BARRIERS TO IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN SECONDARY SCHOOLS IN MOLO, NAKURU COUNTY, KENYA

BY

Cheruiyot Mutai Gilbert (B.Ed. Science)
N50/CE/27956/2013

Signature_____ Date _____

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DECLARATION

Declaration by Candidate:

This project is my original work and has not been submitted in any University or institution for any award.

Cheruiyot Mutai Gilbert

N50/CE/27956/2013

Signature……Date……..
Department of Environmental Science and Education

Declaration by Supervisor

I confirm that this project has been submitted for appraisal with my approval as the University Supervisor.

DR. Richard. K. Kerich

Department of Environmental Science and Education

Signature……Date ……

DEDICATION

I dedicate this project to my family for their unending support.

ACKNOWLEDGEMENT

I thank God for granting me strength and knowledge to finally come up with this research project. I acknowledge my mum for always praying for me to succeed in my studies, my dad for moral support and Mrs. Peris Kimani for encouragement. Thanks to my supervisor Dr. Kerich who guided me up to the completion of this research project. I thank my classmates and friends for moral and academic support. Special thanks to everyone who contributed to the final realization of this research project.

ABSTRACT

Environmental degradation is among the world's major threats to existence of humanity today. Policy measures have been put in place to curb degradation but the menace has escalated at an alarming rate. Due to this, Environmental Education as a tool for environmental management and conservation cannot be overemphasized. The importance of Environmental Education is well known globally among societies. Environmental Education is gradually promoted as a sustainable tool in protection of the natural environment. To raise environmental literacy level among Kenyans, Environmental Education is taught using both interdisciplinary and multidisciplinary approaches. However, research indicates that efforts to effectively integrate Environmental Education in secondary schools in Kenya have not borne fruits. Arguments are rife that there are several barriers hindering successful Environmental Education implementation. The core objective of this study was to investigate barriers hindering successful Environmental Education implementation in Molo sub-county in Kenya. To achieve this, the study examined the effect of teachers' and students' attitude, administrative support and curriculum design on Environmental Education implementation. The main subjects considered in extraction the major Environmental Education thematic areas in secondary school syllabi included Biology, Chemistry, Physics, Geography and Agriculture. The methods used to teach these subjects, the preparedness of teachers to handle them in terms of training, availability of teaching and learning resources was also investigated. The target population was16 secondary schools out of a total of 41 secondary schools in Molo sub-county selected purposefully from the four wards of Molo, Elburgon, Marioshoni and Turi. The four schools selected had similar characteristics. They were all public mixed day schools, facing the same school-based challenges. The study chose 4 schools from each ward. The principals were asked to select a teacher each teaching Physics, Biology, Geography, Chemistry and Agriculture to take part in filling the questionnaires. Two students, a boy and girl, were randomly selected from form one to four in each school. A total of 128 students were involved in the study. The descriptive survey design was used as it came in handy in describing the existing conditions. Data was collected using questionnaires, school environmental checklists and analysis of thematic areas covered in the Kenyan secondary school syllabi of the selected Environmental Education related subjects. Data was analysed using the Statistical Package for Social Sciences version 16 computer package. The findings of the study were presented in tables. Correlation analysis to show the significance of the independent variables to the dependent variables was carried out. Findings indicated a positive relationship between independent and dependent variables. Specifically, it was noted that there was a positive correlation between teacher attitude, r (.45), student attitude, r (.53), administration support, r (.62) and curriculum design, r (.58) and implementation of Environmental Education. This implies that teacher attitude, student attitude, administration support and curriculum design were barriers to implementation of Environmental Education in public day secondary schools in Molo sub-county. The study recommended the strengthening and clarity of policy guidelines towards Environmental Education and enhancement of mechanisms to enable administration support. Training and empowerment of teachers in matters related to Environmental Education was also recommended. Teachers were to come up with mechanisms to change students' attitude towards Environmental Education.

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LIST OF ABBREVIATIONS AND ACRONYMS

EE	Environmental Education
KICD	Kenya Institute of Curriculum Development
NEMA	National Environmental Management Authority
PEEAQ	Pupils' Environmental Education Attitude Questionnaire
SPSS	Statistical Package for Social Sciences
SEPA	Swedish Environmental Protection Agency
TSC	Teachers Service Commission
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
URT	United Republic of Tanzania

CHAPTER ONE: INTRODUCTION

1.1Background of the Study

Environmental degradation has been identified as a major crisis across the globe. Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil, the destruction of ecosystems, habitat destruction, the extinction of wildlife and pollution. When natural habitats are destroyed or natural resources are depleted, the environment is degraded. According to UNESCO (2012), environmental degradation resulted due to growth of urban centers, rise in poverty levels, and surge in population. The need to create food security has led to deforestation, and depletion of water reservoirs. Moreover, industrialization resulted in increased chemical use hence air pollution (UNEP, 2012).

Majority of the African countries, Kenya included, rely on its national economy to propel growth. According to Kiprotich (2014), approximately two thirds of the Kenya population derives their livelihood from agricultural activities. However, Glackin (2017) laments that the natural resource base is shrinking at an alarming rate. Environmental degradation in form of all types of pollution and deforestation has been increasingly manifesting (UNEP, 2012). This spells doom for the future generations. Governments across the globe have been forced to come up with measures to counteract these environmental challenges.

Several authors identify Environmental Education (EE) as one of the remedies to escalating environmental challenges (Wolwick, 2014). According to Mutisya and Baker (2011), Environmental Education enables learners to acquire knowledge and skills for enhancing the right attitude towards environmental conservation. Environmental Education as a tool enhanced awareness and comprehension of social the emerging social and physical environment including the natural, manmade, cultural, and spiritual resources. This is coupled with the national use and conservation of these resources for development. This implies that Environmental Education enables individuals make sound decisions and individually formulated code of behaviour about issues concerning environmental conservation and quality.

Majority of the governments embraced Environmental Education with the aim of nurturing environmental literacy among their populace. In response to the recommendations made in the 1977 Tbilisi and 1987 Moscow conferences respectively, Kenya has over the years made tremendous progress towards Environmental Education. According to Glackin (2017), Environmental Education is guided by Agenda 21, Chapter 36 on Education and Sustainable Development. As such, the country implemented the National Environmental Action Plan (NEAP). Environmental Education in Kenya encounters numerous challenges (Kabubo-Mariara and Mwabu, 2014). Currently, Environmental Education is incorporated into other subjects, hence rated second in importance to those subjects.

The Ministry of Education has made efforts to incorporate Environmental Education across the existing subjects. Contrary to expectations, teachers' workload as a result of demanding curriculum makes it difficult for them to achieve the set targets in the various subjects. As a result, most teachers ignore Environmental Education and hope that it will be covered in other subjects.

In the hope of Kenya being a fully industrialized country by the year 2020, Environmental Education has to fulfill its role in provision of sustainable development (Mutisya and Baker, 2011). This calls for a balance between how natural resources are utilized and their contribution to economic growth. Environmental Education in secondary schools is identified as an important key in the process of changing attitudes and values that are necessary in development of skills needed in management of a sustainable environment. However, Kabubo-Mariara and Mwabu (2014) observed that are challenges faced in implementation of Environmental Education in Kenya.

According to Kiprotich (2014), there are several issues that hinder effective implementation of Environmental Education in Kenya. These include the perception that there is inadequate pre-service and in-service training in issues related to Environmental Education. It is important to note that Kenya has made several attempts to initiate actions geared towards Environmental Education, some which

have yielded positive results. However, these initiatives are inadequate and more actions are required in order to achieve and maintain quality education (Kabubo-Mariara and Mwabu, 2014). The current study seeks to document these challenges and make recommendations on Environmental Education implementation in Molo sub-county.

1.2 Problem Statement

In Kenya, environmental issues and in particular its destruction through by human activities is a major area of concern. The continuous depletion of the natural resources has been documented in several researches (Mutisya and Baker, 2011). In addition to this depletion of resources, environmental pollution, water, air and soil has also been reported to be on the increase in Kenya. As a result of inability of the environmental conservation authority to reduce the pollution of the environment and also destruction of the natural resources, efforts were directed to establishment of Environmental Education programmes; formal and non-formal learning activities. Thus, as an educational programme Environmental Education in Kenya, generally aims at increasing people's knowledge and awareness about the environment and associated challenges, In addition, Environmental Education develops the necessary skills and expertise required to address challenges that threatens sustainability of the ecosystem (Kiprotich, 2014).

Despite the importance of Environmental Education in Kenya's quest for environmental sustainability, there seems to be problems in the implementation of the laudable objectives of secondary school Environmental Education curriculum in Kenya (Mutisya, 2011). How to sensitize teachers to effectively implement the secondary school environmental curriculum and make government seriously involved in providing necessary environment for curriculum implementation remain daunting.

According to Kiprotich (2014), in Molo Sub County, there has been inadequate implementation of Environmental Education in the learning of Physics, Geography, Chemistry, Biology and Agriculture. Evidently, Environmental Education is ordinarily implemented as an exhibition in instances where there are national/local competitions to merely provides superficial evidence of it being implemented in the classrooms

(Boiyo, 2014). As such, the present paper is a product of a study that explores the factors affecting implementation of Environmental Education curriculum in secondary schools in Molo Sub County.

In Kenya, Kinyi (2015) studied the factors influencing awareness and participation of secondary school students in Environmental Education in Dogorreti-West sub-county. In another study, Boiyo (2014) looked at environmental awareness, attitude and participation among secondary schools in Kasarani and Kibera divisions. Kiarie (2014) looked at influence of teachers' perception and competences on students' achievement and perceptions in Environmental Education in secondary school biology in Gilgil division. While the studies above give insights on Environmental Education in secondary schools in Kenya, none of the above studies comprehensively investigated barriers hindering successful Environmental Education implementation in secondary schools in Molo sub-county.

1.3 Research Questions

1. Why does teacher' attitude towards Environmental Education affect Environmental Education implementation in secondary schools in Molo Sub-County?
2. How does student's attitude towards Environmental Education on Environmental Education implementation in secondary schools in Molo Sub-County?
3. Why does administration support influence Environmental Education implementation in secondary schools in Molo Sub-County?
4. How does curriculum design affect implementation of Environmental Education in secondary schools in Molo Sub-County?

1.4 Research Objectives

The study will be guided by the following objectives**:**

1. To determine the effect of teachers' attitude towards Environmental Education implementation in secondary schools in Molo sub-county.
2. To examine the effect of students' attitude towards Environmental Education on Environmental Education implementation in secondary schools in Molo sub-county.
3. To find out the effect of administrative support on Environmental Education implementation in secondary schools in Molo sub-county.

4. To establish the relationship between curriculum design and Environmental Education implementation in secondary schools in Molo sub-county.

1.5 Research Hypotheses

The study will be guided by the following hypothesis**:**

1. Teacher and student attitude, administrative support and curriculum design are barriers to implementation of Environmental Education in public day schools in Molo sub-county.

1.6 Justification of the Study

A large proportion of students in Molo sub-county like in other places as well will only attend secondary schools without chances to proceed on with education. To ensure that students not proceeding on with education beyond form four benefits from Environmental Education, it is important that those concerned with education and the environment understand the extent Environmental Education has been incorporated into the secondary school curriculum in addition to positive attitudes towards environmental conservation. When the teachers possess environmental awareness, positive attitudes and values, adequate knowledge, skills and good will to solve problems affecting the quality of the environment, they can be expected to give Environmental Education the required emphasis as they teach.

This study will be very instrumental to education stakeholders especially the (Kenya Institute of Curriculum Development (KICD) in evaluating the curriculum whether its intended goals are being met. It also informs the KICD whether there is need for intervention to customize the existing content in the syllabus or even to relook at the existing contents whether to better it or even recommend for a complete overhaul.

1.7 Conceptual Framework

A conceptual framework shows the relationship between the independent and dependent variable. According to Miles and Huberman (1994), a conceptual framework is defined as a schematic diagram explaining, either in a graphic or narrative form, the factors, concepts or variables under study. A conceptual framework not only depicts the variables under study but also explain the relationship between these variables.

The conceptual framework below shows the relation between teachers' and students' attitude, administrative support, curriculum design and effective Environmental Education curriculum implementation. The framework illustrates the parameters that will be used to measure the strength of these relationships. According to the conceptual framework below, teachers' attitude will be measured by teachers' preparedness in Environmental Education related issues, the environmental knowledge and skills possessed by the teachers and their perception towards teaching the subject.

On the other hand, students' attitude will be measured by their level of awareness on Environmental Education, their knowledge on Environmental Education related issue and their perception towards learning Environmental Education.

Administrative support will be measured by how adequately schools avail resources to facilitate Environmental Education implementation, the mechanisms they have laid to ensure Environmental Education is effectively implemented and their commitment towards the implementation of Environmental Education. Curriculum design will be measured by the teaching approaches and their effectiveness, extent to which Environmental Education is incorporated in the teaching of other subjects, and the Environmental Education implementation evaluation mechanisms.

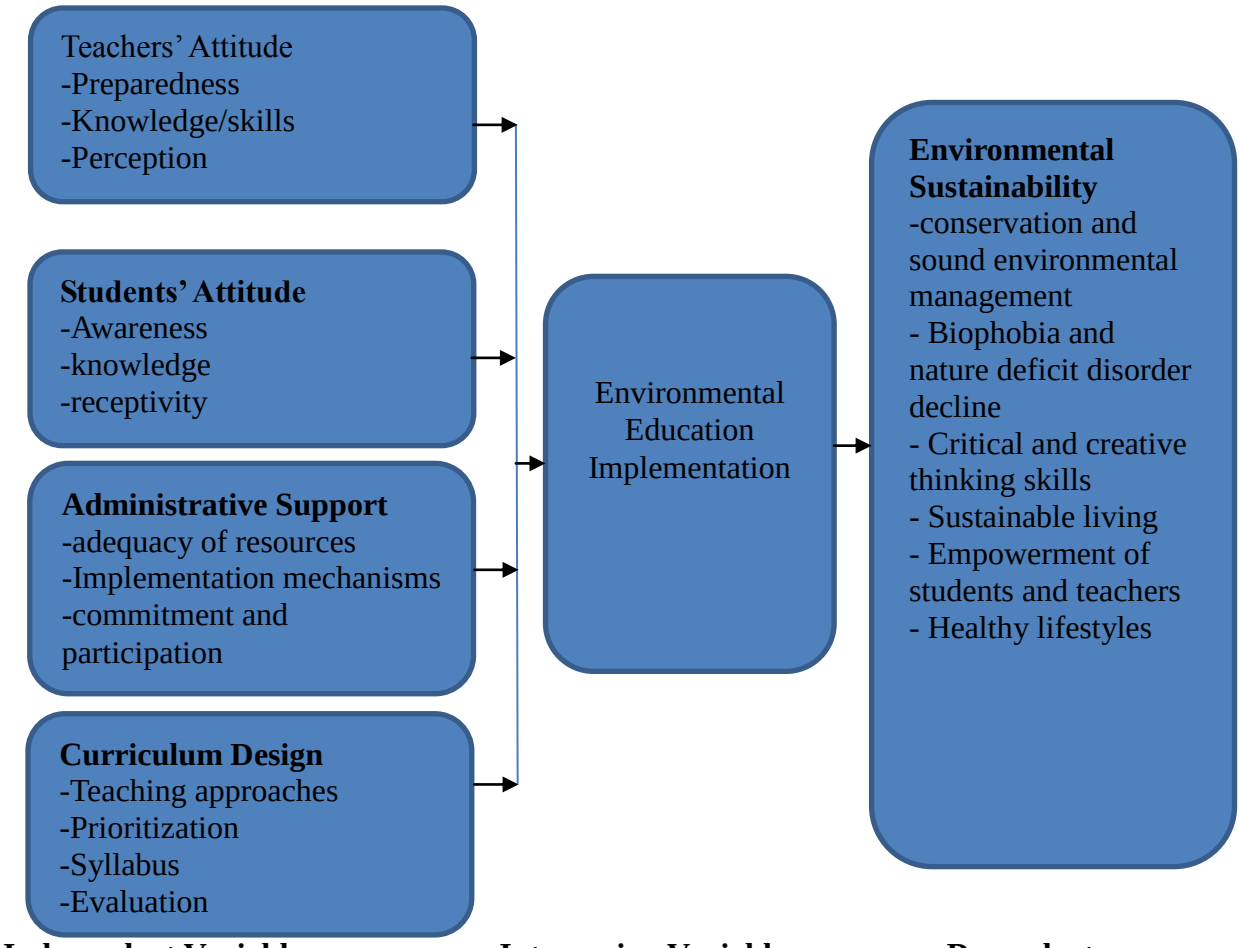

Figure 1.1 Conceptual Framework on the Factors influencing Environmental Education Curriculum Implementation.(Source: Author)

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature related to barriers to Environmental Education implementation from a global, regional and local level. These barriers include teacher and students' attitude, administration support and curriculum implementation. A summary of the chapter is done.

2.1 Environmental Education from a Global Perspective

In England, Glackin (2017) observed that policy makers withdrew Environmental Education from the streamlined English Secondary National Curriculum in 2014. As a result, school administrations obliged to make decisions on how Environmental Education would be incorporated during Geography and Science lessons. In Sweden, Wolwick (2014) reported that Environmental Education is compulsory and incorporated into the curriculum.

In Malaysia, Said, Yahaya and Ahmadun (2007) found that Environmental Education featured in the Malaysian secondary school curriculum in 1986. However, despite early incorporation, there have been challenges in its implementation up to date (Nor and Akinnuoye, 2011). Among these challenges include lack of proper implementation procedures, inadequate resources and teachers' perception towards Environmental Education.

In Nigeria, Nor and Akinnuoye (2011) pointed out that Nigeria was among the first developing countries to acknowledge the significance of Environmental Education in achieving a sustainable environment. However, Bosah (2015) observed that even though a lot of resources have been channeled towards Environmental Education awareness programmes, there has been challenges in the implementation process. A tussle exists as to whether Environmental Education should be implemented at individual schools' level or at the national level (Adara, 2015).

In Tanzania, Ssozi (2012) observed that the Tanzanian secondary school curriculum had incorporated Environmental Education. Environmental Education was integrated

and taught during other subjects. However, URT (2013) argued that challenges experienced during implementation of Environmental Education in secondary schools in Tanzania was due to lack of properly spelt out implementation guidelines.

2.2 Status of Environmental Education Implementation in Kenya

Despite the strides made towards Environmental Education in Kenya, Mutisya and Baker (2011) observed that testing of Environmental Education content is not given equal weight as other contents in the various subjects. The Republic of Kenya (2013) cited various challenges facing implementation of Environmental Education including Environmental Education integration with other subjects.

Consequently, most school administrations second rate the subject and do not allocate available resources to facilitate successful implementation. In addition, Kabubo-Mariara and Mwabu (2014) observed that another challenge facing implementation of Environmental Education was due to inadequate pre-service training on Environmental Education and procedures of implementing it. Kiprotich (2014) cited inadequate teaching and learning materials and lack of support from the administration.

2.3 Empirical Review on Barriers to Environmental Education Implementation

This section reviews studies carried on barriers to Environmental Education implementation. The studies review literature from a global, regional and local perspective.

2.3.1 Teacher Attitude

According to Omolara and Adebukola (2015), an attitude is a mindset that affects how a person thinks and acts. Attitude can influence a person's performance positively or negatively. For instance, negative attitude towards one's job will result in negative performance. Similarly, personality traits of the teachers are more powerful and influential than the course content or instructional strategies used in the classroom. Attitude is determined by a number of motivational bases. According to David (2013) there are four motivational bases for attitude formation. These include utilitarian, value expressive, ego-defensive, and knowledge. Attitude formed on utilitarian base is associated with survival, safety and other social needs of individuals. This means that

one's attitude towards teaching and learning of a subject is bound to be favorable if it improves one's survival needs.

Value expressive attitude is based on a person's motive for self-esteem and self-actualization. People seek to develop an identity and on the concept of self-esteem in which they have pride. This implies that attitude that coincides with a person's values and ego-ideals will enhance one's feeling of self-esteem (Glackin, 2017). Ego-defensive attitude is a mechanism formed by a person to defend one's anxieties. The implication is that teachers who become dissatisfied with their teaching conditions and environment are likely to express negative attitude towards teaching and behaviour control of their students. The last one is knowledge. This is needed to cope with the attitudes of those around a person or by adopting an attitude which is consistent with one's thinking towards the issues at hand.

It has been long recognized in literature that there are several factors that can affect implementation of Environmental Education in secondary schools (Mutisya and Baker, 2011). Implementation of new concepts and curriculum need some sorts of attitudinal change on the teachers' part. If teachers' attitudes are incompatible with new curriculum, it is likely that they will be resistant to its implementation (Glackin, 2017). In other words, successful formulation and implementation of Environmental Education need teachers' wholehearted cooperation and supports. Teachers' attitude is, therefore, significant with respect to implementation of a curriculum.

A number of studies have demonstrated on the powerful influence that teachers may have on the implementation of curriculum. Therefore, it indicates that, in general, teachers do not implement curricula in their classroom in the same way that these curricula were assigned to be implemented. For example, Manuku (2013) reported that teachers adapt curricula to fit their knowledge, priorities, and unique classroom settings while Kelani (2015) reported that teachers influence curriculum implementation by deciding which topics and activities are appropriate for their students. These studies suggest that teacher perceptions and beliefs play critical role in the process of curriculum implementation. Teacher perceptions may lead to the hindrance of the effectiveness of curriculum implementation.

In Botswana, Kanene (2016) looked at the impact of Environmental Education perceptions and attitudes of students in selected secondary schools in Botswana. The study found that Environmental Education was integrated in the teaching subjects in secondary schools in Botswana. However, the study found that Environmental Education was teacher-centred. As a result, students' knowledge on environmental matters was enhanced but the students' capacity to act for environmental sustainability was inadequate.

In Zimbabwe, Manuku (2013) studied greening and transformative social change through Environmental Education in Zimbabwean secondary schools. The study was aimed at appraising Environmental Education practices in secondary schools in Zimbambwe. It was geared towards establishing whether Environmental Education enhanced behavioral transformation towards environmental conservation among teachers and pupils. Findings indicated that was went on in the schools in pretext of Environmental Education was mere 'greening' of the curriculum. Approach towards Environmental Education was more of factual stance than action competence. Consequently, the transformation was minimal. Moreover, findings indicated that there was need for refocus on Environmental Education curriculum since the current one did not equip students with practical Environmental Education problem solving skills.

In a study, Kelani (2015) examined the integration of Environmental Education in science curricula in secondary schools in Benin, West Africa. The study established that successful implementation of Environmental Education was determined by attitude of individual subject teacher towards Environmental Education. The study found that some teachers were inadequately prepared to teach Environmental Education thus shied away from the subject completely.

In a study, Kiarie (2014) investigated the influence of teachers' perception and competences on students' achievement and perceptions in Environmental Education in secondary school biology in Gilgil Division, Nakuru District. According to

(Kiprotich, 2014), the learning, retaining, application of knowledge, attitudes and skills by students and geared towards Environmental Education is determined by the teacher's perceptions toward Environmental Education. Through a causal comparative survey, findings indicated that both teachers' and students' perception towards Environmental Education was good.

The current study observes the above study offers important insights as to the importance of teacher perception on implementation of EE. However, it ironical that the study findings revealed that EE implementation was not successful yet students' and teachers' had good perception towards the same. Moreover, findings indicated that teacher competence was not an important factor in strategy implementation yet other findings indicated that there is a significant relationship between teacher attitude and competence on Environmental Education and Environmental Education implementation in secondary schools in Kenya (Mutisya *et al*., 2013).

In a study, Chikati and Okendo (2018) looked at teachers' and students' perceptions of integrated Environmental Education in the secondary school curriculum for managing environmental degradation in Machakos County. Findings indicated that both teachers' and students' perceptions of the integrated Environmental Education in the secondary school curriculum were generally weak hence little attention was paid to adequate integration of EE in the school curriculum. This negatively impacted teachers' and students' involvement in and commitment to implementation of EE in the school curriculum hence the persistence of environmental degradation in Machakos County. The study confirmed that some elements of Environmental Education were integrated in the subjects that were taught in the secondary school curriculum albeit inadequately and unevenly distributed, apparently marginalizing particularly climate change and land degradation hence reducing the crosscutting nature of EE.

2.3.2 Student Attitude

Attitude can alter every aspect of a person's life, including their education. Student attitudes on learning determine their ability and willingness to learn (Bosah, 2013). If negative attitudes are not altered, a student is unlikely to continue his education

beyond what is required. Student attitudes on learning, good or bad, affect their outlook toward learning throughout life. Their attitudes towards learning not only affect their amount of education but their desire for education (UNESCO, 2012).

In a study, Tilmaz *et al*. (2009) investigated students' attitude towards Environmental Education in elementary schools in Turkey. Findings indicated that elementary pupils had a positive attitude towards energy conservation. As a result, they were ready to study Environmental Education. Therefore, the school integrated the study on pollution, soil erosion and environmental degradation in the curriculum. According to Mutisya and Baker (2011), students' awareness and attitude towards Environmental Education was a key factor in Environmental Education implementation in schools.

The current study observes that these studies (Tilmaz *et al*., 2009; Mutisya and Baker, 2011) focus on elementary and primary schools. The setting and attitude towards Environmental Education might be different from that of secondary schools. Moreover, these studies focused on rural areas and generally these areas embrace agricultural activities. The current study seeks to get responses from students in both private and public schools which draw students from both urban and rural settings. Moreover, Meltem *et al*. (2011) emphasized that environmental awareness and positive attitude enhances promotion of environmental literacy

In a study, Yousuf and Bhutta (2012) examined secondary school students' attitude towards environmental issues in Karachi, Pakistan. The study investigated the relationship between students' perception and up take of Environmental Education. Environmental Education was denoted by pollution of air and water, misuse and excess usage of resources, and changes in global climate. These environmental issues were studied in respect to the school system. Findings indicated that private schools were more receptive to environmental issues and Environmental Education than their counterparts in public sponsored schools.

In Kenya, Boiyo (2014) investigated environmental awareness, attitude and participation among secondary school students in Kasarani and Kibera divisions of Nairobi County. This study was building on Mutisya and Baker (2011) argument that students in urban areas possess more knowledge on environmental matters than

students in rural areas. The study shifted from rural-urban divide to urban-urban divide. Boiyo (2014) argued that dues to rapid growth of urban centres, different models of urban dwellings came up. The study established that there was significance variation between awareness and reception of students towards Environmental Education as observed in these two divisions.

Similarly, Mutisya, Kirui and Rono (2013) studied the attitude towards Environmental Education and the role of primary education. Using descriptive research design, the study developed the Pupils' Environmental Education Attitude Questionnaire (PEEAQ). Findings indicated that most of the pupils regarded Environmental Education positively. The pupils felt that there was need to conserve the environment, have a mutual co-existence between man and other creatures (both land and see), conserve natural resources, and proper management of solid wastes and protection of natural forests.

In another study, Okoth (2002) did an analysis of students' participation and attitudes towards Environmental Education in Siaya County. The study focused on the impact of Environmental Education in regard to students' attitudes and participation. The study focused on the impact of head teacher's characteristics and gender on student participation. The study established that head teachers were capable of creating positive attitudes towards environmental conservation. The study established that was possible if the head teachers acted as role models and were actively involved in sensitizing the students about the environment by implementing personal environmental initiatives.

2.3.3 Administrative Support

The word support has many different definitions. One of them, to keep from fainting, yielding, or losing courage, refers to emotional support (Birkeland and Tamir, 2019). Beginning teachers need shoulders to cry on, enthusiastic cheerleaders to bolster their courage, and friends who remind them of why they entered the field in the first place. Yet support also means "to strengthen" or "to aid in the development" of something (Birkeland and Tamir, 2019). In the context of an administrator's role, this aspect of support implies an active approach to helping teachers learn and grow professionally.

In Malaysia, Rahman, Halim and Ahmad (2018) sought to identify the challenges encountered by teachers in teaching and learning education and the proposed solutions for cultivating positive behavioural changes among indigenous students. The study was conducted among teachers from 12 primary and secondary indigenous schools in the state of Pahang, Malaysia. The qualitative study used semi-structured interviews to collect data. Findings indicated two challenges in implementing Environmental Education. These were challenges arising from the teachers and challenges arising from the indigenous students themselves. Teahers were changes by time constraints, heavy workload, poor teaching aids, unavailability of manual/handbook, and the lack of support from the school administrators.

In Nigeria, Bosah (2013) studied the issues, prospects and challenges facing Environmental Education in Nigeria. The study sought to establish the relationship between schools' administration support towards Environmental Education and successful implementation of Environmental Education. Findings revealed that majority of the respondents (85%), felt that the management did not provide adequate financial and personnel resources in the implementation of Environmental Education in schools. Further findings indicated that school management had not provided mechanisms for integrating Environmental Education topics in the course work. Moreover, findings indicated that there were forums for environmental issues in schools.

Similarly, Okoth (2014) examined head teachers leadership in providing instructional resources for Environmental Education in secondary schools in Siaya County, Kenya. The study focused on the extent of provision of instructional resources in Environmental Education and whether they encouraged use of these materials. Findings indicated that important audio-visual aids for enhancing study of Environmental Education in secondary schools. These aids included national parks, museums, laboratories, computers, projectors, vides/films, radio, charts and textbooks. The study found that availability of these materials fostered learning and improved behavior of students towards the environment.

The study above highlights the importance of head teachers' support in Environmental Education. However, the study does not bring out the relationship between support and implementation of Environmental Education. Moreover, the study recommended that further study be carried out on effect of administration motivation of teachers on effective implementation of Environmental Education. The current study seeks to bridge this knowledge gap by investigating the effect of administration support on implementation of Environmental Education in Molo sub-county.

In a study, Mandila (2008) investigated the influence of environmental knowledge on secondary school students' attitudes toward environmental conservation in Central division, Machakos district, Kenya. The study sought to establish the relationship between knowledge, attitude and environmental conservation within the framework of the established school curriculum. The study found that teachers and students were inadequately equipped with the relevant knowledge. Further findings revealed that the administration did not offer support and encouragement towards enhancement of Environmental Education. Despite high positive environmental attitudes among the students and teachers, there was poor commitment among schools to carry out environmental activities.

In regard to the above study, Okoth (2014) observed that some study indicated that there is a significant relationship between attitude, awareness and administration support while others show there was no correlation. This calls for further study to verify these diverse claims. Moreover, Mandila (2008) argued that the education curriculum supports Environmental Education but most schools did not implement Environmental Education. The current study seeks to establish whether lack of administration support is one of the reasons why implementation of Environmental Education is ineffective.

2.3.4 Curriculum Design

Curriculum design (also curriculum organization) refers to the ways in which we arrange the curriculum components (Shawer, 2011). Regardless of the underpinning curriculum model, all curriculum designs endeavour to address four curriculum

components: Why do we initiate instruction or aims? What should we teach to realize our set aims and objectives (content or subject matter)? How can we communicate target learning experiences (pedagogy, instruction)? What have we realized and what actions should we take accordingly in relation to the instructional program, learners, and teachers (evaluation)? (Shawer, 2011).

The curriculum design process at course level sets the context for topic design and topic design sets the context for each learning experience (Stutt, 2018). Topics need to be designed to come together in structured combinations to form coherent major and minor sequences and courses. Parts of the process especially at the course and topic levels overlap and ideally should occur interactively with course design informing and influencing topic design and topic design informing and influencing course design. The fundamental purpose of curriculum development is to ensure that students receive integrated, coherent learning experiences that contribute towards their personal, academic and professional learning and development (Shawer, 2011).

In a study, Baxte and Jack (2008) researched on effective methods of curriculum implementation. The study found that integrative teaching was an effective method of teachers. Teachers were able to strategize on how they developed skills of a particular subject. As a result, this helped students build on diverse prior knowledge and research. In Iran, Omran and Yarmohammadian (2015) examined designing environmental literacy curriculum for secondary school education system in Iran using an integrated approach. The study found that purpose, content, methods of teaching-learning and evaluation were factors that enhanced Environmental Education in secondary schools in Iran.

In a study, Yueh (2010) examined Environmental Education in Taiwanese junior high schools. The study sought to identify the challenges facing the teaching and learning of Environmental Education. This was done through a critical analysis of choice of curriculum models. Findings indicated that although many schools in Taiwan had a positive attitude towards Environmental Education, the method of carrying out the same did not yield positive results. Findings revealed that strategies infused during national curriculum change phase had no impact in schools. Further findings indicated

that there was ineffectiveness of the eleven supporting themes, there were no external examination credit and Environmental Education was not prioritized. As such there was no systemic syllabus for Environmental Education.

In Tanzania, Mwendwa (2017) carried out a study on learning for sustainable development through integration of Environmental Education in the curriculum of ordinary secondary students in Tanzania. The study sought to assess the extent to which Environmental Education curriculum enhanced environmental sustainability. This was done through evaluation of subjects used to deliver Environmental Education. The study established that there were weaknesses in the curriculum as far as implementation of Environmental Education was concerned. These challenges included integrated learning approach, lack of adequate knowledge on Environmental Education, lack of support from the administration and cultural myths and beliefs.

In Kenya, Nganga (2016) examined the challenges and opportunities of teaching and Environmental Education in secondary schools in Ruiru District, Kenya. Findings indicated that majority of the challenges facing implementation of Environmental Education were curriculum and administrative based. There was inadequate provision of effective methods of integration. Moreover, instructional materials were inadequate. The study observed that there was need for pre-and in-service programmes for teachers as well as regular monitoring of Environmental Education implementation.

2.4 Research Gaps

Research indicates that Environmental Education in Kenyan secondary schools was introduced in the early 1980s (Kabubo-Mariara and Mwabu, 2014). However, critics lament that there has been minimal attempts by the students to participate in environmental protection (Kiprotich, 2014). Arguments are rife that majority of the researchers in the area of Environmental Education focus on the impact of Environmental Education rather than the factors affecting the implementation (Mutisya and Baker, 2011). This study seeks to establish the effect of teachers' attitude, students' attitude, administrative support and curriculum design on Environmental Education curriculum implementation.

Many of the studies carried out on Environmental Education focus of elementary and primary schools (Tilmaz *et al*., 2009; Mutisya and Baker, 2011; Kiprotich, 2014). Primary schools have different teaching methodologies and approach to Environmental Education and conservation (Shawer, 2011). The documented data on these studies might not be a representative of barriers affecting Environmental Education implementation in public secondary schools in Molo sub-County.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Study Area

The study was carried out in Molo sub-county, Nakuru County. Molo town is along the Mau Forest which runs on the Mau Escarpment. It is approximately 50 kilometers from Nakuru town and four (4) kilometers from Nakuru - Eldoret Highway. The area is a highland with a cool and wet climate. The main economic activities are farming and forestry. Molo boasts of both small and large scale farmers. There are several well-endowed foreigners investing in farming, most of them associated to the elite class in Kenya. A variety of farming activities are carried out in this area including flower farming, maize plantations and livestock keeping. However, the presence of numerous timber yards, by both foreigners and locals, has resulted to a high rate of forest destruction and timber illegal felling. Efforts to reclaim land and grow trees have been outpaced by logging and charcoal making. The Kenyan government has since declared all forests contained from human activity (GoK, 2015).

Drought, intense rains, floods, and high temperatures already challenge productivity, incomes and food security in the sub-county and are expected to pose even greater challenges in the future (GoK, 2015). Looking to the future in the years 2021-2065, prolonged moisture stress is projected to occur across both seasons of the year analyzed and consecutive days of moisture stress are projected to more than double in the first wet season from approximately 35 days to over 70 days on average (GoK, 2017). While only small changes in intense precipitation are expected to occur, precipitation is projected to increase by 0.3% in the first wet season, and 6% in the second wet season. These all indicate the need of preparing agricultural systems to expected increased incidence of droughts and floods in the future.

At the moment, crop farmers' strategies to cope with climate hazards include tree planting, soil and water conservation and changing crop type, and, to lesser extents, staggered cropping, diversification of enterprises, and post-harvest storage and processing. In livestock production, farmers resort to changing livestock type and feed conservation. However, the lack of productive resources, infrastructure, and technical skills often result in low uptake and adoption of these strategies (Njoroge and

Manyasa, 2014). Successful implementation of climate adaptation strategies requires strengthening of the institutional and financial capacity of relevant stakeholders. This will enable them to deliver basic resources and agricultural incentives to the target beneficiaries and thus keep them engaged in sustainable agricultural activities. Farmers need information to understand the urgency for adapting to climate change by being able to access appropriate extension services in a timely manner.

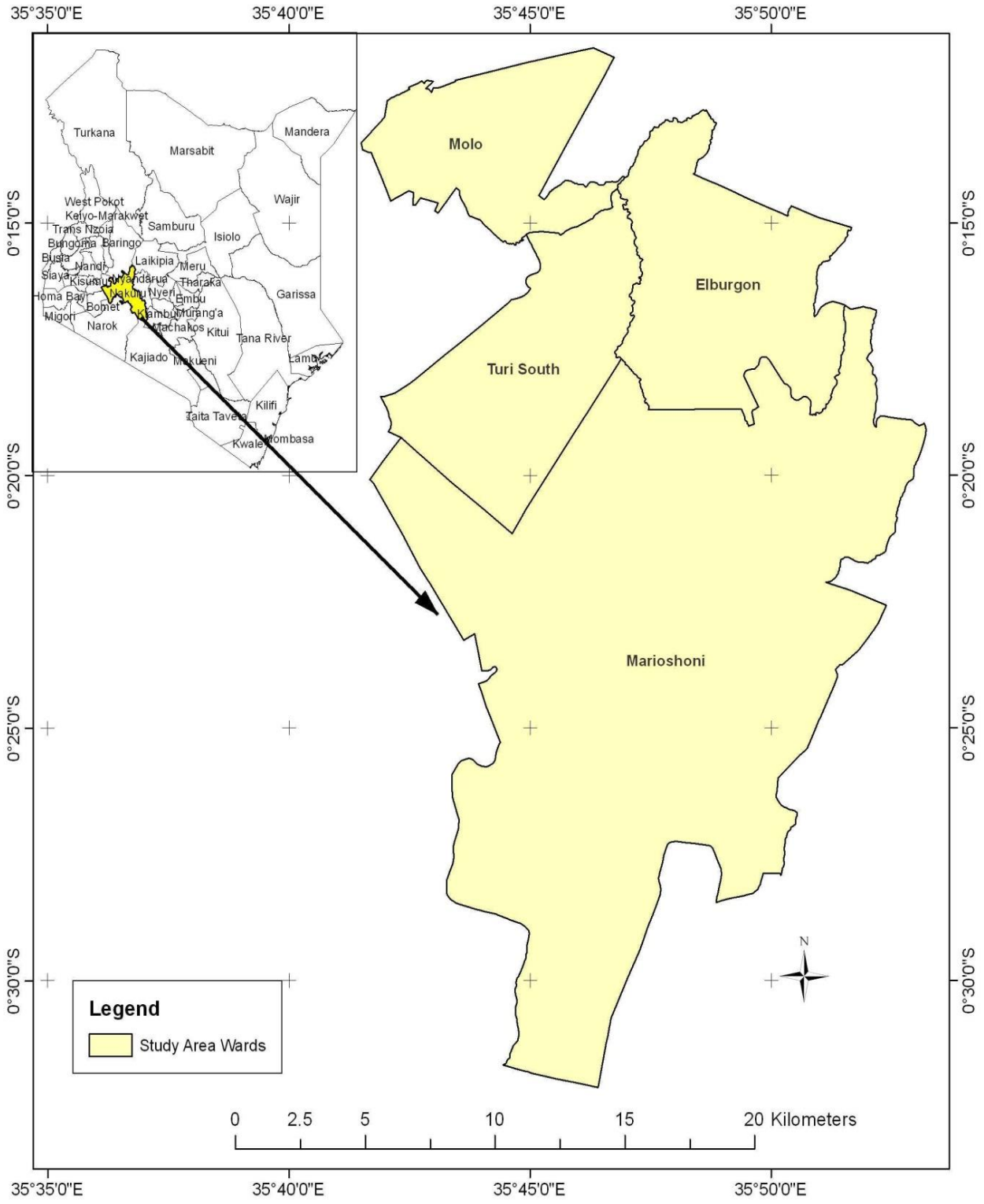

Figure 3.1 Map of Molo sub-County

Source: Independent Electoral and Boundaries Commission (2016).

3.2 Study Design

The study used a descriptive survey approach. Bryman and Bell (2012) states that the basic aim of a survey research is to collect information at one point in time. The authors define descriptive research as a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subject in the study. Descriptive research involves describing, reading, analysing and interpreting condition that exists.

The study used descriptive survey design. This was useful in establishing the relationship between the preconceived factors affecting the implementation of Environmental Education in secondary schools in Molo and the extent of implementation of the latter. The method was chosen since the researcher had no absolute control over the variables used like the available resources for use in Environmental Education. Survey design was used since it was considered as the most efficient and reliable method of collecting descriptive data that would help in addressing most of the research questions (Ng'ang'a, 2010).

3.3 Population

Data was collected from 16 public secondary schools selected purposefully from the four wards in Molo sub-county. The study chose to collect data from schools with similar characteristics. All these schools chose were public mixed day schools. These wards are Turi, Molo, Elburgon and Marioshoni. Molo sub-county has 41 secondary schools. Of these, 28 are public day, 5 are public boarding, 3 are private boarding and 3 are private day secondary schools. However, 3 are yet to be registered by the ministry of Education. The schools have a total of 256 teachers employed by the Teachers Service Commission (TSC). However, the study focused on 16 public schools. The selection of the 16 schools was arrived at after considering the nature of their catchments. The list of the schools is attached in the appendix.

3.4 Sampling Procedure

Sampling is a procedure of selecting a part of population on which research can be

conducted, which ensures that conclusions from the study can be generalized to the entire population. The researcher made use of purposive sampling or judgement sampling. This is a non-probability sampling technique. Purposeful sampling is the process of selecting the exact sample the researcher is interested in. Purposive or judgemental sampling is an acceptable kind of sampling for special purposes. It uses the judgement of an expert in selecting cases with a specific purpose in mind. As a non-probability sampling technique, Bryman and Bell (2012) pointed out that purposive sampling is a technique where units investigated are based on the judgement of the researcher.

The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest, which will best enable you to answer your research questions. The researcher used purposeful sampling because the kind of questions the research instrument raised needed to be addressed by specific subject teachers. The principals were then asked to select a teacher each teaching Physics, Biology, Geography, Chemistry and Agriculture to take part in filling the questionnaires. Currently the curriculum integrates Environmental Education to these subjects (Mutia, 2018).

3.5 Sample Size

The selected 80 teachers, 5 from each school under study were involved in filling the questionnaires. Two students, a boy and a girl, were randomly picked in each class from form one to form four in the 16 schools. A total of 128 students were selected. The purpose of this selection was to ensure that each form in the 16 schools had been represented without bias (Bryman and Bell, 2012). Of the 41 schools, 8 are urban, 12 are peri-urban and 21 are rural. The 16 were picked purposefully to represent the three clusters whereby 2 were urban, 4 peri-urban and 10 rural. According to Mugenda and Mugenda (2003), a sample size of 10% of the population is considered adequate for descriptive study Prior to the start of the study, a circular was sent to the schools participating in the survey indicating the aims of the study and the required information. The circular served to introduce the researcher to teacher and the management teams of the schools. Primary data was also collected through field observations and use of questionnaires. This was complemented by secondary data to more adequately address and answer the research questions and meet the objectives.

3.6 Research Instruments

3.6.1 Knowledge level and administrator and teacher questionnaire

The questionnaire contained open-ended questions that were considered relevant to the data being sought. The questions were framed to elicit responses that would reliably answer the research questions raised. The questionnaire included an attitude scale, which consisted of a set of statements that did not have correct or wrong answers. The scale ranged from 1-4, with zero to represent a neutral response. 1 represented strong agreement with the statement while 4 represented strong disagreement with the statement.

3.6.2 School environmental status checklists

The researcher developed a checklist to investigate the extent to which the school had committed its resources towards preservation of the environment. This checklist was important because it enabled the study identify different environmental activities carried out in the school. The researcher went around and physically ticked all the activities and environmental resources within the school.

3.7 Data Collection Procedures

A research permit was sought from the Ministry of Education Science and Technology. The sample schools were consulted in advance in order to obtain their consents and booking of appointments. The direct method of administration of questionnaires was used. Questionnaires were distributed directly to the research participants; clarifications were sought and collected on completion.

3.8 Data Analysis

Collected data was analyzed through descriptive statistics using the Statistical Package for Social Science (SPSS version 16). Two steps of detailed statistical analysis were involved. At the first stage, descriptive statistical analysis was performed to extract frequencies, percentage, means and standard deviation of underlying study variables teachers' attitude, students' attitude, administrative support and curriculum design. Tables, charts and graphs were be used to present the study findings as appropriate. At the second stage, multiple regression analysis was performed to understand the relationship among these variables.

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents the findings of the study that was carried out to establish the barriers to implementation of Environmental Education mixed day secondary schools in Molo sub-county. The objectives were to:

a) To determine the effect of teachers' attitude towards Environmental Education on Environmental Education implementation in secondary schools in Molo sub-county.
b) To examine the effect of students' attitude towards Environmental Education on Environmental Education implementation in secondary schools in Molo sub-county.
c) To find out the effect of administrative support on Environmental Education implementation in secondary schools in Molo sub-county.
d) To establish the relationship between curriculum design and Environmental Education implementation in secondary schools in Molo sub-county.

4.2 Response Rate

The sample size of the study consisted of 80 teachers and 128 students drawn from 16 mixed day secondary schools in Molo sub-County. Data was collected through hand delivered questionnaires which were collected within a period of one week. The response rate that was recorded from the research instruments is as tabulated below

Table 4.1 Response Rate on the Teachers' Research Questionnaires

	Frequency	Percentage
Number of instruments administered	80	100%
Number of respondents who answered the questions	75	93.75%
Number of respondents who didn't answer the questions	5	6.25%

Table 4.2 Response Rate on the Students' Research Questionnaires

	Frequency	Percentage
Number of instruments administered	128	100%
Number of respondents who answered the questions	125	97.67%
Number of respondents who didn't answer the questions	3	1.67%

4.3 Findings on Barriers to Environmental Education Implementation

4.3.1Teachers' Attitude towards Environmental Education Implementation

The first objective was to determine the effect of teachers' attitude towards Environmental Education on Environmental Education implementation in secondary schools in Molo sub-county. The research question was: To what extent do teachers' attitudes towards Environmental Education affect Environmental Education implementation in secondary schools in Molo Sub-County? The instruments used were questionnaires. The questionnaires were designed in a scale of 1-4 where 1=Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

The study found that respondents, as indicated by a mean of 3.2 said they were not adequately knowledgeable on Environmental Education issues including pollution, waste management and disposal, climate change, deforestation, soil conservation and water harvesting. Similarly, most of the respondents, as indicated by a mean of 3.5, said that they did not often integrate the above educational concepts in their day-to-day learning and teaching. In other findings, respondents agreed that they did not have adequate training on how to conduct Environmental Education as indicated by a mean of 1.83. These findings are in tandem with Kelani (2015) who found that most teachers assigned to teach Environmental Education had limited knowledge of environmental concepts.

The respondents also agreed that they were not knowledgeable on some environmental concepts hence avoided teaching then in class and that they did not prioritize teaching Environmental Education in class as indicated by a mean of 1.90. These findings are supported by Boiyo (2014) who found that Environmental Education implementation was hampered by teachers' negative attitude towards the subject.

Other findings indicated that most respondents agreed that they found Environmental Education irrelevant and a waste of time because it was not adequately tested in the national exam as indicated by a mean of 2.05. These findings are similar to those of Mutisya (2011) who found that teachers felt that teaching Environmental Education

was a waste of time as students did not embrace the subject. According to Kiprotich (2014), successful implementation of Environmental Education was determined by attitude of individual subject teacher towards Environmental Education. Findings are indicated in table 4.

Table 4.3 Teachers' Attitude

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
a. I'm adequately knowledgeable Environmental Education issues including pollution, waste management & disposal, climate change, deforestation, soil conservation and water harvesting	75	1.00	4.00	3.2533	1.38616
b. I often integrate (a) above in my day-to-day learning and teaching	75	1.00	4.00	3.5067	1.60551
c. I do not have adequate training to effectively conduct Environmental Education	75	1.00	4.00	1.8533	1.17051
d. I perceive Environmental Education as a waste of time because it is not adequately tested in the national exam	75	1.00	4.00	2.0533	1.45094
e. I am not knowledgeable on some Environmental Education concepts hence avoid teaching them in class	75	1.00	4.00	1.9067	1.29629
f. I do not prioritize teaching Environmental Education in class	75	1.00	4.00	1.9067	1.32719
g. Valid N (listwise)	75				

4.3.2 Students' Attitude towards Environmental Education Implementation

The second objective was to determine the effect of students' attitude towards implementation of Environmental Education in public mixed day secondary schools in Molo sub-county. The research question was: To what extent does students' attitude towards Environmental Education on Environmental Education implementation in public mixed day secondary schools in Molo sub-county. The instruments used were questionnaires. The questionnaires were designed in a scale of 1-4 where 1=Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

Study findings indicated that majority of the respondents strongly agreed that students prioritized examinable subjects and concentrated less on Environmental Education as indicated by a mean of 3.81. These findings are supported by Mutisya *et al*. (2013) who found that though students had a positive attitude towards the environment and felt there was need to conserve it, they were not keen on embracing Environmental Education in class. This is because they concentrated more on the examinable subjects.

Similarly, respondents agreed, as indicated by a mean of 3.63 that students found Environmental Education too tedious and associated it with manual work as indicated by a mean of 2.89. For this reason, they did not participate adequately in Environmental Education. These findings are supported by Kiprotich (2014) who argued that students, especially those from poor backgrounds and villages, considered Environmental Education as manual work hence had a negative attitude towards Environmental Education.

Further findings showed that respondents found Environmental Education boring as indicated by a mean of 3.2. According to Glackin (2017), teaching Environmental Education without practical demonstration can be tedious and boring. The author advocated for variation in teaching Environmental Education.

These findings are as shown on table 4.4 below

Table 4.4 Students' Attitude Towards Environmental Education

	N	Minimum	Maximum	Mean	Std. Deviation
a. I find Environmental Education boring	125	1.00	4.00	3.2000	1.16248
b. I consider Environmental Education tedious hence do not participate adequately	125	1.00	4.00	3.6333	1.35899
c. I tend to prioritize examinable subjects and concentrate less on Environmental Education	125	1.00	4.00	3.8133	1.28077
d. I associate Environmental Education with manual work hence have a negative attitude	125	1.00	4.00	2.8900	1.12898
e. Valid N (listwise)	125				

4.3.3 Administrative Support and Implementation of Environmental Education

The third objective was to find out the effect of administrative support on Environmental Education implementation in public day secondary schools in Molo sub-county. The research question was: What is the effect of administrative support on Environmental Education in implementation of Environmental Education in public day secondary schools in Molo sub-county. The instruments used were questionnaires. The questionnaires were designed in a scale of 1-4 where 1= Strongly agree, 2=Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

Study findings indicated that majority of the respondents admitted that the school administration did not involve teachers in Environmental Education workshops and seminar and that the administration did not facilitate trainings related to Environmental Education on regular basis as indicated by a mean of 3.5. Further findings indicated that the respondents disagreed that the administration allocated adequate time for Environmental Education activities in the school as indicated by a

mean of 3.72. This findings are in tandem with those of Bosah (2013) who found that majority (85%) of the teachers under study felt that the management did not provide adequate financial and personnel resources in the implementation of Environmental Education in schools.

Further findings indicated that the school administration was not actively involved in the organization of Environmental Education as indicated by a mean of 3.20. This is contrary to Kiprotich (2014) argument that for successive implementation of Environmental Education, the school administration should be fully involved in programming, facilitation and training and funding Environmental Education.

Other findings indicated that the school administration to a low extent evaluated how Environmental Education was integrated in the school's curriculum as indicated by a mean of 3.19. This is contrary to earlier findings from the principal that they evaluated integration of Environmental Education to a moderate extent. According to Okoth (2014), the school administrations should be actively involved in the school Environmental Education activities. Findings indicated that respondents agreed that the school administration was involved in Environmental Education activities to a moderate extent. However, it is important to note from earlier findings that these activities were not often carried out in the schools under study. Findings are indicated in table 4.5

Table 4.5 Views of Teachers on administration support

	N	Minimum	Maximum	Mean	Std. Deviation
a. The school administration is actively involved in the school Environmental Education activities in the school	75	1.00	4.00	3.2000	1.31519

b.	My school administration often evaluates how Environmental Education is integrated in the school's curriculum	75	1.00	4.00	3.1867	1.58279
c.	The school allocates adequate resources towards effective implementation of Environmental Education	75	1.00	4.00	3.4133	1.24220
d.	The school administration is actively involved in the organization of Environmental Education	75	1.00	4.00	3.8933	1.21448
e.	The school administration allocates adequate time for Environmental Education activities in the school	75	1.00	4.00	3.7200	1.23201
f.	I am facilitated to attend trainings related to Environmental Education on a regular basis	75	1.00	4.00	3.5069	1.01839
g.	The school administration involves teachers in Environmental Education workshops/seminars	75	1.00	4.00	3.383	1.01839
h.	Valid N (listwise)	75				

4.3.4 Curriculum Design and Implementation of Environmental Education

The fourth objective was to find out the effect of curriculum design on Environmental Education implementation in public day secondary schools in Molo sub-county. The

research question was: What is the relationship between curriculum design and implementation of Environmental Education in public day secondary schools in Molo Sub-County? The instruments used were questionnaires. Study findings indicated that majority (66.2%) felt that there were no clear guidelines on the implementation of the Environmental Education curriculum in their school, 16% agreed that there were no clear guidelines. On the other hand, 16.9% said that that there were clear guidelines on implementation. These findings are supported by (Nganga, 2016) who observed that Kenyan schools lacked adequate provision of effective methods of integration. Findings are indicated in table 4.6

Table 4.6 Guidelines on Environmental Education Implementation

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Strongly agree	51	68.0	68.0	68.0
	Agree	10	13.3	13.3	81.3
	Neutral	1	1.3	1.3	82.7
	Disagree	13	17.3	17.3	100.0
	Total	75	100	100.0	

Having established whether there were clear guidelines on implementation of Environmental Education curriculum, the study sought to find out whether implementation was affected by the workload. According to the findings, 39 and 32.5% respectively strongly agreed and agreed that their subject workload was too much hence inability to teach Environmental Education effectively. Other findings indicated that 14.3% said that their workload was not too much. This implies that majority of the respondents were overworked hence unable to deliver implementation of Environmental Education effectively. These findings are in tandem with Kabubo-Mariara (2014) who found that Environmental Education is not taken as a separate subject. Due to congestion of the curriculum, it is at times difficult for teachers to achieve the targets of teaching Environmental Education. The findings in regard to subject workload are as indicated in Table 4.7

Table 4.7 Teachers Workload and Environmental Education Implementation

		Frequency	Percent	Valid Percent	Cumulative Percentage
Valid	Strongly agree	30	40.0	40.0	40.0
	Agree	25	33.3	33.3	73.3
	Neutral	6	8.0	8.0	81.3
	Disagree	11	14.7	14.7	96.0
	Strongly disagree	3	4.0	4.0	100.0
	Total	75	100	100.0	

Having established the effect of workload on implementation of Environmental Education, the study then sought to establish whether Environmental Education was adequately tested during national examinations and the effect of adequacy on emphasis during teaching. Study findings indicated that 41.6% of the respondents were none committal on whether Environmental Education was adequately tested during national exams and hence prioritization. In other findings, 4% strongly agreed and 22.1% agreed that Environmental Education was inadequately tested hence not emphasized in class. Further findings indicated that 24.7% disagreed and 3.9% strongly disagreed that Environmental Education was inadequately tested. Study findings implied that most respondents were not aware on adequacy of testing or were disinterested as indicated by a neutral response of 41.6%. The findings are indicated on table 4.8

Table 4.8 Adequacy of Testing Environmental Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	4	5.3	5.3	5.3
	Agree	17	22.7	22.7	28.0
	Neutral	32	42.7	42.7	70.7
	Disagree	19	25.3	25.3	96.0
	Strongly disagree	3	3.9	4.0	100.0
	Total	75	100	100.0	

The study further sought to find if there was inadequate provision of effective methods of integration. Study findings indicated that majority (66.2%) strongly agreed while 13% agreed that there was inadequate provision of effective methods of integration. On the other hand, 16.9% disagreed that methods of integration were inadequate. These findings are in tandem with Nganga (2016) who observed that implementation of Environmental Education was hampered by inadequate provision of effective methods of integration. Study findings are as indicated in table 4.9

Table 4.9 Provision of effective methods of integration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	51	66.2	68.0	68.0
	Agree	10	13.0	13.3	81.3
	Neutral	1	1.3	1.3	82.7
	Disagree	13	17.3	17.3	100.0
	Total	75	100	100.0	
Missing	System				
Total					

4.4 School Environmental Checklist

The researcher visited the 16 schools and through observation ticked the resources and environmental activities that were carried out in the schools. The checklist was significant as it help the researcher gauge the level of environmental awareness and environmental practices in the schools. Research findings indicate that majority of the

schools did not have an incinerator and there was no water being harvested as indicated by 81.5%. Moreover, many schools eco-codes, tree nurseries were absent or poorly managed as indicated by 62.5%. Further findings revealed that flower beds were not watered adequately as indicated by a response rate of 37.5% indicating poor and 25% indicating very poor. The only environmental aspect that had a positive status was lack of presence of scattered litter indicated by 37.5% as satisfactory and 12.5% as good. This was still a low percentage considering 50% indicated poor and below. This implies that there was still much needed to be done to improve on disposal of litter.

Table 4.10 Checklist of school environment status

	Very poor	Poor	Satisfactory	Good	Excellent
Presence of Eco-Codes	63.00%	18.50%	18.50%	0	0
Well watered flower beds	25%	37.50%	12.50%	25%	0
No presence of scattered litter eg papers/polythene bags	25%	25%	37.50%	12.50%	0
Presence of well used and managed pit-litter	6.50%	18.50%	50%	18.50%	6.50%
A process of waste separation has been put in place	63%	25%	12%	0	0
Presence of dustbins	18.50%	31.50%	31.50%	18.50%	0
Presence of an incinerator	81.50%	12.50%	6%	0	0
Presence of at least 20 well planted trees	0.00%	0%	62.50%	12.50%	25.00%
Trees that have been labelled	75%	6.50%	18.50%	0	0
Well demarcated pathway for students	31.50%	6.50%	18.50%	31.50%	12%
Presence of tree nursery within the school	62.50%	25%	12.50%	0	0
Water is being harvested	81.50%	18.50%	0	0	0

Presence of taps or water used sustainably	12.50%	18.50%	31.50%	37.50%	0

Other positive indications were presence of well demarcated pathways for students indicated by 18.5% as satisfactory and 31.5% as good condition. Study findings indicated presence of at least 20 well planted trees in schools as indicated by 62.5% observation as satisfactory, 12.5% as good and 25% as excellent. This implies that schools had embraced tree planting which was commendable. However, the process of waste separation was lacking or poorly carried out in schools as indicated by 63% as very poor and 25% as poor. Findings are indicated in Table 4.12

4.5 Hypothesis Testing

In order to test the significant relationship between Environmental Education Implementation and how it's affected by teacher attitude, student attitude, administration support and curriculum design, the Spearman Rank Order Correlation was used. The research data was combined and analysed to check the strength of the relationship. The analysis was as presented below in Table 4.11. Findings revealed a positive correlation between teacher attitude, student attitude, administration support and curriculum design. Specifically, it was noted that there was a positive correlation between teacher attitude, r (.45), student attitude, r (.53), administration support, r (.62) and curriculum design, r (.58) and implementation of Environmental Education.

Table 4.11 Correlation Analysis

		EE Implementation	Teacher Attitude	Student Attitude	Administration Support	Curriculum Design
EE Implementation	Spear man Correlation Sign (2-tailed)	1.00	0.45	0.53	0.62	0.58
Teacher Attitude	Spearman Correlation Sign (2-tailed)	0.45	1.00			
Student Attitude	Spearman Correlation Sign (2-tailed)	0.53		1.00		
Administration Support	Spearman Correlation Sign (2-tailed)	0.62			1.00	
Curriculum Design	Spearman Correlation Sign (2-tailed)	0.58				1.00

Based on these findings we accept the hypothesis that teacher attitude, student attitude, administration support and curriculum design acted as barriers to implementation of Environmental Education in public day secondary schools in Molo sub-county.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

5.1.1 Effect of Teacher Attitude towards Implementation of Environmental Education

Study findings indicated that majority of the respondents disagreed that they were adequately knowledgeable on Environmental Education issues including pollution, waste management and disposal, climate change, deforestation, soil conservation and water harvesting. Similarly, most of the respondents said that they did not often integrate the above educational concepts in their day-to-day learning and teaching. In other findings, respondents agreed that they did not have adequate training on how to conduct Environmental Education.

The respondents also agreed that they were not knowledgeable on some environmental concepts hence avoided teaching them in class and that they did not prioritize teaching Environmental Education in class. Other findings indicated that most respondents agreed that they found Environmental Education irrelevant and a waste of time because it was inadequately tested in the national exam.

5.1.2 Effect of Student Attitude towards Implementation of Environmental Education

Study findings indicated that majority of the respondents strongly agreed that students prioritized examinable subjects and concentrated less on Environmental Education. Similarly, respondents agreed that students found Environmental Education too tedious and associated it with manual work. For this reason, they did not participate adequately in Environmental Education.

5.1.3 Effect of Administrative Support on Implementation of Environmental Education

According to responses from principals, findings indicated that majority of the respondents facilitated teachers' training on Environmental Education. Similarly, respondents rarely involved teachers in Environmental Education and workshops. Further findings indicated that a considerable number of respondents rarely

participated in organizing environmental activities in schools.

Findings revealed that the respondents were involved in some activities to a small extent. These activities included being involved in organizing environmental activities in school, evaluating how environmental programmes were being implemented in the school, and allocating adequate time for environmental activities in the school. Further findings indicated that the respondents moderately involved teachers in Environmental Education programming.

According to responses from the teachers on administration support, study findings indicated that majority of the respondents admitted that the school administration did not involve teachers in Environmental Education workshops and seminar and that the administration did not facilitate trainings related to Environmental Education on regular basis. Further findings indicated that the respondents disagreed that the administration allocated adequate time for Environmental Education activities in the school.

Further findings indicated that the school administration was not actively involved in the organization of Environmental Education. Other findings indicated that the school administration to a low extent evaluated how Environmental Education was integrated in the school's curriculum. This is contrary to earlier findings from the principal that they evaluated integration of Environmental Education to a moderate extent. Findings indicated that respondents agreed that the school administration was involved in Environmental Education activities to a moderate extent. However, it is important to note from earlier findings that these activities were not often carried out in the schools under study.

5.1.4 Relationship between Curriculum Design and Implementation of Environmental Education

Study findings indicated that majority felt that there were no clear guidelines on the implementation of the Environmental Education curriculum in their school. According to the findings, 39 and 32.5% respectively strongly agreed and agreed that their subject workload was too much hence inability to teach Environmental Education effectively. Other findings indicated that 14.3% said that their workload was not too much. Study findings indicated that 41.6% of the respondents were none committal on whether Environmental Education was adequately tested during national

exams and hence prioritization. In other findings, 4% strongly agreed and 22.1% agreed that Environmental Education was inadequately tested hence not emphasized in class. Further findings indicated that 24.7% disagreed and 3.9% strongly disagreed that Environmental Education was inadequately tested. Study findings implied that most respondents were not aware on adequacy of testing or were disinterested as indicated by a neutral response of 41.6%. The findings are indicated on table

Study findings indicated that majority (66.2%) strongly agreed while 13% agreed that there was inadequate provision of effective methods of integration. On the other hand, 16.9% disagreed that methods of integration were inadequate.

5.2 Conclusion

5.2.1 Teacher Attitude as a Barrier to Implementation of Environmental Education

From the study findings, it can be concluded that teacher attitude towards acquisition of knowledge on Environmental Education matters has a bearing on how the teachers effectively carry out the implementation of Environmental Education. Among the matters related to Environmental Education, teachers had moderate to limited knowledge on environmental matters implying that the teachers do not have the ability to implement Environmental Education effectively.

Moreover, teachers agreeing that they considered the subject a waste of time imply that they integrate it less in their subject. The study further concluded that lack of adequate training hindered effective undertaking of Environmental Education in secondary schools in Molo sub-County. From the findings, the study concluded that majority of the teachers do not prioritize Environmental Education as they consider the subject irrelevant and a waste of time.

5.2.2 Student Attitude as a Barrier to Implementation of Environmental Education

From the study findings, the study concluded that students' attitude moderately impacted on Environmental Education implementation. This is based on the findings that the students prioritized examinable subjects and concentrated less on

Environmental Education. The students were also said to have an opinion that Environmental Education was too tedious and associated with manual work. However, the study concluded that students' attitude towards Environmental Education was not as significant because teachers had a responsibility of giving the students the right information towards Environmental Education. To an extent, the attitude of the teachers towards the subject trickles down to the student and affect the students' attitude towards Environmental Education.

5.2.3 Administrative Support as a Barrier to Implementation of Environmental Education

From the findings, the study concluded that administration support was one of the major barriers to implementation of Environmental Education. This is because lack of training on Environmental Education, lack of teacher involvement and inadequate organization of environmental activities in schools all affected teachers' attitude and morale towards implementation of Environmental Education. Teachers also lamented that there was inadequate allocation of time for environmental activities in schools. The study also concluded that lack of administrations' active participation in Environmental Education activities showed lack of commitment to the implementation process.

5.2.4 Curriculum Design as a Barrier to Implementation of Environmental Education

From the study findings, the study concluded that curriculum design was also one of the major barriers to Environmental Education implementation. One of the major factors of curriculum design affecting Environmental Education implementation was lack of clear guidelines on the implementation of the Environmental Education curriculum in schools. The curriculum was designed in such a way that teachers had a lot of work and hence paid less attention to Environmental Education. Moreover, findings that most teachers did not indicate whether Environmental Education was inadequately tested during national examinations implied that the curriculum was not clear on this issue.

5.3 Recommendations

5.3.1 Teacher Attitude and Implementation of Environmental Education

From the findings, it is evident that teacher attitude has a significant effect of implementation of Environmental Education. As such, the study recommends that the Ministry of Education needs to sensitize teachers on the importance of Environmental Education. Training on components of Environmental Education should also be carried out. This is because a knowledgeable workforce would be in a position to implement Environmental Education more effectively.

5.3.2 Students' Attitude and Implementation of Environmental Studies

On students' attitude, teachers should strive to have a positive attitude towards Environmental Education. This is because their opinion and actions the teachers take towards Environmental Education are adapted by the students. Teachers should also adequately test Environmental Education during continuous assessment tests in order to emphasize on importance of Environmental Education. This will change the attitude of the students that Environmental Education is a less important subject.

5.3.3 Administration Support and Implementation of Environmental Education

On administration support, study findings indicated that administration support was a major barrier to implementation of Environmental Education in secondary schools in

Molo sub-County. As such, the study recommended that the schools' administration show support towards Environmental Education be actively participating in organization and funding, and evaluation of environmental activities in schools. Moreover, the school administration should ensure that teachers receive adequate training and orientation towards implementation of Environmental Education.

5.3.4 Curriculum Design and Implementation of Environmental Education

On curriculum implementation, policy makers should ensure they come up with clear guidelines on how Environmental Education should be implemented. There should be a balance between all the subjects including Environmental Education, to minimize teacher fatigue and lack of prioritization of Environmental Education.

5.4 Recommendations for further study

Arising from the study findings, the researcher proposes the following areas for further study:

i) This study was focused on the barriers to Environmental Education implementation in secondary schools in Molo sub-County; there is need to carry out a comparative study on Environmental Education implementation in both private and public schools in the larger Nakuru County.

ii) The study also recommends that a study on other possible barriers to Environmental Education be carried out to establish their contribution to the effective implementation of Environmental Education in secondary schools.

iii) The study recommends a further analysis on how curriculum design affects Environmental Education implementation. This is because this variable had the most significant influence on Environmental Education implementation.

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APPENDIX I: TEACHER'S QUESTIONNAIRE

Dear respondent,
The researcher, Cheruiyot Mutai Gilbert (N50/CE/27956/2013), is a postgraduate student (MSC) at Kenyatta University in the Department of Environmental Education undertaking a study on the FACTORS INFLUENCING ENVIRONMENTAL EDUCATION CURRICULUM IMPLEMENTATION IN MOLO SUB-COUNTY, KENYA. The questions in this questionnaire are for research purpose only and the finding of this study will be treated with utmost confidentiality. Your assistance in answering the questions truthfully and accurately will be highly appreciated.

Section A: Background Information
1. Gender: Male [ ] Female [ ]
2. Age: Below 35 years [ ] 36-40 years [ ] 41-45 years [ ] Above 46 years [ ]

Section B: Teachers' Attitude
9. Below are statements related to your attitude towards Environmental Education, tick appropriately
1= Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4 =Strongly Disagree

No.	Statement	1	2	0	3	4
1.	I often integrate (1) above in day-to-day classroom learning and teaching					
2.	I do not have adequate training to effectively undertake Environmental Education					
3.	I perceive Environmental Education to be a waste of time because it is not adequately covered in the national examination					
4.	I'm not knowledgeable on some Environmental Education concepts and methodology hence avoid teaching it in class					
5.	I do not prioritize teaching of Environmental Education					

Section C: Administrative Support

7.Below are statements related to administrative support and Environmental Education in your school, tick appropriately
1=Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

No.	Statement	1	2	0	3	4
1.	The school administration allocates adequate time for Environmental Education activities in the school					

2.	The school administration involves teachers in Environmental Education workshops/seminars					
3.	I am facilitated to attend trainings related to Environmental Education on a regular basis					
4.	The school administration is actively involved in Environmental Education activities in the school					
5.	My school allocates adequate resources towards effective implementation of Environmental Education					
6.	The school administration is actively involved in the organization of Environmental Education					
7.	My school administration often evaluates how Environmental Education is integrated in the school's curriculum					

Section D: Curriculum Design

8.Below are statements related to curriculum design and Environmental Education in your school, tick appropriately

1=Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

No.	Statement	1	2	0	3	4
1.	There are no clear guidelines on the implementation of the Environmental Education curriculum in my school					
2.	My subjects' workload is too much hence cannot be able to teach Environmental Education effectively					
3.	Environmental Education is inadequately tested during national exams hence I do not emphasize on teaching it in class					
4.	There is no systemic syllabus for Environmental Education					
5.	There is inadequate provision of effective methods of integration					

APPENDIX II: STUDENT'S QUESTIONNAIRE

Section A: Background Information

1. Name of the School……..

2. Form: One ( ) Two ( ) Three ( ) Four ( )

3. Gender: Male ( ) Female ( )

Section B: Students' Attitude

10. Below are statements related to students' attitude towards Environmental Education, tick appropriately

1=Strongly agree, 2= Agree, 0= Neutral, 3= Disagree, 4=Strongly Disagree

No.	Statement	1	2	0	3	4
1.	I find Environmental Education boring					
2.	I tend to prioritize examinable subjects and concentrate less on Environmental Education					
3.	I consider Environmental Education tedious hence do not participate adequately					
4.	I associate Environmental Education with manual work hence have a negative attitude towards Environmental Education					

APPENDIX III: SCHOOL ENVIRONMENTAL STATUS CHECK LIST

I am a student at Kenyatta University; I am conducting a research on the factors affecting Environmental Education curriculum implementation in secondary schools in Molo sub-county. This research is a requirement for the award of Master of Science (Environmental Education) Degree. Your answers will be treated with confidentiality and will be used for academic purpose only.

Key: 1 = Very Poor 2 = Poor 3 = Satisfactory 4 = Good 5 = Excellent

Enumerator_____ Questionnaire No. _____ Date_____

Fill appropriately against to confirm the presence and status of the following whole school environmental activities

1. Presence of eco codes [ ]
2. Well tendered flower beds/ lawns [ ]
3. No presence of scattered litter e.g. polythene papers, papers etc. [ ]
4. Presence of a well-used and managed pit for litter [ ]
5. A process for waste separation has been put into place [ ]
6. Presence of dust bins [ ]
7. Presence of an incinerator [ ]
8. Presence of at least 20 trees, well planted and growing [ ]
9. Trees that have been labeled [ ]
10. Well demarcated pathways for students use [ ]
11. Presence of a tree nursery within the school [ ]
12. Water is being harvested [ ]
13. Presence of press taps or a sign that water is used sustainably [ ]
14. Rate the school environmental status of this school

1. [ ] 2. [ ] 3. [ ] 4. [ ] 5. [ ]

(5= Excellent, 4=Very Good, 3=Good, 2=Poor, 1= Very Poor)

15. Any other (specify) ……

THANK YOU AND GOD BLESS YOU

APPENDIX IV: LIST OF SCHOOLS

1. Elburgon DEB
2. Elburgon Secondary
3. Moto Secondary
4. Arimi Secondary
5. Njenga Karume
6. Molo secondary
7. Mwangi Michuki Secondary
8. St. Josephs Secondary
9. Turi Surugwita
10. Chandera secondary
11. Mona Secondary
12. Molo Highway
13. Mianzini secondary
14. Marioshoni Mixed
15. Kapsita sec
16. St. Bredans mixed