ROLE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ENHANCING SUSTAINABILITY AWARENESS AMONG LEARNERS IN SECONDARY SCHOOLS IN NAIROBI COUNTY, KENYA

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N50/CE/26125/2014

A Project Report Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Science (Environmental Education) in the School of Environmental Studies of Kenyatta University, Nairobi, Kenya

APRIL, 2019
DECLARATION

By the candidate:

I declare that this project is my original work and has not been presented in any other university/institution for consideration of any certification. This research project has been complemented by referenced sources duly acknowledged. Where text, data / (including spoken word), graphics, pictures or tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti-plagiarism regulations.

Signature…………………………… Date ………………………………………

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By the Supervisor:

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

Signature……………………………Date ………………………………………

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Department of Environmental Science & Education
Kenyatta University
DEDICATION

I dedicate this project to my lovely husband, children and entire family for their support and understanding during the entire period of time I committed to this project.
ACKNOWLEDGEMENT

First and foremost, I acknowledge the power of God in granting me good health, resources and knowledge I needed to complete this project. I recognize my supervisor, Dr. Kerich, for guiding me throughout the period I developed and finalized the project. Thanks to my immediate family for their love and support. I also acknowledge the help accorded to me by my colleagues in the Department of Environmental Science and Education at Kenyatta University. God bless everyone who contributed to the success of this project.
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<th>Full Form</th>
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<tr>
<td>CBO</td>
<td>Community Based Organization</td>
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<tr>
<td>EE</td>
<td>Environmental Education</td>
</tr>
<tr>
<td>ESD</td>
<td>Education for Sustainable Development</td>
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<tr>
<td>GOK</td>
<td>Government of Kenya</td>
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<tr>
<td>KICD</td>
<td>Kenya Institute of Curriculum Development</td>
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<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<tr>
<td>NEC</td>
<td>National Environmental Council</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environmental Management Authority</td>
</tr>
<tr>
<td>QPSMR</td>
<td>Quantitative Program for Social and Market Research</td>
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<td>SPSS</td>
<td>Statistical Packages for Social Sciences</td>
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<td>UNDESD</td>
<td>United Nations Decade of Education for Sustainable Development</td>
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<tr>
<td>UNEP</td>
<td>United National Environmental Programme</td>
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<td>UNESCO</td>
<td>United Nation Environmental, Social and Cultural Organization</td>
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ABSTRACT

Sustainable development is a critical undertaking that requires the support and commitment of everyone in making it a reality. The role of schools in sustainable development is significant. Being places of teaching and learning, they are eminently suited to help students understand the impact they have on earth. Schools can promote good practices and serve as centres in which young people as well as the local communities learn to appreciate sustainable living and working. This study sought to establish the role of education for sustainable development in enhancing sustainability awareness among secondary school learners in Lang’ata sub county, Nairobi, Kenya. The broad objective of the research was to find out the effectiveness of Education for Sustainable Development (ESD) in enhancing awareness of environmental sustainability among secondary school learners in Lang’ata Sub-County, Nairobi, Kenya. More specifically, the study sought to evaluate the level of ESD implementation in secondary schools; to determine the environmental, social and economic activities among Lang’ata secondary school learners that point to environmental, social and economic sustainability and to find out the factors that hinder effective implementation of ESD programmes in secondary schools in Lang’ata Sub-County. The study adopted descriptive cross-sectional design and employed quantitative method of data collection. It utilized simple random sampling to choose respondents who comprised students from different secondary schools in Lang’ata Sub-County. Structured questionnaires were, therefore, administered to students to obtain quantitative data. Data analysis was conducted using the quantitative program for social and market research alongside the Statistical Packages for Social Sciences (SPSS). The level of significance was set at P ≤0.05. Descriptive statistics was conducted to determine relative frequencies, percentages and means of variables; while measures of central tendency were used to summarize and interpret the research findings. The presentation of quantitative data is done in tables, figures and graphs, while the qualitative data is presented through text. The findings of the study indicated that education for sustainable development was carried out in schools. However, this knowledge was not utilized in environmental sustainability. Students felt that environmental sustainability was important but were indifferent towards activities geared towards the same. Income generating activities carried out to a low extent included poultry keeping, vegetable farming and rabbit keeping since these activities can be done in limited space. Factors cited as hindering effective implementation of ESD programmes included lack of interest among teachers and students, lack of funds, lack of information and busy schools’ schedules. The study recommends a change in the curriculum design to enhance uptake for education for sustainable development. The study also recommends design of environment sustainable programmes that involve both the students and local community. Local environmental leaders should create more awareness by coming up with different environmental programmes and schools should assist students to initiate income generating activities.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

The World is increasingly challenged by relentless economic growth and environmental degradation, amidst the contradictory co-existence of affluence and poverty in their varied forms. These challenges are directly associated with the conservation and preservation of the systems that support life notably water, air, land and ecosystems. The critical forces of environmental degradation include population growth, inappropriate technology and consumption choices, as well as poverty; culminating in changes in relations between people and ecosystems. Others are development undertakings such as intensive agriculture, industrial production and rapid urbanization. In order to address the myriad environmental challenges, Education for Sustainable Development (ESD) is emerging as a vital tool in changing students’ attitudes, behaviour, motivation, commitment and stewardship (UNESCO, 2008).

Conceptually, Sustainable Development emerged in 1972 during the first United Nations Conference on the Human Environment held in Stockholm, Sweden where the task for the international community became one of systematizing and restating existing normative expectations regarding the environment, as well as of boldly positing the legal and political underpinnings of sustainable development. The Rio Earth Summit in 1992 gave the concept greater significance, by prioritizing the global environment discourse and improving upon the initial framework established in Stockholm. The commitment to the right to education was reaffirmed in 2012 at Rio20, with acknowledgement that full access to quality education at all levels is a vital condition towards the attainment of sustainable development.

Additionally, international cooperation was encouraged as a means of achieving this objective (NEMA, 2008). This partnership seeks to offer a framework for the creation of Education for Sustainable Development (ESD), for the purpose of safeguarding environmental integrity, economic viability, and a just society for the present and future generations. The ESD programme furthers these goals by instituting
comprehensive teaching and learning processes that give emphasis to an interdisciplinary and holistic approach that promote critical thinking and creativity in education. ESD promotes this objective on the premise that it is possible to change human behaviour to check destructive tendencies on the environment (NEMA, 2008).

Research has confirmed that the involvement of students in active teaching learning process leads to considerable improvement in retention of knowledge; and that further, it enhances motivation and results in higher-order learning and development of practical skills (Cooper et al, 2000).

Experiential Learning theory asserts that students learn more effectively by doing, observing, thinking and planning than through ‘listening’ (active instead of passive, rote learning). This provides a strong basis for learning in the field, where students undertake environmental projects, data collection and analysis. Fieldwork contributes immensely in raising the confidence and motivation of students, besides giving them direct educational benefits (Kolb, 1984).

In its endeavour to achieve Vision 2030, Kenya is looking towards more sustainable economic and financial options, renewable energy sources and lower carbon footprint as well as greater social equity. In doing so, Kenya intends to put its people at the centre of the social, economic and environmental pillars of sustainable development.

1.2 Statement of the Problem

Despite all the efforts made to promote ESD and its accompanying global awareness of the need for sustainable development, the entire concept of ESD has not been wholly integrated in the curriculum. As such, most people including teachers and students have limited understanding of ESD. This has led to increased unsustainable lifestyles, development patterns and environmental problems.

The city of Nairobi is facing serious environmental challenges owing to its industrial growth, rapid urbanization and the resultant upsurge in the number of motor vehicles. Students are significant agents in generating awareness on environmental issues
because they are nurtured into becoming responsible citizens. The study sought to establish the effectiveness of ESD in enhancing environmental awareness sustainability among secondary school learners in Lang’ata Sub-County, Nairobi, Kenya.

1.3 Research Questions

1. What is the level of awareness on environmental sustainability among secondary school learners in Lang’ata Sub-County, Nairobi County, Kenya?
2. How do the social, economic and environmental activities in Lang’ata secondary schools indicate environmental sustainability awareness?
3. What factors hinder effective implementation of ESD programmes in secondary schools?

1.4 Purpose of the Study

To establish the effectiveness of ESD in enhancing environmental awareness sustainability among secondary school learners in Lang’ata Sub-County, Nairobi, Kenya.

1.5 Objectives of the Study

The objectives of this study were to:

1. Evaluate the extent to which ESD is taught in secondary schools in Lang’ata Sub-County, Nairobi.
2. Determine the social, economic and environmental activities of learners in secondary schools in Lang’ata Sub-County that relate to sustainable development of the environment.
3. Establish ways in which identifiable factors influence the implementation of ESD programmes in secondary schools in Lang’ata Sub-county.
1.6 Research Hypothesis

H₀: ESD is not effective in enhancing awareness among learners in secondary schools about sustainability of the environment.

1.7 Justification of the Study

In Kenya, ESD implementation in schools and other institutions of learning has been faced with numerous challenges. Among them is political instability, changes in education curriculum, education system, inadequate finances and lack of trained personnel to implement the ESD programme in schools and lack of a proper ESD curriculum in for secondary school learners. It is on this basis that this research is being carried out with a view to establishing ways in which ESD can contribute to enhancing sustainability awareness among secondary school learners. Despite the various policy and institutional interventions, the underlying contributing factors to effectiveness of ESD in enhancing environmental sustainability awareness have not been adequately addressed. The economic, social and environmental factors, which are considered in this study, would be useful in finding a lasting solution to these challenges.

1.8 Significance of the Study

The findings of this study will assist education policy makers in Kenya to identify the possible factors that hinder successful implementation of ESD in secondary schools. Additionally, the study will document programmes that enhance sound environmental behaviour can best be developed. Further, it will create awareness about the various complex local environmental issues to the student community.

1.9 Conceptual Framework

This study is premised on the notion that having clean environment, fertile soil, aesthetic value, economic self-reliance and reduced school drop-out rates depend on other independent and intervening variables. The intervening variables, in this case,
are recycling of wastes, income generating projects, proper management of solid wastes, cleaning the environment and supporting the poor; while the independent variable is effective ESD.

Figure 1.0 Conceptual Framework of the study
Source: Adapted & modified :( Chilonda & Huylenbroek, 2001)

The Conceptual Framework indicates that when students are taught ESD effectively, it will lead to recycling of wastes, income generating projects, proper management of solid wastes, cleaning of the environment and supporting the poor; which will in turn lead to a cleaner environment, fertile soil, reduction in poverty level, economic self-reliance and reduced school drop-out rate.

1.10 Definition of Operational Terms

**Attitude** - One’s feeling and response towards an idea, suggestion or an issue.

**Biology** - Natural Science that deals with the study of living things and how to sustain a healthy surrounding of living organisms.

**Biosphere** - Part of the atmosphere occupied by living organisms.
**Conservation** - The process of controlling and managing the environment and all that it contains.

**Curriculum** - A written plan indicating the content of an educational programme and how it is to be taught systematically.

**Deforestation** - Cutting down of trees without replacement.

**Ecosystem** - The interaction of living organisms with their natural surroundings.

**Education** - The process of imparting knowledge to the learners so as to improve their skills, knowledge and attitudes.

**Environment** - Everything that surrounds living organisms.

**Environmental Degradation** - Any action that reduces the quality of an environment, making it less fit for human, animal and plants’ living.

**Environmental Education** - The process of inculcating on the learners all that the surrounding entails and how to conserve the environment.

**Environmental Issue** - Subject concerning the environment which is debatable and people have different opinions concerning it.

**Global warming** - Sudden and continuous change of climate as a result of the accumulation of greenhouse gases e.g. methane, carbon dioxide and nitrogen dioxide in the atmosphere as a result of human activities.

**Pollution** - Physical contamination of the atmosphere making it less conducive for living.

**Sustainable Development** - An attempt to improve the social and economic conditions of the society without depleting the environment so as to ensure that future generations get access to the available natural resources.
CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter evaluates literature related to the subject in line with the research questions from international, regional and local studies. It will focus on the level of awareness on environmental sustainability among secondary school learners, the social, economic and environmental activities in secondary schools that indicate environmental awareness and the factors that hinder effective integration of ESD programmes in secondary school curriculum.

2.2 Context of Education for Sustainable Development in Secondary Schools in Kenya

According to a study conducted by Hassan, Tajul and Suriat (2009) among the secondary school learners in Sengalor, Malaysia, the results indicated that the level of environmental awareness amongst secondary school students in the concept of sustainable development was “high”. Respondents had a strong conviction that for an area being developed, the balance between the environment and development was necessary. Whereas the respondents said they were “aware” of the responsibility to environment, they could not relate such key aspects as social, economy and energy sources with the environmental protection issues. This demonstrated that students lacked clear understanding on the interaction between sustainable development and the environment.

In Kenya, Boiyo (2010) conducted a research in selected secondary schools in Kasarani and Kibera Divisions of Nairobi County about the level of awareness on environmental issues by learners. The general observation indicated that students in Kasarani and Kibera Divisions had general knowledge about the environment. The findings of this study are in concurrence with the conclusions made by Saiduddin (2003) who noted that it is expedient to put the blame and responsibility for low academic performance on such issues as family, socio-economic status, culture and the learner being less intelligent than the others.
Thus, from the various studies, it is clear that though much is done to create awareness among the secondary schools’ learners on environmental sustainability, there is still need to inculcate in the learners the three pillars of ESD which have not been clearly brought out. The pillars are environmental, economic and social pillar.

2.3 Education for Sustainable Development in Secondary Schools

2.3.1 ESD Programmes in Secondary Schools and Awareness of need for Sustainable Environment

There is a large body of literature concerning clubs and their role in the student’s social life as well as enhancing academic achievements. For example, Bakers (2008) argues that students who participate in extracurricular activities through their college life are more successful academically than those who do not. Similarly, according to Robyn (2008) it has long been acknowledged that students who take part in peer support programmes as peer supporters or mentors develop important skills and attributes. It therefore seems that a lot of study has been done on higher education including universities but there is little study about extracurricular activities in secondary schools.

In line with the above issues, environmental clubs have recently gained tremendous popularity in Kenyan secondary schools since the development of ESD implementation strategy 2003. This was in cognizance that Kenya is in the United Nations Decade for Education for Sustainable Development (UNDESD) 2004-2014. The other reason for increased popularity is to complement the infused status of Environmental Education (EE) in the Kenyan education curriculum.

The ESD implementation strategy in Kenya was started in 2003, spearheaded by NEMA, with UNESCO playing the advisory role in the process (NEMA, 2004). The National Environmental Council (NEC), which consists of representatives from all relevant ministries, finally adopted the implementation strategy on April 24th 2008. Since the Koech Commission of Inquiry into Kenya’s Educational System recommended teaching of EE in schools, environmental clubs emerged both in
primary and secondary schools to carry out activities that promote environmental awareness (Republic of Kenya, 1999)

2.3.2 Activities in Secondary Schools and Awareness of Need for Sustainable Environment

Wanjiku (2004) carried out a study on environmental awareness and participation amongst students in secondary school in Kasarani Division, Nairobi. In her findings, some of the reasons given by the students for not participating in environmental activities include lack of knowledge as to what is being done and when it is done, lack of interest as they are busy with their studies and that such activities are carried out by members of environmental clubs. She therefore concluded that individual interests and awareness leads to participation in the activities. Participation can be increased if there are regular talks, seminars and activities opened to all students in the school. Proper dissemination of the environmental information should be carried out everywhere in schools, homes, churches and in any other gatherings (Wanjiku, 2004). This literature therefore confirms that the existence of knowledge alone does not necessarily lead to participation in conservation activities.

According to Mwikali (2005), out of the 120 secondary school students sampled in a study to investigate attitudes and participation levels in environmental conservation of secondary school students in Nairobi Province, asked whether they belonged to any of the environmental clubs in the school, 79% said Yes, while only 21% said No. These findings reveal that majority of the students in secondary schools belong to an environmental club where they actively participate in addressing environmental issues.

Mwikali (2005) went further to ask the students to list the clubs in which they belong and they gave the following: Health Club, Wildlife Cub, Environmental Club, Geography Club, Girl Guide and Scouts Club. This may however not give a clear picture of the students’ participation level because they may have been listing the clubs just to answer the questions on the questionnaire, and their involvement on environmental clubs may just be for the sake of adhering to the school rules and avoid
any prevalent punishment. Hence, more research needs to be carried out to make more inquiry from the students what motivates them to join the various environmental clubs.

2.3.3 Factors Influencing Implementation of ESD Programmes in Secondary Schools

As outlined by NEMA Report (2008), despite the fact that it is Kenya’s natural resources base that drives its economy, the country is faced with numerous challenges in sustainable development. The complex and often interlinked sustainable development issues in Kenya are societal, economic and environmental. This therefore demands that natural resources should be utilized sustainably. ESD has been recommended as one of the means that will ensure prudent and sustainable use of natural resources in Kenya.

The government, private sector and Community Based Organizations (CBOs) have responded in outstanding ways to the societal, economic and environment facets of sustainable development. Some of the notable interventions are capacity building, policy formulation, resource material development, advocacy, public awareness, research, innovations, partnerships, networking and vision building (NEMA, 2008).

Societal issues include ethnic animosity, prejudice towards cultural diversity, corruption, poor governance, gender inequality, HIV/AIDS, malaria, tuberculosis (TB) and other communicable and non-communicable diseases; drug and substance abuse, human rights abuses, violence and insecurity; degraded lifestyles and behaviour, and erosion of cultural values and morals. The economic issues encompass consumption, systems of production, investments and service delivery geared towards enhancing the economy. However, such challenges as high levels of poverty and related issues hamper economic performance (GOK, 2007).

The environment sector also faces myriad challenges, for instance natural disasters, acute water shortages, frequent droughts, poor waste management systems, climate change and variation inconsistency and loss of biodiversity. This has resulted in land
degradation and deforestation, leading to dwindling forest cover, which currently accounts for 1.7 per cent of the total territorial surface area; way below the 10 per cent minimum cover that is globally recommended. Negative impacts on the environment have been caused by the rapid industrial development that has been taking place in the country. Consequently, there has been a phenomenal increase in the generation of waste, resulting in unsustainable waste management practices (NEMA, 2008).

In the Kenyan secondary schools, the club activities are ignored and the teachers accept no responsibility for what the students do outside of their own narrow subjects (Ndaruga, 2004). This is because teachers are overloaded and therefore hardly get time to guide the clubs. As observed in this literature review, some clubs in schools are not taken seriously with the argument that they do not directly relate to examinable curriculum. The research therefore recommends that co-curricular activities be examined and considered as one of the qualifications for joining higher learning institutions.

2.4 Conclusion

In conclusion, from the global scale down to national level, the review of scholarly work has shown the need for sustainable development. The integration of ESD in the Kenyan curriculum is a positive step towards achieving a sustainable Environment. Addressing the issue of sustainability awareness in secondary schools is a needy call to our current generation through policy formulation and more research to utilize the available resources while conserving the same for future generations.
CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter describes the steps that were followed in conducting this research. It describes the study area, research design, target population, sample and sampling procedures, research instruments, materials as well as methods of data collection and analysis.

3.2 Characteristics of the Study Area

This related to the location of the study area as well as its socio-economic activities.

3.2.1 Location of the Study Area

Lang’ata Sub-County is one of the seventeen (17) sub-counties in the Nairobi County of Kenya. It lies on the south-western part of the County and is about 10 kilometres from Nairobi City centre. It is located at approximately 1° 22’S 36° 44’E. The Sub-County covers an area of 196.80 Km² and has a population of approximately 346,384 people (KNBS, 2009 Census). It is located at about 140 km south of the Equator (GOK, 2008). It constitutes two constituencies namely Kibra and Lang’ata and five county wards, namely Karen, Mugumoini, South C, Nairobi West and Nyayo Highrise.

3.2.2 Socio-economic Activities

Lang’ata Sub-County is home to the affluent Karen and Lang’ata estates and a number of middle-class residential housing estates such as Nairobi Dam, Otiende, Southlands, Ngei, Jambo, Onyonka, and Madaraka among others. It has a wide range of shopping, social and recreational amenities and is also well covered by all-weather road network making it easily accessible. The region has a large number of spatial features some of which serve as great tourist attractions. These include but not limited to; the Nairobi National Park, Nairobi Animal Orphanage, The Giraffe Centre, Wilson
Airport, Bomas of Kenya, Mamba Village, Lang’ata Cemetery, Uhuru Gardens among many others. The Kenya Wildlife Services headquarters are also situated in this Sub-County.

![Figure 3.1 Map of Lang’ata Sub-County](source)

Source: IEBC, (2010). KNBS

### 3.3. Study Design

The design used in this research was descriptive research design. Surveys using questionnaires and interview schedules were utilized in order to assess the level of effectiveness of ESD in enhancing environmental sustainability awareness among secondary school learners. Descriptive research was used in order to acquire relevant and specific information regarding the position of phenomena and, whenever possible, to derive valid conclusions out of the findings. (Mugenda & Mugenda (2003))
3.4 Target Population

Target population refers to a group of people, institutions or objects with a common feature (Ogula, 2005). Target population is the total number of subjects, or the total environment of interest to the researcher. The choice of the target and the accessible population must, however, be justified by the researcher. (Oso & Onen, 2011) For this study, the target population consisted of all secondary school learners in Lang’ata Sub-County.

3.5 Sample and Sampling Procedure

Sample refers to that part of the target population which has been procedurally selected to represent it. A researcher should provide the details of the sample by numbers and characteristics (Oso & Onen, 2011). A sample is carefully selected so as to be representative of the whole population with the relevant characteristics. (Mugenda, 2003).

Stratified sampling was used to group the students in to sub-groups of boys and girls. Subsequently, random sampling was used to select the students into the study sample. Random sampling technique was preferred for the current study because in this sampling, every item in the population has an equal chance of inclusion in the sample and each of the possible samples has the same probability of being selected in case of finite universe (Kothari, 2011). The study sampled a total of 17 schools, all the 9 public schools and 8 private schools were included in the study. In each mixed school, 2 students, a boy and a girl were selected in each form while in single sex schools, 2 students were selected in each form. The total number of respondents was 136 students.

3.6 Instruments for Data Collection

This study employed the use of questionnaires, observation sheets and interview guide to collect the primary data. According to Bryman & Bell (2003), a questionnaire is a tool used to collect data where carefully selected, orderly, self-administered questions
are used. The questions addressed economic, social and economic aspects of the ESD programme.

Observation sheets were also used in this study. Observation entails the use of all senses to perceive and understand the experiences the researcher has interest in. Interview, on the other hand refers to verbal communication form person to person, where one person or a group of persons ask(s) the other questions aimed at obtaining information or opinions (Oso & Onen, 2011). The respondents were also interviewed. Interview was chosen for this study because it yields more detailed information that cannot be directly observed.

To test the effectiveness of the instruments chosen, a successful pilot study was carried out at Lang’ata High School.

3.7. Data Collection Procedure

Data collection entails gathering and quantifying information on variables of interest, through an established methodical manner, which allows one to answer stated research questions and assess outcomes (Kombo & Tromp, 2013).

Primary data was collected through administration of questionnaires, interviews, observations and illustrated presentations (photography). Structured, open-ended interviews were conducted with key informants being secondary school students.

3.8. Data Analysis

Data analysis entails the organization, interpretation and presentation of collected data (Oso & Onen, 2011). In this study, data analysis involved summarizing the data to obtain answers to the research questions. Responses obtained from questionnaires, interview guide and observation guide were organized and categorized under different headings according to the research questions. In this study, data analysis constituted quantitative and qualitative methods which came from the closed-ended and open-ended questions respectively.
The quantitative data was analysed using the Quantitative Program for Social and Market Research (QPSMR) alongside the Statistical Packages for Social Sciences (SPSS). Squares and the level of significance was placed at $P \leq 0.05$. Descriptive statistics were undertaken to establish relative frequencies, percentages, means of variables and measures of central tendency to summarize and interpret the research findings. Quantitative data was presented in tables, figures and graphs while the qualitative data was discussed in text to explain the effectiveness of ESD in the study area.
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 role of Education for Sustainable Development in enhancing sustainability awareness among secondary school learners of Lang’ata sub-county. The objectives were to:

1. Evaluate the extent to which ESD is taught in secondary schools in Lang’ata Sub-County, Nairobi.
2. Determine the social, economic and environmental activities of learners in secondary schools in Lang’ata Sub-County that relate to sustainable development of the environment.
3. Establish ways in which identifiable factors influence the implementation of ESD programmes in secondary schools in Lang’ata Sub-County.

4.2 Response Rate

The sample size of the study consisted of 136 students drawn from 17 schools in Lang’ata sub-County. The names of the schools are indicated in Appendix VI. Data was collected through hand delivered questionnaires which were collected within a period of two weeks. The response rate that was recorded from the research instruments as tabulated below:

Table 4.1 Response Rate on the Students’ Research Questionnaire

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<th>Frequency</th>
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<td>136</td>
</tr>
<tr>
<td>Number of students who answered the questions and agreed to an interview</td>
<td>130</td>
</tr>
<tr>
<td>Number of students who did not answer the questions and did not agree to an interview</td>
<td>6</td>
</tr>
</tbody>
</table>
4.3 Findings on ESD

4.3.1 Implementation of ESD Programmes and Awareness about Environmental Sustainability

The first objective of the study was to evaluate the level of ESD implementation in secondary schools. The research question was: What is the level of awareness on environmental sustainability among secondary school learners in Lang’ata Sub-County, Nairobi County, Kenya? The instruments used were questionnaires.

The findings indicated that majority (70%) of the respondents reported that they had learnt about environmental sustainability while 30% said had not. The study findings are as indicated in Figure 4.1

![Figure 4.1 Learnt about environmental sustainability](image)

4.3.2 Social and economic activities and awareness of need for sustainable environment

The second objective of the study was determining the social, economic and environmental activities of learners in secondary schools in Lang’ata Sub-County that relate to sustainable development of the environment. The research question was: How do the social, economic and environmental activities in Lang’ata secondary
schools indicate environmental sustainability awareness? The instruments used were questionnaires, interview schedule and observation sheets.

The study found that 30% of the respondents had learnt about waste disposal, 27% said they learnt about sanitation, 15% said they had learnt about income generating activities, 12% soil conservation, 7% energy conservation and 2% said they had learnt about water recycling and social activities with neighbours.

These findings are in tandem with Meghan (2011) who found that students understood water recycling, but were unable to grasp the holistic picture of water cycle and ways of recycling. The lack of visualization separated what students learnt in the classroom from their knowledge of the environment around them. Mwenda (2017) observed that students had an idea of the meaning of environment and environmental conservation. Mwenda (2017) also assessed students’ understanding of various environmental issues they had been learning and how environmental aspects had been affecting their lives. Findings indicated that students were able to mention various environmental issues they learnt in their classes such as conservation methods, forestry and afforestation.

The study findings are presented in figure 4.2

![Bar Chart](image)

**Figure 4.2 Education for Sustainable Development Concepts**
After determining the areas that respondents had learnt about education for sustainable development, the study examined the frequency of respondents who embraced income generating activities. Findings indicated that majority (89%) did not have any income generating activities. Only 11% of the respondents indicated that they engaged in income generating activities. These findings could be linked to earlier findings where 15% of the respondents said that they had learnt about income generating activities in class. The low number of respondents engaged in income generating activities was explained by Nyamwega (2016) who found that in secondary schools in Kenya, majority of the income generating activities were carried at the school-level. For example, the study established that schools earned between Kenya Shillings 680,000 and 6,000,000 annually from income generating activities.

The study findings are shown in Figure 4.3

![Figure 4.3 Engagement in Income Generating Activities](image)

Having established the percentage of respondents who engaged in income generating activities, the study further investigated the type of income generating activities carried out by the respondents. Majority of the respondents (50%) said they did poultry keeping, 29% said they practised rabbit keeping while 21% said they engaged in vegetable farming. These findings are supported by Njoroge, Mwangi and Udoto (2014) who found that young farmers’ club members engaged in sustainable agriculture through hands-on activities in the schools’ demonstration clubs. At the
same time, some of them could take active initiatives to keep rabbits, chicken, goats, or even grow horticultural crops for income. The findings of the study are shown below:

![Figure 4.4 Types of Income Generating Activities](image)

The study further sought to find out if what the respondents had learnt in secondary school had helped them better the environment. From the findings, 77% of the respondents said it did not while 23% of the respondents said it did help in making the environment better. Similarly, Ssozi (2012) found that though students demonstrated moderate knowledge on environmental sustainability, they were unable to put into use the knowledge they learnt in class towards betterment of their environments. The findings are as indicated in Figure 4.5
Having established whether the environmental education sustainability taught in class had an effect on how the respondents made the environment better, the study investigated whether the respondents were aware of the world environmental day. Findings indicated that majority (91%) had no idea about the date. Only 9% of the respondents said the environmental day was on 5th June 2018. The study findings are as indicated in Figure 4.6

Figure 4.5 Impact of Education for sustainable Development on Betterment of Environment

Figure 4.6 Awareness of World’s Environmental Day
Further, the study sought to determine the activities carried out by the respondents. Study findings indicated that the respondents rarely engaged in picking waste papers when they came across them in the school compound and they did not plant trees as indicated by a mean of 2 and 2.1 respectively. In other findings, majority of the respondents said they almost never placed recyclable waste in the recycle bins, and almost never carried out joint activities with community outside the school as indicated by a mean of 2.5 and 2.7 respectively. On the same note, majority (as indicated by a mean of 2.7) almost never engaged in income generating activities. These findings are justified by earlier findings where only 11% of the respondents said they engaged in income generating activities.

Table 4.2 Environmentally Sustainable Activities

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting trees</td>
<td>130</td>
<td>1.00</td>
<td>3.00</td>
<td>2.1077</td>
<td>.51709</td>
</tr>
<tr>
<td>Picking waste papers when you come across any in the school compound</td>
<td>130</td>
<td>1.00</td>
<td>3.00</td>
<td>2.0077</td>
<td>.67624</td>
</tr>
<tr>
<td>Placing recyclable waste in the right recycle bins</td>
<td>130</td>
<td>1.00</td>
<td>3.00</td>
<td>2.5308</td>
<td>.69537</td>
</tr>
<tr>
<td>Income generating activities in school</td>
<td>130</td>
<td>1.00</td>
<td>3.00</td>
<td>2.7462</td>
<td>.63869</td>
</tr>
<tr>
<td>Joint activities with community outside the school</td>
<td>130</td>
<td>1.00</td>
<td>3.00</td>
<td>2.6923</td>
<td>.49566</td>
</tr>
<tr>
<td>Valid N (list-wise)</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3.3 Factors Influencing Implementation of ESD Programmes in Secondary Schools

The third objective of the study was to determine the social, economic and environmental activities of learners in secondary schools in Lang’ata Sub-County that relate to sustainable development of the environment. The research question was: What factors hinder effective implementation of ESD programmes in secondary
The study investigated whether the respondents had attended any environmental related seminar or workshop.

The findings revealed that majority (80%) of the respondents had not attended any seminar or workshop related to environmental issues, only 20% of the respondents reported in the affirmative. The findings are shown in figure 4.7

Figure 4.7 Attendance of Workshops and Seminars

The few positive responses prompted the study to inquire where the 20% of the respondents had attended these seminars/workshops. Findings showed that 46% of the respondents attended sub-county level world’s environmental day, 31% said they attended young farmers’ workshop and 23% said they attended environmental meetings organized by local leaders. According to Herriman and Pertridge (2010), leaders in charge of the environment use public events as an environmental educational opportunity for a large number of local residents. Besides, other organizations mobilize students to attend events such as national tree planting days. According to Mwenda (2017), the policy makers have been trying to strengthen the Young Farmers Clubs around the country to sensitize more students on environmental matters. Findings are shown in figure 4.8
It was paramount that the study examined a few factors that could derail effective implementation of ESD programmes in secondary schools in Lang'ata sub-county. Majority of the respondents (50%) said that they did not participate in environmental related activities due to lack of interest, 16% said it was lack of commitment by the school administration, 12% said they lacked information about the workshop and had a busy schedule in school while 10% said they did not attend environmental-related activities due to lack of funds/resources.

These findings are supported by Ram and Pereira (2014) who found that the major hurdles for the proper implementation of environmental education programmes in schools included lack of awareness about the relevant environmental problems, lack of interest of the teachers and students to the environment, lack of proper coordination and organization of project, lack of sufficient number of students, lack of cooperation and assistance of parents, teachers and local authorities, and improper utilization of financial assistance from project authorities. Similarly, Shiyakumar (2011) established that students did not consider environmental education as important. Consequently, most of them were disinterested in participating in any environmental activities.

Further, Boiyo, Koech and Munguriu (2015) found that environmental awareness levels towards sustainable development in schools was quite poor. Students did not have enough information on environmental related issues, especially towards...
sustainable development because of lack of environmental programmes in their respective schools. Environmental programmes in schools were largely very few and not viable because of lack of funds, reluctance from both learners and their teachers coupled with the absence of well spelt government interventions. Findings are indicated in figure 4.9

![Figure 4.9 Factors affecting Effective Implementation of ESD Programmes](image)

**4.4 Attitudes of Students towards Environmental Management**

The findings showed that majority of the respondents, as indicated by a mean of 1.7, strongly agreed that environmental pollution affects them and future generations. Similarly, most respondents agreed that they wanted to be actively involved in income generating activities and also agreed that recycling of waste would benefit the respondents and their future generations. These findings are in tandem with those by Ram and Pereira (2014) who observed that secondary school students demonstrated a high level of understanding of the significance of education for sustainable development.

Contrary to the respondents’ concurrence that environmental sustainability was significant, respondents were not willing to participate in commercial and social activities and they also said that environmental sustainability was not their business as indicated by a mean of 3.67 respectively. Moreover, a substantial number of respondents, as indicated by a mean of 2.8, believed that water taps should be left
running as long as there was no water shortage. According to Mweetwa (2014), students were knowledgeable on environmental matters but did not apply the knowledge to enhance environmental sustainability. Ram and Pereira (2014) also found that students did not participate in community and social activities related to their environment. The findings are illustrated in Table 4.3.

Table 4.3 Attitude of Students towards Environmental Management

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am interested in environmental issues</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6692</td>
<td>1.05939</td>
</tr>
<tr>
<td>Environmental pollution affects me and future generations</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>1.7231</td>
<td>1.04929</td>
</tr>
<tr>
<td>I am willing to participate in community and social activities</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6692</td>
<td>1.05939</td>
</tr>
<tr>
<td>I want to be actively involved in income generating activities</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>2.2923</td>
<td>1.56238</td>
</tr>
<tr>
<td>Recycling of waste will benefit me and the future generation</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>2.3846</td>
<td>1.16396</td>
</tr>
<tr>
<td>Environmental sustainability is not my business</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6615</td>
<td>1.06060</td>
</tr>
<tr>
<td>Water taps should be left running as long as there is no water shortage</td>
<td>130</td>
<td>1.00</td>
<td>5.00</td>
<td>2.8000</td>
<td>1.33759</td>
</tr>
<tr>
<td>Valid N (list-wise)</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.5 Indicators of Environmental Sustainability Awareness

The findings elaborated in Table 4.4 show the perception of respondents towards enhancing environmental sustainability. Yes and No were used to determine the presence or absence of the items listed in the Observation Sheet.

Table 4.4 Observation List

<table>
<thead>
<tr>
<th>Item/Behaviour</th>
<th>Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of litter bins in the school</td>
<td>Yes: 17, No: 0</td>
<td>All the schools had litter bins in classes. 10 schools did not have litter bins in the school compound. Generally, there were litter bins in school but not enough</td>
</tr>
<tr>
<td>Presence of recycle bins for paper, glass, plastics, clothes and electrical items</td>
<td>Yes: 4, No: 13</td>
<td>Majority of the schools did not have recycle bins for paper, glass, plastics and electrical items. These items were thrown in the compost pit. It is important to note, however, that there were few of such items in school</td>
</tr>
<tr>
<td>Tree planting activities</td>
<td>Yes: 6, No: 11</td>
<td>Majority of the schools did not have a tree planting program. Those who planted trees did that on rare occasion such as the world tree planting day</td>
</tr>
<tr>
<td>Presence of compost pits in the school</td>
<td>Yes: 17, No: 0</td>
<td>All the schools had at least one compost pit. A considerable number of compost pits (6) were not well maintained with litter scattered around the compost pits. However, the study established that majority of the schools had well maintained pits.</td>
</tr>
<tr>
<td>Electricity switches with ‘Switch me off’ labels</td>
<td>Yes: 5, No: 12</td>
<td>Most of the schools did not have labels</td>
</tr>
<tr>
<td>‘Turn me off’ labels around water tap areas</td>
<td>Yes: 5, No: 12</td>
<td>Most of the schools did not have labels</td>
</tr>
<tr>
<td>Presence of income generating activities in the school</td>
<td>Yes: 3, No: 14</td>
<td>Few schools had income generating activities. Those that had the activities included poultry keeping, vegetable</td>
</tr>
</tbody>
</table>

4.6 Interview Schedule

Interviews were conducted to verify the information given by the respondents in the questionnaires. On the factors that prevented the respondents from placing recyclable
waste in the right recycle bins, majority of the respondents (80%) said that they did not have recycle bins in school so they dumped recyclable materials in the compost pit or the rubbish bins in classrooms. Other findings indicated that 12% of the respondents said they had no tangible reason as to why they did not use recycle bins and 8% said it was due to lack of interest. These findings are similar to the observations the study made that only 4 out of 17 schools had recycle bins. The findings are indicated in figure 4.10.

![Figure 4.10 Use of Waste Recycle Bins](image)

The study also interrogated the respondents on the type of activities the respondents’ carried out in their respective environmental clubs. Findings indicated that 50% of the respondents’ environmental clubs helped in keeping the school compound clean, 36% of the respondents said they carried out tree planting exercise while 14% said they engaged in income generating activities. These income generating activities included rabbit keeping, vegetable farming and poultry keeping. The respondents interviewed did not have a program that catered for the needy and disabled students. The findings are indicated in Figure 4.11.
The above findings (Figure 4.11) are in tandem with Nyamwega (2016) who found that a small number of students are involved in income generating activities. These findings are supported by earlier findings that the small number involved in income generating activities carry out poultry farming, rabbit keeping and vegetable growing.
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

5.1.1 Level of Education for Sustainable Development

Findings from the study indicated that 70% of the respondents had learnt about environmental sustainability. Further, 30% had learnt about waste disposal, income generating activities and soil conservation. Findings indicated that 7% of the respondents had learnt about energy conservation, water recycling and social activities with neighbours. On income generating activities, 85% of the respondents did not have any income generating activities. Among the 15% who carried out income generating activities did poultry keeping, rabbit keeping and vegetable farming.

From the findings, 70% of the respondents said environmental education learnt in class did not help them make the environment better, very few respondents were aware of the world environmental day. On the activities carried out by the respondents, study findings indicated that the respondents rarely engaged in picking waste papers when they came across them in the school compound or planted trees. In other findings, the respondents said they almost never placed recyclable waste in the recycle bins, and almost never carried out joint activities with community outside the school. On the same note, 85% of the respondents almost never engaged in income generating activities.

5.1.2 Factors Hindering Effective Integration of ESD Programmes in School

The study findings revealed that 80% of the respondents had not attended any seminar or workshop related to environmental issues. The 20% positive responses prompted the study to inquire where those respondents had attended these seminars/workshops. Findings showed the respondents attended sub-county level world’s environmental day, young farmers’ workshop and environmental meetings organized by local leaders.
Further findings revealed 50% of the respondents said that they did not participate in environmental related activities due to lack of interest, 16% of them said it was lack of commitment by the school administration, lack of information about the workshops and busy school schedules in school. 10% of the respondents said they did not attend environmental related activities due to lack of funds/resources.

5.1.3 Attitudes of Students towards Environmental Management

In other findings, all respondents strongly agreed that environmental pollution affected them and future generations. Similarly, 73.2% of the respondents agreed that they wanted to be actively involved in income generating activities and also agreed that recycling of waste would benefit the respondents and their future generations. However, the respondents also said that they were not willing to participate in commercial and social activities while others said that environmental sustainability was not their business. Moreover, a substantial number of respondents, believed that water taps should be left running as long as there was no water shortage.

5.2 Conclusion

5.2.1 Education for Sustainability Development

The study concluded that there was education for sustainable development taking place in secondary schools in Kenya. Respondents were more knowledgeable on waste disposal and sanitation. Other areas learnt to a low extent included income generating activities, soil conservation, and energy conservation, water recycling and social activities with neighbours. Further, the study concluded that some respondents carried out income generating activities. These activities included poultry keeping, rabbit keeping and vegetable farming.

From the findings, the study concluded that education for sustainable development learnt in class did not help the respondents make the environment better. This is because the respondents rarely picked waste papers when they came across them in
the school compound nor planted trees. The study further concluded that respondents never place recyclable waste in recycle bins and did not carry out joint activities with community outside the school.

5.2.2 Factors Hindering Effective Integration of ESD Programmes in School

From the study findings, it emerged that respondents rarely attended workshops or seminars related to environmental issues. The respondents who did attended sub-county level World’s Environmental Day, young farmers’ workshops and environmental meetings organized by local leaders. Further, the study concluded that respondents failed to participate in ESD related activities due to lack of interest, lack of commitment by the school administration, lack of information, inadequate funds/resources and busy schedule in schools.

5.2.3 Attitudes of Students towards Environmental Management

The study concluded that environmental pollution affected the respondents and their future generations. Respondents also expressed willingness to be actively involved in income generating activities. The study concluded that recycling of waste would benefit the respondents and their future generation. The study also concluded that despite the realization of the importance of the environment, respondents were not willing to participate in commercial and social activities. They were also disinterested in environmental sustainability. The respondents did not play their part in sustainability as they believed that water taps should be left running as long as there was no water shortage.

5.3 Recommendations

5.3.1 Education for Sustainability Development

It is evident that Education for Sustainable Development (ESD) is carried out in schools. However, ESD does not seem to impact on the students’ attitude towards environmental sustainability. Students have limited knowledge on several environmental sustainability terms. The study recommends that the Kenya Institute of
Curriculum Development (KICD) review the environmental education curriculum to enhance its impact in schools. Moreover, teachers should change their attitude towards environmental education and undergo regular training on the content and delivery of environmental education.

From the checklist, it is evident that there are inadequate waste disposal facilities in schools. The schools’ administration should ensure that they place recyclable bins strategically in the school compounds. Moreover, there should be labels within the schools’ compound reminding the students and the school community of their responsibility towards environment sustainability. Since the students expressed interest in participating in income generating activities, schools’ administration should avail funds and resources such as land to facilitate the same. The schools’ administration should come up with mechanisms to ensure that students benefit from these initiatives.

There is minimal contact between the students and community on matters related to environmental sustainability. The local environmental leaders and schools’ administration should come up with effective programmes that involve both the student and the community. A sensitization drive should be carried out to ensure success of these programmes.

From the interview schedule, none of the schools had programmes for the needy or disabled students. The study recommends that policy makers come up with such a program, fully funded, to enable schools keep the needy and disabled students in school. Moreover, schools should come up with income generating activities to enable finance the education of this group of students.

5.3.2 Factors Hindering Effective Integration of ESD Programmes in School

It is important to strengthen the environmental clubs in schools. The mandate of these clubs should be clearly outlined. Schools’ administration should support these clubs’ activities by availing resources and facilitating further learning on environmental matters. Students should be facilitated and sensitized on attending workshops and
seminars related to environmental sustainability. Regular environmental sustainability related sensitizing meetings should be held in schools to help change the attitude of the students towards environmental education.

The schools should liaise with environmental sustainability offices in the sub-county to enable prompt acquisition of information related to environmental issues. The policy makers and curriculum developers should review the curriculum to accommodate environmental education as a subject. Integration of environmental education demeans the importance of the subject.

5.3.3 Attitudes of Students towards Environmental Management

It is evident that the students are aware that environmental pollution has an impact on their lives and that of the future generations. Therefore, students should be sensitized on how to enhance environmental sustainability. Teachers and schools’ administration should be proactive in ensuring the environment is well maintained. Schools should design regular programmes where the whole school communities participate in environmental management. Moreover, students should be provided with enough resources towards environmental sustainability. These resources include adequate recycle bins, adequate rubbish bins and compost pits. These resources should be placed strategically to enhance ease of access.

5.4 Recommendation for Further studies

Based on the findings of this study, the following recommendations are proffered:

1. Further studies be carried out on the relationship between the environmental education curriculum and effective education for sustainable development.
2. A study on the role of school administration on education for sustainable development be conducted.
3. Further studies on ways of enhancing education for sustainable development in secondary schools be conducted.
REFERENCES


APPENDIX I: Questionnaire for Students

Kenyatta University
School of Environmental Studies
P.O. Box 43844
Nairobi

Dear Participant,

My name is Veronica Ngota, I am a student at Kenyatta University where I am pursuing a Master of Science Degree in Environmental Education. I am currently undertaking a research project on ‘ROLE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ENHANCING SUSTAINABILITY AWARENESS AMONG SECONDARY SCHOOL LEARNERS OF NAIROBI COUNTY, KENYA’

Therefore, I kindly request you to assist me by filling in the questionnaire below to the best of your knowledge. The information gathered will be treated with strict and maximum confidentiality and is only meant for purposes intended.

Thank you in advance for your cooperation.
INSTRUCTIONS:

Place a tick (✓) in the bracket in front of the correct response, and where explanations are required use the space provided. Do not indicate your name anywhere in the questionnaire.

SECTION A: DEMOGRAPHIC INFORMATION OF STUDENTS

1. Name of your school: ____________________________________________________________
2. Form: One ( ) Two ( ) Three ( ) Form Four ( )
3. Gender: Male ( ) Female ( )

SECTION B: Effectiveness of ESD in enhancing environmental sustainability

4. Have you learnt anything concerning the environment sustainability in class?

   Yes { } No { }

   If yes, tick (√) what you have learnt concerning environmental sustainability from the list below:

   i) Soil Conservation ( ) (iv) Water recycling ( ) (vi) Waste disposal ( )

   ii) Irrigation ( ) (v) Energy Conservation ( ) (vii) Sanitation ( )

   iii) Income generating activities ( ) (iv) Social activities with neighbours ( )

   iv) Any Other (Specify)

5. As an individual or in your club, do you have any income generating activities?

   Yes ( ) No ( )

6. If your answer in question (5) above is yes, specify the actual activities

   __________________________________________________

7. In your own opinion, do you think that what you have learnt in secondary school so far has helped you in any way to make the environment better? Yes ( ) No ( )

   __________________________________________________

8. Do you know the World’s Environment Day? Yes ( ) No ( )

9. If your answer in question (8) above is Yes, Specify the date

   __________________________________________________

10. How often have you participated in the following activities in the past one year?
<table>
<thead>
<tr>
<th></th>
<th>Often</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Planting trees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Picking waste papers when you come across any in the school compound</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Placing recyclable waste in the right recycle bins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Income generating activities in school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Joint activities with community outside the school</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section C: Factors that hinder effective integration of ESD programs in secondary school curriculum.

11. Apart from the classroom, have you ever attended any seminar or workshop on environmental issues? Yes ( ) No ( )

If Yes, state where________________________________________________________

If No, give a reason________________________________________________________

12. In your opinion, do you think that Environmental Sustainability has been well taught and learnt in class? Yes ( ) No ( )

D: Attitudes of students towards environmental management.

13. Rate the following statements to indicate your perception on environmental management. Strongly Agree (SA) = 1, Agree (A) = 2, Undecided (U) = 3, Disagree (D) = 4, and Strongly Disagree (SD) = 5; such that 1 is the highest score and 5 is the lowest score
<table>
<thead>
<tr>
<th>Statements</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) I am interested in environmental issues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Environmental pollution affects me and future generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) I am willing to participate in community and social activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) I want to be actively involved in income generating activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Recycling of waste will benefit me and the future generation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Environmental sustainability is not my business.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) Water taps should be left running as long as there is no water shortage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX II: Observation Sheet

School: ………………………………………………………………………..

<table>
<thead>
<tr>
<th>Item/Behaviour</th>
<th>Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of Litter bins in the school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of recycle bins for paper, glass, plastics, clothes and electrical items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree planting activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of compost pits in the school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity switches with ‘Switch me off’ labels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘Turn me off’ labels around water tap areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of income generating activities in the school</td>
<td></td>
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APPENDIX III: Interview Schedule for students

1. Which factors prevent you from placing recyclable waste in the right recycle bins?

2. Which activities do your environmental clubs engage in?

3. Which income generating activity are you engaged in while at school?

4. Which programs do you have in school for helping the needy or disabled students?
## APPENDIX IV: Work Plan

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APPENDIX V: Names of Schools

1. Langata High School
2. Nairobi Muslim Academy
3. Sunshine Secondary School
4. St. Elizabeth Boys high School
5. Langata Barracks secondary School
6. Malezi School
7. Karengata Academy
8. Kibera Academy
10. Jeremic Adventist Secondary School
11. St. Aloysius Gonzaga Secondary School
13. St Hannah secondary School
14. Light Academy
15. Guru Nanak Secondary School
16. St. Mary’s Educational Center
17. Soweto Academy