning resources are becoming increasingly important as a tool to assist teachers in facilitating learning for their students and improving their learning skills. Shim and Lee (2020) confirmed the findings, stating that learning materials are not usually used by teachers, yet the quality of interactions with students improves depending on the learning materials used.

The study also discovered that there were topics on environmental conservation taught in some subjects in secondary schools, as shown in Tables 12 and 13. This has also conformed to the responses from the interview, where the majority of the respondents stated that topics on

environmental conservation were in the curriculum of secondary school education. For example, the district inspector of schools in Amuru district stated that at various secondary education levels, environmental conservation-related information is covered in fundamental subjects like geography, agriculture, and biology in secondary schools in Lamogi Sub County, Amuru District. These topics are not subjects in and of themselves, but rather components of a larger curriculum. The program is designed to provide learners with a thorough grasp of environmental conservation. This therefore means that content on environmental conservation practices exists within the secondary school curriculum, and benefactors of secondary education are receiving it. This is in agreement with Dalu et al. (2020), who found out that environmental conservation has been included in the school curriculum in technology, natural science, geography, and life orientation topics. The finding is also in support of McPhail (2018), who stated that to improve students' learning results in environmental conservation, environmental conservation is taught in secondary schools through curricular integration. Curriculum integration was used as a complement to applying discipline knowledge in specific, well-planned circumstances. It is also in agreement with another study in the Philippines, which found that environmental education was integrated into a wide range of course curricula, including social studies, geography, civics, moral education, and life and physical sciences (Punzalan, 2020). This is further backed by quantitative research by Aminrad et al. (2013), whose main purpose was to study the links between environmental awareness, knowledge, and attitudes among secondary school students through teaching environmental conservation in schools and was discovered that environmental conservation was taught in all subject areas in Malaysia to enhance people's attitudes toward the environment as well as their level of knowledge and awareness.

The study revealed that the methods of teaching used to deliver environmental conservation content were theoretical (Table 12). This has been confirmed through the responses to the interview, where the majority of the interviewees, as shown in Table 16, stated that teachings in the schools were carried out theoretically. For example, community stakeholders like the sub-county chairperson (LC3), sub-county chief, and parish chiefs were quoted as saying that schools do not have demonstration areas where practicals are held. Some of the principles are intended to be applied realistically. However, most teachers do not employ interactive teaching methods but rather theoretical methods with limited learning materials. This means that learners do not get the hands-on skills required to accommodate children in society; hence, environmental conservation is being inadequately implemented in secondary schools in Lamogi Sub County. This is in support of Ajoke (2017), who found that practical methods are not being used by many teachers; the use of practical approaches is critical for effective curriculum and teaching. Teachers employ several methods to motivate learners to learn, but their usefulness is dependent on the materials' appropriateness, adequacy, and effective utilization. Practical methods of instruction significantly improve students' academic progress by providing sensory experiences that promote real behavioral change. Similarly, Taslidere (2021) stated that many teachers use theoretical teaching methods even when practical methods of teaching are essential for effective teaching and learning. They assist learners in comprehending abstract topics, stimulating imagination, and encouraging active participation. Matteucci et al. (2017) disagreed with the study, which discovered that teachers prepared a suitable learning environment along with practical methods to enable learning. Practical methods make it simpler for teachers to teach and for learners to learn. Practical teaching moderates teaching and learning through direct engagement with all of the learners' physical senses rather than choosing to learn.

5.2.2 Environmental Conservation Practices

The research question was: What are the practices of environmental conservation in Lamogi Sub County?

The study revealed that learners were aware of the practices of environmental conservation in the schools, as shown in Table 17. This has been confirmed by the responses from the qualitative interview, where the majority of the respondents, as shown in Table 19, agreed that there was a high level of awareness among the learners. For example, most of the parish chiefs stated that learners frequently displayed academic awareness at home through the concepts learned from school. Children who have gone to school are aware of the benefits of sustainable activities for environmental conservation; there is still a need to create more awareness, especially about mindset change. This therefore implies that there was adequate awareness of environmental conservation practices in the schools. This is supported by Mohiuddin et al. (2018), who discovered that environmental consciousness was growing and views toward "green consumption" were evolving. This was because environmental knowledge had a significant impact on environmental protection. It is also in line with Paço & Lavrador (2017), who stated that learners exhibit a high level of environmental knowledge and awareness. This is because environmental preservation is taught in many disciplines in schools.

The study also discovered, as shown in Table 18, that the majority of the community members had adequate awareness of indigenous practices to enhance environmental conservation. It is in agreement with the findings from the interview, where the majority of the respondents, as shown in Tables 21 and 20, agreed that people in their community had adequate knowledge of the indigenous practices of environmental sustainability. For example, the parish chiefs stated that people in the community were aware, through knowledge transmitted by the elders, of the values

of the environment. This indigenous awareness of the practices of the environment exists in society even without any curriculum intended to enlighten people on the values of keeping the environment safe, which has encouraged the locals to become more conscious of their surroundings. This showed that there was adequate awareness of environmental conservation practices among community members in the Lamogi Sub-County. Magni (2017) agrees with this finding in that his study discovered that education, poverty, access to justice, and climate change are just a few of the concerns affecting indigenous peoples' lives. Indigenous peoples, on the other hand, are not passive agents; the knowledge system they have established over time has enabled them to successfully adapt to ecological and developmental difficulties. Another related study by Yecla et al. (2023) found that the majority of respondents were aware of indigenous environmental conservation methods, which encouraged others to participate, especially those who advocate risky activities for the environment. However, according to Boesen et al. (2019), community members have a weak understanding of environmental sustainability. Environmental labeling and environmental awareness are critical because they allow people to make better decisions.

The study discovered, as shown in Table 18, that learners had acquired inadequate environmental conservation skills. This was related to the findings of the interview, where the respondents stated that learners have attained little of the skills for protecting the environment. For example, most of the headteachers stated that few learners can display the environmental conservation skills learned from schools through other co-curricular activities, which are necessities for environmental preservation. Some students are not able to demonstrate some of the activities on their own without the support of teachers. This therefore means that the majority of the learners had not acquired the intended skills for environmental conservation. This agrees with Ramadhan

et al.'s (2019) research aimed at determining environmental knowledge, attitudes toward the environment, and environmental preservation abilities, which discovered that students had acquired little skills in environmental conservation. It is also in support of a study by Punzalan (2020) carried out in the Philippines that found that secondary school students have little practical skills in environmental conservation and suggested creating practical environmental education programs to preserve and improve students' knowledge and skills in environmental issues and sustainability principles.

The study also revealed that there are a lot of negative attitudes and practices toward environmental conservation in schools and the community, as shown in Table 17. This is supported by the responses from the interviewees, who noted that there is massive environmental destruction in the community. For example, the parish chiefs, local councils 1 and 2, and the sub-county chief all noted that our negative actions toward the environment have not altered despite the useful information gained. Parents do not advocate for environmental sustainability practices, and few community members urge their children to engage in these activities at home. Children who have gone to school are aware of the benefits of sustainable activities; despite the strict instruction and awareness campaigns that have been given to them, people are nevertheless able to ruin the environment in pursuit of a specific energy source. This means more awareness needs to be created to educate people on the values provided by the environment to man. This implies an unsustainable use of the environment in Lamogi Sub County. This is further supported by Drosos et al. (2021), who discovered that there is a lot of environmental destruction due to global economic development that indirectly led to an increase in energy consumption, which causes a steady depletion of traditional energy supplies such as coal, oil, and gas. The quest for these energy sources again contributes to climate change by producing greenhouse gases, which harm

the ecosystem. In agreement, Karakul (2016) stated that natural resource extraction has objectified and gained control over nature in the current situation of the conflict between man and nature. The various human activities have devastating impacts on environmental quality. This includes mining, energy production, and settlement, all of which have impacts on the land, environment, and climate of the surrounding area. It is also in support of Tadesse & Teketay (2017), who stated that in many circumstances, human advantages are dependent on the environment. In most cases, human activities have altered or destroyed the environment.

The study also found that there is a need to create more awareness among people, as shown in Table 18. This is in line with the interview applied to data collection, where the majority consented that there is a great need to create more awareness among the local people who have not received formal secondary education, who are the main agents of environmental destruction. For example, local councils 1 and 2 stated that people had inadequate awareness of environmental conservation practices, especially the community. There is therefore a greater need for awareness, especially about mindset change. This implies that the existing knowledge of environmental conservation is inadequate, and so there is a need to create additional awareness among the local population. This is in agreement with a study by Tadesse and Teketay (2017), which discovered that increased public awareness is critical to addressing the issues of deforestation and unsustainable environmental usage, which are currently lacking in society. Socioeconomic factors that influence local people's views and attitudes about the environment may shift over time. Sousa-Silva et al. (2018) also agreed that there is a pressing need for public awareness because it is mostly human actions that are creating environmental devastation. The primary sources of deforestation are land conversions for agriculture and unlawful actions. The

problem of adapting to environmental conservation is today considered one of the most significant and toughest ever posed to the forest industry.

The study also discovered that, as shown in Table 17, most of the learners apply the information and skills learned about environmental conservation to the community. With the above, qualitative data confirmed that some of the learners are applying what they have learned in school at home. For example, the parish chiefs, sub-county chiefs, and local councils 1 and 2 stated that some learners are actively engaging with the community, which has helped some residents become more conscious of their surroundings and have a better awareness of environmental protection techniques. Children practice what they have learned at school in their respective communities, which contributes to the community's awareness of environmental conservation. However, some of the learners do not share information with their community. This is supported by Novianti and Garzia (2020), who discovered that some students do not carry home information about environmental conservation that they learn in school.

5.2.3 Relationship between Secondary School Curriculum Implementation and Environmental Conservation Practices

Pearson's linear correlation coefficient was utilized to assess the significance of the relationship between the implementation of the secondary school curriculum and environmental conservation in Lamogi Sub County, Amuru District. The results uncovered a noteworthy and positive correlation, with a Pearson correlation value of 0.711, indicating a strong positive correlation between environmental conservation and the implementation of secondary school curricula at a 95% confidence level. The statistical significance of this relationship was affirmed by a p-value (sign) less than 0.05 (=0.000), signifying that as secondary school curriculum implementation improves, environmental conservation is likely to enhance, and conversely, decline with a

decrease in curriculum implementation. This implies that individuals who have undergone secondary school education exhibit better performance in terms of environmental conservation. This correlation aligns with insights gathered from interviews, where headteachers emphasized the substantial contribution of quality secondary school curriculum implementation in environmental conservation practices. Notably, 54.5% of the interviewed headteachers concurred that effective curriculum implementation regarding environmental content significantly contributes to fostering positive attitudes toward environmental conservation. For instance, Head Teacher 3 underscored the importance of environmental conservation implementation in their school, highlighting its role in enhancing learners' knowledge and skills in environmental conservation practices. This reaffirms the notion that curriculum implementation of environmental conservation plays a pivotal role in heightening awareness among learners about the significance of environmental protection within the realm of secondary schools.

This aligns with a study by Ardoin et al. (2020), which found that implementing curriculum focused on environmental conservation enhances attitudes, values, and knowledge related to the environment. Such curriculum also cultivates skills that enable individuals and communities to collaborate in positive environmental actions, establishing connections between research findings and practical applications. Ntanos et al. (2018) similarly supported this observation, revealing that students tend to be environmentally conscious due to the implementation of school curricula centered around environmental initiatives. It is recommended to enhance the implementation of environmental education curriculum as a pivotal strategy for fostering environmental conservation awareness. The assertion that the primary objective of curriculum implementation in environmental conservation content is to elevate comprehension and engagement in environmental conservation aligns with the findings of Ramirez et al. (2023), who emphasized

the significance of ecological balance and the connection between humanity and environmental protection in Colombian environmental education. This approach integrates real-world projects and hands-on activities to enhance students' awareness of environmental issues, ultimately influencing positive attitudes toward environmental conservation practices. However, Vezzoli et al. (2015) argued for an increased focus on enhancing energy access and efficiency alongside providing environmental conservation solutions to enable a new generation to actively participate in creating, using, and disseminating sustainable energy systems. Stanišić & Maksić (2014) found that environmental protection and preservation were addressed in Serbian schools; however, they identified gaps in students' knowledge hindering contributions to healthy environmental consciousness and revealed negative community attitudes toward the environment. The study suggests that while adjustments in school policies and curricula acknowledge the importance of environmental education, shifts in student practices are ongoing. Contrary to conventional expectations, Erhabor & Don (2016) discovered a limited association between students' environmental knowledge and attitudes. Despite efforts to integrate environmental education into the curriculum, students exhibited a high degree of awareness and a critical mindset. The study recommends intensified mentality shifts, particularly within the community, to complement the instructional efforts in environmental conservation within schools.

The study unveiled the presence of specific topics related to environmental conservation within the secondary school curriculum in Lamogi Sub County. Teachers incorporate these topics into their instructional practices through the preparation of lessons, schemes of work, and the assessment of learners. However, a notable deficiency was observed in the utilization and diversity of learning aids, with few teachers incorporating such aids in their teaching

methodologies. Furthermore, the study highlighted that the instructional methods employed in classrooms tended to be theoretical rather than practical, resulting in a limited capacity for learners to actively participate in the subject matter. The insufficient utilization of learning aids and the absence of diverse and effective teaching methods underscore a deficiency in the implementation of the secondary school curriculum on environmental conservation.

This observation aligns with Mezirow's (1991) theory of transformative learning, emphasizing that well-designed instruction can facilitate a transformative process where individuals undergo positive changes in feelings, beliefs, assumptions, and perspectives related to the subject matter. The theory posits that individuals, when provided with appropriate information, can develop the capacity to critically reflect on previously overlooked aspects. Consequently, effective teaching of environmental conservation can lead to positive transformations in learners, enabling them to translate theoretical knowledge into practical actions. Significantly, the study identified a correlation between the manner in which environmental conservation is taught and the subsequent behavior of secondary school leavers, particularly their involvement in environmental degradation while seeking firewood and charcoal after leaving school.

5.3 *Conclusions*

The following conclusions were drawn from the study: This has been based on the major findings according to the research objectives.

5.3.1 Implementation of Environmental Conservation Practices in the Secondary School Curriculum

The findings of the study revealed that there exists an integration of environmental conservation practices within the secondary school curriculum of Lamogi Sub County and Amuru District.

However, it was observed that information pertaining to environmental conservation is assimilated into specific topics rather than being afforded independent subject status. Regrettably, these thematic inclusions were not uniformly integrated across all courses but rather limited to select subjects. Furthermore, the content encompassed within these specific subjects is deemed to be cursory in nature. Consequently, the conclusion drawn from the analysis posits that the implementation of the secondary school curriculum with regard to environmental conservation practices is inadequate.

5.3.2 Environmental Conservation Practices in Lamogi Sub County

The survey results indicate a commendable level of knowledge regarding environmental conservation among secondary school students in both Lamogi Sub County and Amuru District, alongside a well-informed general public possessing substantial indigenous knowledge. However, a noteworthy aspect surfaced in the form of unfavorable attitudes, beliefs, and opinions held by the public of Lamogi Sub County toward environmental conservation. This discernible divergence in perceptions leads to the conclusion that, despite the existence of adequate knowledge, the practical implementation of environmental conservation practices in Lamogi Sub County is deemed insufficient.

5.3.3 Secondary School Curriculum Implementation and Environmental Conservation Practices

The research findings reveal a statistically significant positive correlation between the implementation of the secondary school curriculum and environmental conservation in the specific geographic context of Lamogi Sub County, in Amuru District ($R^2 = 0.711$, P value = 0.05). The identified coefficient of determination (R^2) indicates that approximately 71.1% of the

variability in environmental conservation practices can be attributed to the variations in the implementation of the secondary school curriculum. The associated P value of 0.05 underscores the statistical significance of this correlation. In essence, the study suggests that an elevated level of secondary school curriculum implementation is linked to an increased involvement and commitment to environmental conservation practices within the specified region.

5.4 Recommendations

5.4.1 Implementation of Environmental Conservation-Related Contents in Secondary Schools

The study identified an inadequacy in the extent of information pertaining to environmental conservation within the secondary school curriculum, as it lacks an autonomous subject dedicated exclusively to environmental preservation. Instead, such content is integrated into various disciplines within the curriculum. Consequently, the research recommends the introduction of a distinct course solely focused on environmental education to augment the breadth of knowledge imparted in secondary schools concerning environmental preservation. This proposed measure not only facilitates the organization of teaching methodologies, learning materials, and the learning environment but also aims to influence behavioral patterns. The study advocates for teachers to enhance the utilization of pertinent learning materials and adopt effective instructional methods specifically tailored for teaching environmental conservation during the teaching and learning processes.

5.4.2 Environmental Conservation Practices

The survey findings indicate that individuals residing in Lamogi Sub County exhibit a heightened awareness of indigenous environmental conservation methods, surpassing their

familiarity with sustainable conservation practices acquired through formal educational curricula in schools. Notably, a portion of students fails to effectively disseminate the acquired information within their community, contributing to a prevalent negative disposition towards environmental conservation. Consequently, the study proposes the implementation of informal education strategies with a specific focus on mindset transformation to influence beliefs and behaviors, thereby fostering a more favorable attitude towards environmental conservation.

In order to mitigate environmental encroachment, the government is recommended to undertake measures such as the reduction and subsidization of costs associated with ecologically friendly energy sources like electricity and biogas. Recognizing the pivotal role of energy needs as a primary catalyst for environmental degradation, these proposed initiatives aim to address the root cause and promote sustainable practices within the community.

5.4.3 Secondary School Curriculum Implementation and Environmental Conservation

The research identified a substantial positive correlation between the implementation of the secondary school curriculum and environmental conservation, as evidenced by the coefficient of determination ($R^2 = 0.711$, P value = 0.05). In light of these findings, the study recommends the enhancement of curriculum implementation, with a particular emphasis on improving the utilization of learning materials and adopting effective instructional methods when imparting environmental conservation content.

5.5 Areas for Further Study

The focus of this investigation was limited to the implementation of the secondary school curriculum and associated environmental conservation practices. Nevertheless, it is acknowledged that community attitudes and perceptions constitute significant challenges to

human behavior. Consequently, there is a pressing need for a distinct study that delves into the impact of community attitudes and perceptions on environmental conservation in northern Uganda.

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Appendices

Appendix A: Data Collection Questionnaire for teachers

I am Odida Peter, a student at Gulu University pursuing a Master of Education in Curriculum Studies. I am undertaking a study on *Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District.*

Having selected you as one of the valuable respondents for this research, please kindly provide the necessary information to enable the researcher to complete the research project successfully. Please note that the information provided therein will be treated with the utmost confidentiality, and your cooperation therein is highly welcome. I therefore humbly seek your participation in this research.

Section A: Demographic Information

Please tick the corresponding box for your opinion on the question.

1. Gender
    a) Male ☐
    b) Female ☐
2. Age Bracket
    a) 21-25 ☐
    b) 26-30 ☐
    c) 31-35 ☐
    d) 36 & Above ☐

3. Level of Education

    a) UACE ☐

    b) Diploma ☐

    c) Bachelor ☐

4. Number of years in the institution

    a) Less than a year ☐

    b) Between 1-2 years ☐

    c) Between 3-4 years ☐

    d) More than 4 years ☐

Section B: Secondary Schools' Curriculum Implementation

I kindly request that you indicate your feelings on each of the following sections from B-D in your institution using the scale where 1 = strongly disagree (SD), 2 = disagree (D), 3 = neither agree nor disagree (UD), 4 = agree (A), and 5 = strongly agree (SA).

S/NO	Secondary Schools' Curriculum Implementation	SD	D	UD	A	SA
		1	2	3	4	5
B1	The scheme of work is used for every lesson conducted on environmental conservation in our school					
B2	The lesson plan is used for every lesson conducted on environmental conservation in our school					
B3	Learners are assessed on every topic covered on environmental conservation in our school.					
B4	In our school, teachers use learning materials during the teaching and learning process on environmental conservation.					
B5	There are specific topics on environmental conservation in some					

	subjects in our school.					
B6	These specific topics relating to environmental conservation are taught in some subjects in our school.					
B7	In our school, teaching and learning are practical on environmental conservation					

Section C: Environmental Conservation Practices

S/NO	Environmental conservation Practices	SD	D	UD	A	SA
		1	2	3	4	5
C1	Learners are aware of the practices of environmental conservation.					
C2	People in the community are aware of the indigenous practices to enhance environmental conservation					
C3	Learners have developed practical environmental conservation skills.					
C4	Learners have positive attitudes toward environmental conservation.					
C5	The community members need more information on environmental conservation					
C6	Learners in the schools take environmental conservation information and practices to their respective communities.					

Section D: Influence of Extraneous variables

S/NO	Extraneous variables	SD	D	UD	A	SA
		1	2	3	4	5
M1	The of energy determine the energy choice of the people					
M2	The school environment promote the teaching and learning in our schools					
M3	The of energy determine the energy choice of the people					

Appendix B: Data Collection Questionnaire for learners

I am Odida Peter, a student at Gulu University pursuing a Master of Education in Curriculum Studies. I am undertaking a study on *Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District.*

Having selected you as one of the valuable respondents for this research, please kindly provide the necessary information to enable the researcher to complete the research project successfully. Please note that the information provided therein will be treated with the utmost confidentiality, and your cooperation therein is highly welcome. I therefore humbly seek your participation in this research.

Section A: Demographic Information

Please tick the corresponding box for your opinion on the question.

1. Gender
    a) Male ☐
    b) Female ☐
2. Age Bracket
    a) 15-20 ☐
    b) 21-25 ☐
    c) 26-30 ☐

3. Level of Education

   a) PLE ☐

   b) UCE ☐

   c) UACE ☐

4. Number of years in the institution

   a) Less than a year ☐

   b) Between 1-2 years ☐

   c) More than 3 years ☐

Section B: Secondary Schools' Curriculum Implementation

I kindly request that you indicate your feelings on each of the following sections from B-D in your institution using the scale where 1 = strongly disagree (SD), 2 = disagree (D), 3 = neither agree nor disagree (UD), 4 = agree (A), and 5 = strongly agree (SA).

S/NO	Secondary Schools' Curriculum Implementation	SD	D	UD	A	SA
		1	2	3	4	5
B1	Learners are assessed on every topic covered on environmental conservation in our school.					
B2	In our school, teachers use learning materials during the teaching and learning process on environmental conservation.					
B3	There are specific topics on environmental conservation in some subjects in our school.					
B4	These specific topics relating to environmental conservation are taught in some subjects in our school.					
B5	In our school, teaching and learning are practical on environmental conservation					

Section C: Environmental Conservation Practices

S/NO	Environmental conservation	SD	D	UD	A	SA
		1	2	3	4	5
C1	In our school, learners have adequate awareness of the practices for Environmental conservation.					
C2	In our community, people are sensitized enhance Environmental conservation practices.					
C3	In our school, learners have developed practical Environmental conservation skills.					
C4	In our school, learners have positive attitudes toward Environmental conservation.					
C5	The community members need more information on Environmental conservation					
C6	Learners in our school plant trees and take care of the trees planted.					

Section D: Influence of Extraneous Variables

S/NO	Extraneous Variables	SD	D	UD	A	SA
		1	2	3	4	5
M1	The of energy determine the energy choice of the people					
M2	The school environment promote the teaching and learning in our schools					
M3	The of energy determine the energy choice of the people					

Appendix C: Data Collection Interview Guide for Local Council Members, Parish Chiefs, Sub County Chiefs, and District Inspector of Schools

I am Odida Peter, a student at Gulu University pursuing a Master of Education in Curriculum Studies. I am undertaking a study on *Secondary Schools' Curriculum Implementation and Environmental Conservation Practices: A Case of Lamogi Sub-County in Amuru District.*

Having selected you as one of the valuable respondents for this research, please kindly provide the necessary information to enable the researcher to complete the research project successfully. Please note that the information provided therein will be treated with the utmost confidentiality, and your cooperation therein is highly welcome. I therefore humbly seek your participation in this research.

a) Secondary school curriculum implementation

1. Do teachers in your school prepare schemes of work and lesson plans on environmental conservation practices for their lessons?
2. Are the schemes of work and lesson plans approved by the relevant authority on environmental conservation practices?
3. Do teachers vary instructional materials during the teaching and learning processes on environmental conservation practices?
4. Do teachers vary their methods of teaching during the teaching and learning processes on environmental conservation practices?
5. Are the methods of teaching practical on environmental conservation practices?

6. Are there specific topics in the curriculum related to environmental conservation?
7. Are these topics related to environmental conservation taught to the students?
8. Are the learners assessed after every topic covered on environmental conservation practices?

b) Environmental conservation Practices

1. Do learners have adequate awareness of indigenous practices to enhance environmental conservation?
2. Do people have adequate awareness of indigenous practices to enhance environmental conservation?
3. Do learners have practical environmental conservation skills?
4. Do learners have positive attitudes toward environmental conservation?
5. The community members need more information on environmental conservation.
6. Learners in our school need more information on environmental conservation.
7. Learners in our school take environmental conservation information and practices to their respective communities.

c) Influence of Extraneous variables

1. Does the level of income determine the energy resource to be used in a particular home?
2. Does the choice of energy source use depend on the cost?

3. Does the school have a conducive environment for curriculum implementation of environmental conservation practices in the schools?

Appendix D: Krejcie Morgan Sample Size Table

Required Sample Size†

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

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Appendix E: Introductory Letter

GULU UNIVERSITY
P.O. BOX 166 GULU
TEL: +256471432922;

OFFICE OF THE DEAN, FACULTY OF EDUCATION AND HUMANITIES

May 2, 2022

TO : **WHOM IT MAY CONCERN**

This is to introduce to you Mr. Odida Peter(Reg No. 21/U/1451/MFC/PS) a student pursuing a programme of study leading to an award of Master of Education in Curriculum Studies Master of Gulu University.

He is undertaking research on the Topic:

SECONDARY SCHOOLS' IMPLEMENTATION AND SUSTAINABLE USE OF ENERGY: A CASE OF LAMOGI SUB-COUNTY IN AMURU DISTRICT.

Which is in partial fulfilment of the requirements for the award.

Any assistance rendered to him in relation to this research work will be highly appreciated.

Yours faithfully,

GULU UNIVERSITY

Dr. Denis Thaddeus Ofoyuru
Dean, Faculty of Education and Humanities

Table 19 Frequencies (%) of the Distribution of Learners' Responses on Secondary Schools' Curriculum Implementation of Environmental Conservation

Questionnaire Items	Disagreement	1 SD	2 D	3 UD	4 A	5 SA	Agree ment
	Frequencies (%)						
Learners are assessed on every topic covered in the school.	54 (35.3)	12 (7.8)	42 (27.5)	19 (12.4)	51 (33.3)	29 (19)	80 (52.3)
Teachers use learning materials during the teaching and learning process in the schools.	82 (53.6)	58 (37.9)	24 (15.7)	8 (5.3)	27 (17.6)	36 (23.5)	63 (41.1)
Teaching and learning are practical in the school.	84 (54.9)	52 (34)	32 (20.9)	19 (12.4)	21 (13.7)	29 (19)	50 (32.7)
There are specific topics on environmental conservation in some subjects in the school.	19 (12.5)	5 (3.3)	14 (9.2)	23 (15)	56 (36.6)	55 (35.9)	111 (72.5)
These specific topics relating to environmental conservation are taught in some subjects in the school.	49 (32.1)	29 (19)	20 (13.1)	14 (9.1)	50 (32.7)	40 (26.1)	90 (58.8)

Source: Primary data 2023

Table 20 *Frequencies (%) of Learners' Responses on the Practice of Environmental Conservation*

Questionnaire items	Disagreement	1 SD	2 D	3 UD	4 A	5 SA	Agreement
	Frequencies (%)						
Learners are aware of the practices of environmental conservation in the schools.	50 (32.7)	29 (19)	21 (13.7)	19 (12.4)	32 (20.9)	52 (34)	84 (54.9)
People are aware of the indigenous practices to enhance environmental conservation in the community	28 (18.3)	12 (7.8)	16 (10.5)	24 (15.7)	69 (45.1)	32 (20.9)	101 (66)
Learners have developed practical environmental conservation skills in the school.	107 (70)	43 (28)	64 (42)	6 (3.9)	21 (14)	19 (12)	40 (26)
Learners have positive attitudes toward environmental conservation.	82 (54)	58 (37.9)	24 (15.7)	8 (5.2)	27 (17.6)	36 (23.5)	63 (41.1)
The community members need more information on environmental conservation	70 (46)	32 (20.9)	38 (24.8)	9 (5.9)	25 (16.3)	49 (32.0)	74 (48.4)
Learners in their schools take environmental conservation information and practices to the respective communities.	59 (39)	26 (17)	33 (22)	10 (6.5)	55 (36)	29 (19)	84 (55)

Source: Primary data 2023

Table 21 *Frequencies (%) of the Distribution of Teachers' Responses on Secondary Schools' Curriculum Implementation*

Questionnaire Items	Disagreement	1 SD	2 D	3 UD	4 A	5 SA	Agreement
	Frequencies (%)						
The scheme of work is used for every lesson conducted in the school	10 (12.7)	4 (5.1)	6 (7.6)	9 (11.4)	28 (35.4)	32 (40.5)	60 (75.9)
The lesson plan is used for every lesson conducted in the school	18 (22.8)	11 (13.9)	7 (8.9)	14 (17.7)	31 (39.2)	16 (20.3)	47 (59.5)
Learners are assessed on every topic covered in the school.	24 (30.4)	5 (6.3)	19 (24.1)	7 (8.9)	33 (42)	15 (19.0)	48 (61)
Teachers use learning materials during the teaching and learning process in the school.	36 (45.6)	20 (25.3)	16 (20.3)	8 (10.1)	15 (19)	20 (25.3)	35 (44.3)
Teaching and learning are practical in school	38 (48.1)	20 (25.3)	18 (22.8)	8 (10.1)	14 (17.7)	19 (24.1)	33 (41.8)
There are specific topics on environmental conservation in some subjects in the school.	8 (10.1)	3 (3.8)	5 (6.3)	11 (13.9)	22 (27.8)	38 (48.1)	60 (75.9)
These specific topics relating to environmental conservation are taught in some subjects in the school.	35 (44.4)	18 (22.9)	17 (21.5)	15 (19)	19 (24.1)	10 (12.7)	29 (36.8)

Source: Primary data 2023

Table 22 *Frequencies (%) of Teachers' Responses on the Practice of Environmental Conservation*

Questionnaire items	Disagreement	1 SD	2 D	3 UD	4 A	5 SA	Agreement
	Frequencies (%)						
Learners are aware of the practices of environmental conservation.	10 (12.6)	5 (6.3)	5 (6.3)	19 (24.1)	34 (43)	16 (20.3)	50 (63.3)
People in the community are aware of the indigenous practices to enhance environmental conservation	19 (24.1)	7 (8.9)	12 (15.2)	11 (13.9)	31 (39.2)	18 (22.8)	49 (62)
Learners have developed practical environmental conservation skills.	36 (45.6)	20 (25.3)	16 (19)	8 (10.1)	15 (20.3)	20 (25.3)	35 (44.3)
Learners have positive attitudes toward environmental conservation.	28 (35.5)	13 (16.5)	15 (19)	8 (10.1)	19 (24.1)	24 (30.4)	43 (54.5)
The community members need more information on environmental conservation	27 (34.2)	16 (20.3)	11 (13.9)	8 (10.1)	20 (25.3)	24 (30.4)	44 (55.7)
Learners in the schools take environmental conservation information and practices to their respective communities.	20 (25.4)	9 (11.5)	11 (13.9)	11 (13.9)	22 (27.8)	26 (32.9)	48 (60.7)

Source: Primary data 2023

Key: SA = Strong Agree, A = Agree, UD = Agree nor Disagree, D = Disagree, SD = Strongly Disagree