

**CONTRIBUTIONS OF CONSERVATION EDUCATION CENTRES
TOWARDS SUSTAINABLE ENVIRONMENTAL AWARENESS IN
SCHOOLS, A CASE OF GIRAFFE CENTRE NAIROBI COUNTY.**

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DECLARATION

Declaration by the candidate

I hereby declare that this thesis is my original work and has not been presented for a degree or any other award in any other University.

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Declaration by Supervisors

We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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DEDICATION

To my family, wife Carol and daughter Terryann for their love, support and encouragement during the writing of this thesis, to all individuals in environmental education and conservation sector who work tirelessly to safeguard wildlife and finally to the young people of the world, in whose hands our future rests.

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ABBREVIATIONS AND ACRONYMS

AFEW	-	African Fund for Endangered Wildlife
ANOVA	-	Analysis Of Variance
EA	-	Environmental Awareness
EC	-	Environmental Conservation
EE	-	Environmental Education
EEP	-	Environmental Education Programmes
EFSC	-	Elsamere Field Study Centre
ESD	-	Education for Sustainable development
G.C	-	Giraffe Centre
KWS	-	Kenya Wildlife Service
NEMA	-	National Environment Management Authority
NMK	-	National Museums of Kenya
SD	-	Sustainable Development
SPSS	-	Statistical Package for Social Science
UNEP	-	United Nations Environmental Programme
WCK	-	Wildlife Clubs of Kenya

ABSTRACT

The purpose of the study was to evaluate the contributions of conservation education centres in creating awareness to promote sustainable environmental conservation in schools. In this regard, public education is critical in raising levels of awareness in environmental conservation. The results of this study will contribute to future review and improvement of environmental education and awareness programmes offered by other conservation education centres. A descriptive survey design was adopted targeting pupils, administrators and teachers from 26 out of 205 primary schools in Nairobi County. Purposive sampling was used to select 16 schools that have participated in the Giraffe Centre's environmental education programmes while simple random sampling was used to select 10 schools that had not participated in the same. One hundred and thirty (130) pupils, 26 administrators and 42 teachers from the selected schools were sampled. Questionnaires designed for pupils and teachers/administrators plus a checklist was used as the main tools for data collection. Quantitative data collected was coded and entered into an SPSS programme (version 17) for analysis. Qualitative data was put under themes consistent with the research objectives. Pearson's coefficient of correlation (r) was also used to analyze data at 0.05 level of significance. Results were presented by use of tables, pie-charts and bar graphs. Results show that the EE and Awareness programmes offered at the Giraffe Centre are relevant to the school curriculum; these programmes help pupils to actualize what they learn in theory. Results further show that the environmental knowledge retained by pupils regardless of age or gender was statistically significant (0.9203 ± 1.28) for trained schools versus (1.4977 ± 1.28) for untrained schools ($t(128) = 8.287, P = 0.51$). The study further revealed that the schools environmental status regardless of their status and location was statistically significant (-0.6848 ± 0.25) for trained schools versus (1.8148 ± 0.25) for untrained schools $t(25) = 0.931, P = 0.133$ as simple conservation measures could be taken. By implication, these findings show that the environmental education and awareness programmes offered by the Giraffe Centre impart sustainable environmental conservation skills to pupils and teachers, but there is need for the Giraffe Centre to develop an EE and ESD curriculum and accredit the teachers' workshops through affiliation with one of the local universities for credibility.

CHAPTER ONE

INTRODUCTION

1.1. Background to the problem

The African Fund for Endangered Wildlife - Kenya (AFEW-(K), popularly known as the Giraffe Centre is a charitable not for profit making organization whose main objective is to educate the Kenyan youth on the importance of conserving wildlife and the environment. The Centre was founded in 1979 as a breeding Centre for the endangered Rothchild's giraffes, and in 1984 conservation education programmes were launched with the main target being the school students (AFEW-K, 2001).

The purpose of the centre was to create awareness and provide free environmental education aimed at sensitizing Kenyan youths and the general population on the need to appreciate and conserve Kenya's biodiversity. To date, the Giraffe Centre has hosted thousands of young Kenyans and their teachers on environmental education programmes. This programme is of immense popularity with the number of school children visiting the centre having risen from 800 in 1983 to over 54,000 in recent years. In the year 2008 the centre received 57,514 students (AFEW-K, 2009), while in 2011 the numbers rose to 61,986 (AFEW-K, 2011).

The Giraffe Centre focuses mainly on education and public awareness on endangered wildlife and the environment. The teacher training programme run at the Giraffe Centre on Education for Sustainable Development (ESD) is seen as a response to Kenya's ESD implementation strategy (2005-2014) which calls on the different players to fully implement ESD in this country. It states that, "Non-governmental organizations will help

in capacity building through training and materials production both at the national and local levels” (NEMA, 2008). The same strategy calls on research institutions to carry out research with the aim of improving Education for Sustainable Development (ESD) practices.

African Fund for Endangered Wildlife sensitizes Kenyans, especially the youth on the importance of conserving nature and the environment so that they can take the initiative of preserving their own biodiversity. The centre holds clean up exercise in collaboration with other stakeholders and creates awareness to the community. It also holds national environmental competitions where students in four age group categories compete in essay writing, wildlife art and nature photography. The centre is also involved in Environmental Education and Education for Sustainable Development resource material development and education of the many visiting schools at the centre on daily basis. By doing this both teachers and the students are able to put into practice what they learn as well as teach the community on how to take actions for a better environment. (AFEW-K, 2005).

According to a study that was carried out in Iowa, Wisconsin and Minnesota States in United States of America, environmental education (EE) programmes expose children into close contact with nature. Findings from the study indicated that, students who took part in these programmes were more effective in fostering positive attitudes towards wildlife than the in-class programme. The students who were interviewed revealed that they enjoyed the outdoor learning the most, while their Parents were happy with the socio-economic benefits of the programme. (El-Rahman, 2005).

Although school based learning provide strong environmental education experiences, the impact of out-of-school experiences decreases with time but remains significant. According to Howe and John, (1988) environmental education has consistently indicated that many students and adults attribute a large amount of their environmental concepts, problems and issues to out of class interaction with environment and experiences. Moreover students and young adults also attribute their attitudes and values to the same experiences. Residential EE programmes offered to student by conservation education centres are of paramount importance.

Kartikeya, (2004) noted that good EE for sustainability does not only entail the transfer of information and knowledge but also requires students to engage themselves actively in the learning process through observations, in going out in nature and all these needs to be integrated into classroom manual that would help the students to meet these needs. The non-formal educational sector to include conservation education centres, formal education and the informal educational sector are key in the implementation of ESD and they must work cooperatively in order to educate people in all walks of life (Mckeown, 2002).

1.2. Problem Statement and Justification

The world is currently facing many and diverse environmental problems. These problems range from the greenhouse effect, ozone depletion, population pressure, pollution and overexploitation of natural resources (WCED, 1987; UNESCO, 1992). The cause of these problems can be traced to human beings' way of living which blindly accentuates economic, social and political interests above the biophysical concerns of the environment (Ekins, 1993; Fien, 1993; Jensen & Schnack, 1997).

The last fifty years has witnessed an increased environmental concern to reverse the continued environmental destruction. On the international front, governments have come together to review and renew their commitments to environmental conservation. They have also used these meetings to map the way forward and to seek broader collaboration and resources (Irwin, 1984; Janse Van Rensburg & Shongwe, 1994).

Human beings significantly impact on the natural environment and as the global population continuously rises, humans continue to exert more and more pressure on finite number of resources. The unsustainable utilization of natural resources by humans also largely contributes to the environmental effects that are being experienced today. The best way to promote environmental awareness issues and environmentally responsible citizens is through increased access to environmental education (Taylor, *et al*, 2009). The Giraffe Centre's environmental education programmes are based on problem identification and provision of solutions through step by step education activities (AFEW-K, 2009). These programmes have been going on for the last 29 years and have seen many students and teachers educated on conservation and therefore the aim of this study is to evaluate whether the environmental education disseminated has contributed in any way towards the change of attitudes and understanding of environment by teachers and the students.

Pressure on land as a result of increased human population has led to loss of key wildlife habitats outside protected areas through change of land use and fragmentation. This has resulted to increased human wildlife conflicts and negative perceptions towards conservation. The situation has been attributed to inadequate awareness of environment and wildlife (KWS, 2006). Environmental education offered by conservation education

centres has been fronted as an appropriate approach. Even though nature education centres may not be the panacea for all environmental ills bedeviling Kenya and many other countries, it is seen as a more encompassing way of teaching and learning environmental, social and economic issues. According to Waswa *et al.* (2007), understanding environmental concepts must be preceded by actions that are appropriate within that environment. He further notes that understanding of the environment brings about awareness and connection of the same which eventually triggers ones knowledge into action.

1.3. Study objectives

The overall objective was to evaluate the contribution of conservation education centres in creating awareness and promoting sustainable environmental conservation.

1.3.1. The specific objectives

1. To assess the scope of the environmental education and awareness programmes offered by the Giraffe Centre.
2. To evaluate levels of knowledge gained by pupils and teachers that have gone through Giraffe Centre's environmental education programmes.
3. Evaluate whether environmental education offered at the Giraffe Centre has an impact on attitudes of students towards the environment in schools. .

1.4. Research Hypotheses

H₀: Environmental education offered by the Giraffe Centre does not significantly increase environmental conservation awareness of the recipients.

H₁: Environmental education offered by the Giraffe Centre significantly increases the environmental conservation awareness of the recipients.

1.5. Research Questions

The study was motivated by the need to understand the contributions of conservation education centres in environmental awareness in school with the aim of promoting sustainable environmental conservation.

The objectives above guided the formulation of the following research questions that guided me in the research process

1. What is the scope of environmental education offered by the Giraffe Centre?
2. What environmental knowledge do students and teachers gain after school excursion to the Giraffe Centre?
3. How does knowledge gained at the Giraffe Centre change attitudes of students and teachers towards the environment.

1.6. Significance of the study and anticipated Output

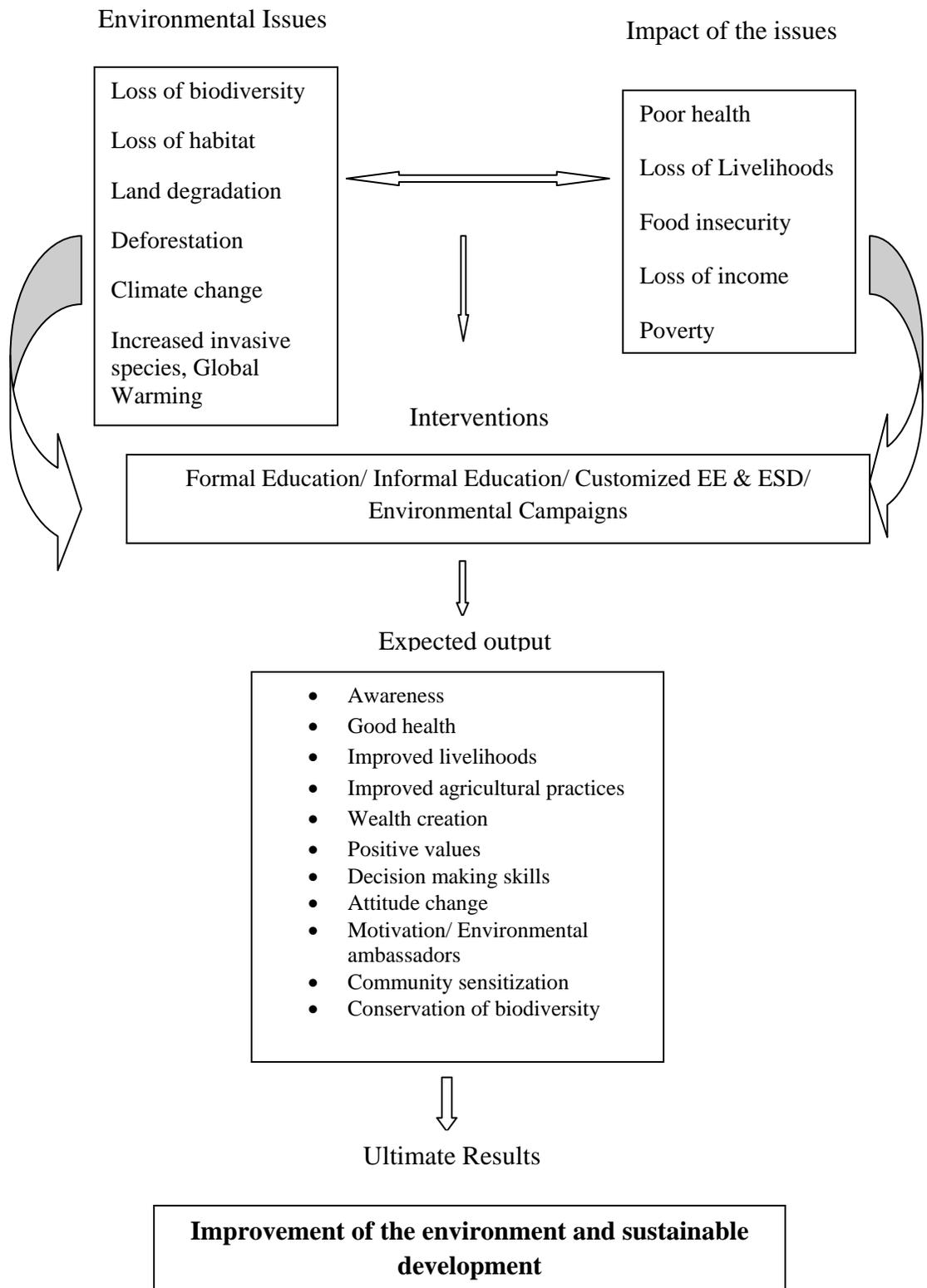
This study has shown the significance of environmental education programmes offered by the Giraffe Centre to school pupils and teachers that visit the Centre. The results of this study would contribute to future review and improvement of environmental education programmes in Kenya. In addition, it envisaged that the results will also help in

refocusing environmental education programmes towards changing the attitudes and behaviour of pupils and teachers in Kenyan schools.

1.7. Conceptual Framework

The conceptual frame work brings out the understanding that the Giraffe Centre's environmental education and awareness programmes are based on problem or issue identification and provision of solutions through hands-on step by step education activities.

The first two boxes presents the environmental issues experienced in any environmental set up, this is followed by possible interventions which includes EE with a bias to EE offered by Conservation Education Centres. This results to giving sustainable solutions towards the outlined issues that culminates to the realization of well sustained environment. These solutions are holistic in that they address the three pillars of ESD, these are, environment, society and economy hence being sustainable (Fig. 1.1).



(Source: Author 2012)

Figure 1.1: Conceptual Frame work

1.8. Definition of Terms

Conservation Awareness: Formal or informal public sensitization on conservation values and its importance in enhancing positive perception towards conservation.

Conservation education: Formal or informal education to various target groups on conservation values and their importance in promoting support and participation in conservation.

Education Centre: Fully fledged facilities including hostels that undertake education programmes in protected and non-protected areas.

Conservation Education Centre: Facilities that provide conservation information and undertake education programmes.

Education for Sustainable Development: Expanded and dynamic vision of education development guided by the principles and values of respect for environment, society and economy.

Environment: The complex physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival.

Environment Education: A process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment.

Outreach Programmes: Education programmes provided for communities and schools in their respective areas.

In-House Programmes: Education programmes provided for organized groups visiting facilities within specific area.

Sustainability: The practice of human utilization of the natural resources which ensures the greatest benefit to present generations while maintaining its potential to meet the needs and aspirations of the future generations.

Stakeholder: Any organization, government entity, individual or community that has an interest in or may be impacted on by the programmes and activities.

School: The term ‘school’ in the context it is used here, implies primary schools. Secondary schools were not included in the study.

1.9 Limitations of the study

The researcher encountered quite a number of challenges related to the research and most particularly during the process of data collection. Some respondents were biased while giving information due to reasons such as privacy and busy schedules at school. In some schools I found new principals while those that had interacted with the Giraffe Centre had been transferred. Time allocated for the study was insufficient while holding a full time job and studying part time. However the researcher tried to conduct the study within the time frame as specified. Due to inadequate resources, the researcher conducted this research under constraints of finances and therefore collected data from only a few schools.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Environmental education centres complement school programmes and provide students with an opportunity to study particular aspects of environment sustainability in the areas where the centres are located (Ballantyne, *et al.* 2008). The centres are located in different environments to include forests, beach, estuaries and in fresh water areas. He further notes that environmental education which is entirely school-based is moderately successful since it emphasizes incorporation of outdoor activities as the best approach for teaching environmental concepts and awareness. The goals of out-of-school environmental education are as diverse as the areas of teaching, they include, environmental awareness, acquisition of environmental knowledge, development of relevant skills, problem solving and action programmes (Howe and John, 1988).

Due to the dramatic decline of populations of some species of flora and fauna, conservation sanctuaries have been established in many parts of the world. These are in form of orphanages and breeding sites for the endangered organisms in order to restore their numbers. Most of these sanctuaries also act as conservation education centres with the aim of sensitizing people to learn more about their environment, appreciate their natural resources and also participate in conservation (World Conservation Union, 1980; Parker and Ballantyne, 2005).

Environmental education has been defined as the learning that occurs in habitats that include wildlife parks, nature centres, museums, aquaria, arboretum, wildlife refuges,

camps and many others. It also includes the mass media such as television, radio, newspaper, and magazines when used away from schools to disseminate information on environmental issues (Howe and John, 1988). This education is closely linked to out-door education and these two disciplines complement each other though they have unique philosophies. Out-door education is entrenched on a curriculum enriched through teaching that involves out-door experiences (<http://en.wikipedia.org>, 2010). Environmental education also helps individuals to comprehend the capacity, capability as well as the constraints of the environment with respect to the broad global environment, this enables them to make collective or individual decisions that are economically as well as ecologically sound (UNESCO-UNEP, 1977).

According to Kimutai, (2006), environmental conservation and education aims at providing learners with the opportunity to gain an awareness or sensitivity to the environment, knowledge and experience of the problems surrounding the environment, to acquire a set of values and positive attitudes to obtain the skills required to identify and solve environmental problems, the motivation and ability to participate.

Generations upon generations of humans have continuously witnessed economic growth and technological progress which is unprecedented. Though many people have benefitted, this growth entails severe social and environmental consequences among them being the increasing deterioration of the physical environment on a world-wide scale (Belgrade Charter, 1975). It is therefore vital for the world's citizenry to vigorously seek for and implement measures for economic growth that will not impact negatively or have harmful repercussions on people's wellbeing and their environment. It is also necessary to find ways to ensure that no nation of the world will develop at the expense of other

nations as well as make sure that, no individuals will increase their consumption of the available resources at the expense of others. Reforms on educational processes are central to building a new development ethic and world economic order. Governments and policy makers can take steps to implement changes and new development approaches aimed at improving the world's present condition. However, these are short term solutions because the young generations have to undergo a new kind of education that will change their mindset in order to solve the problem. In the recommendations of the Stockholm conference on human environment, the development of environmental education was acknowledged to be a critical element in solving the world's environmental crisis (Belgrade Charter, 1975).

2.2. Environmental Education

According to Muthoka, *et. al.* (1998), environmental education (EE) is a process of learning about the environment in order to benefit from it sustainably. Gopal and Anand, (2005) also defined environmental education as a process that aims at developing environmentally literate citizens. Citizens with skills, knowledge and inclinations to make informed choices concerning the environment.

Environmental education refers to organized efforts to teach about the natural environment functions. More specifically, it is a systematic public education approach aimed at modifying the behavior of people for a better ecosystem management and sustainable use of natural resources. Environmental education changes people's perceptions and attitudes towards the natural environment. This leads to improved environmental stewardship by the general public.

The importance of environmental education was underscored at the 1977 UNESCO conference when Mr. Tolba, the then Executive Director of UNEP stated that: “Environmental education should promote attitudes, which would encourage individuals to discipline themselves in order not to impair the quality of the environment and to play a positive role in improving it”.

2.3. Environmental Education in Kenya

Kenya has witnessed widespread destruction of its natural resources largely caused by human activities (Manguriu, 1999; Wass, 1995;). This destruction affects all the major ecosystems in protected and unprotected areas (UNEP, 1993). The root cause of these environmental issues is the economic, social and political structures and systems that the country has upheld all along. Environmental considerations in Kenya date back to colonial days (before 1963) when policies and laws to govern the utilization of natural resources were instituted. After independence in 1963, reviews were made in order to accommodate the aspirations of the new politically independent nation.

Kenya initiated the first concern for the environment in April 1971, when an ad hoc committee that was mandated to prepare the Kenya National Report on Environment that was presented in the United Nations Conference on Human Environment in Stockholm Sweden in 1972, this report identified various issues to include; pollution, soil degradation, drought, urbanization, settlement in marginal areas (Ndaruga, 2003). On environmental education the report

‘At the academic level, the School Science Project for secondary schools includes aspects of population growth and control, resource management and pollution in the curriculum while a proposed Humanities Project also for secondary schools,

will deal with man's integration with his environment and impact of technology on the environment' (RoK, 1972:94).

According to Ndaruga (2003), in Kenya then, environmental education was at its initial stages and largely confined to secondary schools by the time Kenya participated in the Stockholm Conference. The integration of environmental issues was disciplinary while the science subjects were preferred as the carrier subjects of environmental education than humanities. Ndaruga sights one problem with this method, this method could have a possibility of lack of emphasis on human-human – environment interactions and adoption of technical approach needed to addressing environmental issues.

The Ministry of Education in October 1977, issued a policy stating its “responsibility to educate the young people of Kenya towards “preserving and enhancing our environmental heritage” (Kamunge, 1980:66). This policy statement enabled the inclusion of environmental concerns into the secondary school curriculum. At primary school environmental issues were integrated in various subjects to include; Science, Agriculture, Home Science, Geography, History and Civics in 1985 (Lindhe *et al.*1993:17).

Currently, a wide range of environmental education and education for sustainable development activities are taking place on the ground and are being led by the government, civil society organizations, institutions of higher learning and the indigenous communities. These activities are raising awareness, providing capacities and skills, and empowering people and communities to create more sustainable futures (ESD, Kenya Country Report, 2012).

2.4. Education for Sustainable Development (ESD)

ESD was first described by chapter 36 of Agenda 21. Agenda 21 was developed during the United Nations (UN) Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro in 1992. It provides a comprehensive plan of action to be taken at global, national and local levels by UN agencies, governments and major organizations (non-governmental organizations (NGOs), civil society organizations (CSOs) and networks) to reduce negative human impact on the environment. This chapter identified major thrusts, these are; improving the basic education, reorienting existing education to address sustainable development, develop public understanding, awareness and training. (Mckeown, 2002). The training at the Giraffe Centre is seen as a direct contribution to the fourth goal of Chapter 36 of Agenda 21.

In 2002 the UN general assembly adopted resolution 57/254 declaring 2004-2014 the Decade on Education for Sustainable Development (DESD). The superiority of ESD is well captured in the EFA-ESD Dialogue which states that “this is where ESD reinforces education for all (EFA) efforts by challenging dominant conceptions, structures and content of education thereby helping to improve its relevance,” (Wade and Parker, 2008).

Education for Sustainable Development (ESD) is the process of imparting intellectual, moral, social skills and values to learners for a particular purpose. ESD should provide people with skills, perspectives, values and knowledge to live sustainably (NEMA, 2008). ESD is a vision of education that seeks to balance human and economic well-being with cultural traditions and respect for the earth’s natural resources. ESD applies transdisciplinary educational methods and approaches to develop an ethic for lifelong

learning; fosters respect for human needs that are compatible with sustainable use of natural resources and the needs of planet and nurtures a sense of global solidarity (UNESCO, 2002).

ESD seeks to empower people of all ages to assume responsibility for creating, maintaining and enjoying sustainable future. It aims at empowering citizens to act for positive environmental and social change by empowering them with knowledge and skills to find new solutions to their social, economic and environmental problems. Environmental education is critical to sustainable development and is a key means to achieving sustainable conservation and utilization of the country's natural resources (NEMA, 2008).

ESD also emphasizes the key role of education in shaping future development options and choices. To an extent, ESD is perceived to be learning about new value orientations, new choices and new political decisions that includes those that we make in our homes and community. ESD would seem to be about ethical and equitable ways of caring for, using and distributing the earth's finite resources (SADC REEP, 2005).

Mckeown, (2002) denotes that ESD is a principle that promises to make the world more livable for today and the future generations. She continues to say that, the nature of ESD calls for giving people knowledge and skills for lifelong learning to help them find new solutions to their environmental, economic, and social issues. Mckeown elaborates further using the three components: environment, society and economy. She outlines that, the well being of these three areas is intertwined and not separate. The overall aim of ESD is to have an empowered citizenry, one that will act for positive social change by

imparting people with knowledge and skills that help them find new solutions to their environmental issues (NEMA, 2008).

2.5. Conservation Education Centres

Conservation education facilities are established with the aim of creating and enhancing awareness and knowledge on environment and wildlife (flora and fauna) as well as understand their economic value. Conservation education centers provide the necessary information that enables building up of the crucial support for conservation (Indakwa, 2002; Packer *et. al.* 2008).

Parker, *et. al.* (2005) reveals that zoos, which are examples of conservation education centres consider education to be a central role, they say that most zoos and aquariums have education staff and volunteers trained to provide education programmes to school groups and the general visitors. Parker *et. al.* (2005) further ascertain that although conservation education is an accepted part of the mission of modern zoo and aquariums, it is not at the top of most visitors “to do” list for their day at the zoo. This is one of the challenges facing the implementation of EE in conservation education centres.

Howe, *et. al.* (1988) outlines that, outdoor education as an education that occurs in parks, nature centres, museums, aquaria, arboreta, public gardens and forests or any wildlife protected area where learning experiences are not part of a formal school based programme. Zolho, (2005) stated that, environmental education is mainly done through investigation of real environmental issues.

Environmental psychologists have demonstrated that contact with nature restores attention and mental focus while also helping the mind to recover from mental fatigue. These benefits are attributed to the sense of fascination, of being immersed within surroundings that are entirely new and unexplored and to other influences of the natural world. Studies also reveal that office workers with a view of nature linked jobs have better health and greater life satisfaction (<http://www.brighthub.com/education/k-12/articles/3097>).

Davis, *et.al.*, (2006), says ‘it would not be too bold to assert that direct and indirect experience of nature has been and may possibly remain a critical components in human physical, emotional, intellectual and even moral development’. Despite this possibility, he mentioned that scientific knowledge of the impact and significance of nature during varying stages of childhood is remarkably scarce. Further, he highlighted that outdoor learning incorporate all the four pillars of learning, these being; learning to know, learning to do, learning to live and learning to be as opposed to the mainstream classroom education which incorporates only two of the pillars, that is; learning to know and learning to do. Outdoor learning ensures complete development of the person; it is a holistic approach to learning and fully acknowledges social and affective aspects.

Outdoor educators often seek to design programmes that influence an individual’s daily lifestyle and especially environmental behaviours. Zimmerman, (1996) found that for six months after a 5 day out door ecology education programme, secondary school students were more willing to engage in environmental sensitive behaviors, however this was contrary to what children in Finland and Canada reported. In Finland, elementary school children that participated in outdoor activities did not always lead to positive

environmental actions while teenage participants in a 12 day Canadian wilderness programme expressed concern about the environment but did not translate into action at home (Boland, 2009).

EE research strongly suggests that learning experiences in the natural environment are extremely important in developing student's environmental knowledge, attitudes and responsible actions. Research has also shown that a direct experience with nature has far more impact on subsequent involvement in pro-environmental activities than formal education. In Queensland, the state Education Authority has embraced the philosophy of 'real world' environmental instructions by establishing twenty five outdoor and environmental education centres (O AND EEC) through the state. These centres complement school programmes and provide students with the opportunity to study particular aspects of environmental sustainability (Ballantyne, *et. al.* 2008).

Through a research, Howe and John, (1988) indicated that many students and young adults attribute a large amount of their knowledge of environmental concepts, problems and issues to out-of-class educational settings and experiences. They further outlined that, out-of-school settings have been used effectively for developing environmental knowledge and concepts. Outdoor experiences particularly those at zoos, parks, nature centres, forests and coastal areas have been found to make a significant impact on the attitudes and values of students.

A research conducted by Oonyu, (2009) on conservation education and the attitudes of local communities living adjacent Mt. Elgon National Park, reveals that people have favourable attitudes towards the conservation education efforts of various organizations

and agencies within the area. He says that people's attitudes are influenced by perceived benefits of conservation to the local people, exposure to conservation education among other factors.

Oonyu warns that the positive attitude of the local communities could change if the conservation education is not intensified. He highlights that EE offered by conservation education centres among other approaches is necessary in ensuring the integrity of the protected areas. However, in most studies, there is no clear focus on the curriculum or guidelines of EE in these nature education centres in as much as they (respondents) agree that EE is important in environmental conservation and awareness. His study agrees that there is EE component in nature education centres but these centres seldom evaluate the impact (Oonyu, 2009).

2.6. Sustainable Conservation

Sustainable conservation is the utilization of natural resources in a manner that ensures that the natural resources remain available for future generations. The term was developed based on the principles of Sustainable development (SD). Sustainable development is the development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. (WCED, 1987). Mckeown, (2002) adds that, Sustainable development gives rise to economic growth that does not exceed carrying capacity of the environment (SADC REEP, 2005).

Sustainable development is based on the understanding that, excessive pressure on the environment would lead to its fragility. This in turn leads to high poverty levels and unsustainable production and consumption patterns (NEMA, 2008). Sustainable development is actually a pattern of resource use, that aim to meet human needs while

preserving the environment so that these needs can be met not only in the presents, but also for generations to come. (Holmberg *et. al*, 2006)

According to Holmberg, *et. al*, 2008) Sustainable development is the management and regulation of the environment by the society and its organs of governance to ensure their continual existence for future generation. This involves creating management mechanisms to ensure that natural resources are not over-exploited to meet immediate, selfish and greedy needs. Environmental sustainability is therefore a process of making sure current processes of interaction with the environment are pursued with the idea of keeping the environment as pristine as naturally possible based on ideal-seeking behavior (Zimmerman, 1996).

2.7. Giraffe Centre Education Programmes

The key objectives of the education department at the Giraffe Centre in Nairobi are to educate the public and the youth of Kenya on sustainable environmental conservation through learning institutions. It also supports conservation measures geared to conserving the endangered flora and fauna species in the country ([http:// www.giraffecenter.org](http://www.giraffecenter.org), 2011). Students and teachers remain being the main target group for these education programmes.

2.7.1. Training of Trainers Workshops

Since 1983, the Giraffe Centre has conducted environmental education programmes each year for the Kenyan youth. In the course of training students, it became evident that, teachers in participating schools also needed to be trained. Consequently, in 1995 the Giraffe Centre started a teacher training programme on environmental education that has up to now benefitted hundreds of teachers; this was to build capacity of the teachers so

that they could disseminate the same to the pupils that they teach. In 2005, the centre reoriented its teacher training programme towards Education for Sustainable Development (ESD). This was in response to the United Nations decade for SD (2005 – 2014) and to the country's education programme for sustainable development implementation strategy (NEMA 2008).

The main aim of these workshops is to empower the society through the learning institutions to enable them to act on environmental matters in order to nurture positive environmental, economic and social change. This entails equipping them with the relevant skills and knowledge to come up with solutions for challenges facing the environment. These workshops are held once every month with the exception of November due to school examinations for the finalists. After the training, it is usually the responsibility of each teacher to go back to their respective schools to practice EE and ESD. It always takes an innovative and courageous teacher to incorporate and infuse EE and ESD concepts in their regular teaching curriculum. The trainers at the Giraffe centre also make post-training follow ups on most of the teachers to check on their progress and success in implementing EE and ESD. In the year 2008, the Giraffe Centre introduced a formal monitoring and evaluation programme to establish and document any challenges faced by the teachers who had implemented EE and ESD in their schools which is a requirement after the training (AFEW –K, 2010).

2.7.2. Educational Field Trips

The Giraffe Centre conducts educational field trips for the under privileged children coming from needy families and living in slums and rehabilitation centres. The programme also takes into consideration students in most of the public primary and secondary schools. These students visit selected areas that include the Nairobi Animal Orphanage/ Nairobi Safari Walk, Mamba Village, David Sheldrick Wildlife Trust (Orphanage for 'Baby' elephants), and the Giraffe Centre (AFEW –K, 2009).

2.7.3 Environmental Awareness Competition

This is an annual competition that covers various categories from kindergarten to the tertiary levels of learning. The competitions feature questions that present the environment in a holistic manner. The aim is to equip the youth with the ability to think critically, analyze and come up with solutions to challenges afflicting the environment in their localities.

2.7.4. Schools Environmental Micro Projects

The U.N declared 2005 – 2014 to be the decade for ESD. In a bid to achieve this as well as the Millennium Development goals, the Giraffe Centre has been involved in initiating a number of micro projects in schools such as the School greening programme, waste management programme and the millennium fuel project. These are intended to become model projects for teaching with the aim of sensitizing the students, teachers and support staff in schools on sustainable environmental conservation (AFEW –K, 2008 and 2010).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes the study area, the target population, scope of the study, research design, and sample size, sampling procedures, research instruments and methods for data analysis.

3.2. The Study Area

The study was carried out in public primary schools in Nairobi County, (See appendix A) which included the capital City of Kenya and its environs, the county provided urban and rural characteristics and therefore it enabled the researcher to capture views of both the urban, rural and slum settings. Schools from the eight constituencies in Nairobi to include Kasarani, Dagoretti, Embakasi, Kamukunji, Langata, Makadara, Starehe and Westlands constituted the target population. Two public schools that benefited from any of the Giraffe Centre's education programmes between the years 2005 and 2010 and one school that had not experienced the Giraffe Centre's education programmes from each of these districts formed the sample size. The eight constituencies had a total of 205 primary schools and the research evaluated 26 public primary schools which constituted 13% (See appendix F) of the total schools (CCN Education Dept 2011), out of the 205 public primary schools in Nairobi County, 192 of these schools have so far visited the Giraffe Centre, constituting to 94% (AFEW, Database, 2011) .

3.3. Research Design

The study relied on a descriptive survey design. This was used to investigate the awareness and attitudes towards environment between the two categories of schools. According to Ng'ang'a (2010) a survey is a research study in which data is collected from the members of a sample for the purpose of estimating one or more population parameters. It is used to gather data at a particular time with the intention of describing the nature of existing conditions. Survey design was used since it was considered to be the most efficient method of collecting descriptive data that would help address some of the research questions.

A combination of qualitative and quantitative methods were used to generate data and information on the level of knowledge retained after the students had gone through the programme as well as environmental activities or projects carried out at the schools. Their possible impact on environmental conservation was also assessed.

Data was collected from 16 public primary schools selected randomly from the eight constituencies within Nairobi County. These constituencies were Kasarani, Embakasi, Makandara, Langata, Dagoretti, Kamukunji, Starehe and Westlands. The pupils and teachers in the schools selected had received environmental education at Giraffe Centre (GC).

In contrast, ten public primary schools that had never been trained at the GC were also selected randomly from the Ministry of Education database. The principle of randomization was applied where names of 20 schools were written on small pieces of paper that were then placed in a basket and thoroughly mixed. A blindfolded subject

sequentially picked the first ten schools from the set sample size for each of the categories of schools.

Prior to the start of the study, a circular was sent to the schools and conservation organizations participating in the survey indicating the aims of the study and the required information. The circular served to introduce the researcher to teachers, students and the management teams of the schools and other conservation organizations.

Primary data was collected through field observations, use of questionnaires and interview schedules. This was complemented by secondary data to more adequately address the answer the research questions and meet the objectives.

3.3.1. Sample and Sampling Procedures

Simple random sampling which is the process of selecting from the population that provides every sample of a given size an equal probability of being selected was used to identify 26 out of the 205 primary schools that formed the sample. Sixteen schools that have participated in the AFEW environmental education programmes were purposefully identified within the eight constituencies, while a list of all untrained schools was made and random numbers used to draw a sample of ten from the list. This was done since the general characteristics and conditions of the schools in the respective districts were similar 26 public primary schools were considered to be representative enough of the entire population. Final year pupils, teachers and administration staff that participated in the schools' excursion were identified for selection in the random sampling. Pupils, teachers and administrators were similarly identified in the selected untrained public primary schools. From these, a randomized method was used to select 214 individual

respondents comprising 130 students, 26 administrators and 42 teachers were selected in the survey (Table 3.1).

Table: 3.1. Proportion of students, teachers, and administrators selected from the categories of trained and untrained primary schools included in the research survey in Nairobi in 2011.

Schools	No. of schools	Students	Administrators	Teachers	Total
Trained	16	16 (x5)	1 (x16)	2 (x16)	128
Not Trained	10	10(x5)	1 (x10)	1 (x10)	70
Total	26	130	26	42	198

3.3.2 Research instruments

The following instruments were used to collect data for the study;-

1. Knowledge level questionnaire for pupils
2. School environmental status checklist
3. EE scope evaluation checklist for the Giraffe Centre
4. Administrators/ Teachers questionnaire

3.3.3 Knowledge Level and administrator/ Teacher Questionnaire

The questionnaires for both the teachers and the pupils consisted of both closed and 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

(Appendix B and E). Reliability refers to the consistency with which an instrument or research process repeats itself or which a survey or test can be repeated. In this case therefore, reliability was checked by comparing the consistency of the questionnaire responses during the piloting stage.

Both of the questionnaires included an attitude scale, which consists of a set of statements that do not have correct or wrong answers. Attitude scales assumes that subjective attitudes of people can be measured by quantitative techniques by assigning numerical scores to the responses of individuals (Ng'ang'a, 2010) and Ali, (2009).

3.3.4 School Environmental Status and EE Scope Checklists

The checklists, both for the environmental status and for the scope of Environmental Education offered by the Giraffe Centre entailed a set of questions reflecting the standard of the environment in different schools as well as different activities undertaken at that particular school, while the scope checklist outlined different activities that pupils are taken through while undergoing through the education programme. This required the researcher to tick each of the activity where applicable (Appendix D and E).

3.4. Piloting of Research Instruments

To test the validity and reliability of the data collection instruments piloting was done in four schools in the study area which were not included in the study sample. Responses elicited were compared with the objectives of the study to determine whether the instruments were actually measuring what they were intended to measure. Comparison was as well made with responses elicited from similar studies. The necessary refinement of the instruments such as re-wording some of the questions and statements was done thereafter.

3.5. Data Collection Procedures

A research permit was sought from the Ministry of Education. The sampled schools and organizations were consulted in advance in order to obtain their consent and booking of appointments. The direct method of administration of questionnaires was used. Questionnaires were distributed directly to the research participants apart from the students who were engaged by the researcher through discussions; clarifications made were sought, and collected on completion.

3.6. Data Analysis Procedures

The data collected from the questionnaires and the checklists were coded and then scored for analysis and interpretation. This was done using both qualitative and quantitative data analysis methods. The Likert Scale was used to rate and record students, teachers and administrators attitudes towards environmental awareness and conservation as described under the section on data collection instruments. The respondents attitudes were measured on a five point Likert Scale ranging from strongly agree (1) poor to (5) excellent (Ali M. (2009). This generated an ordinal scale data which was used in statistical analysis to understand the impact of environmental education to the youth, teachers and primary school administrators.

The student t-test was used to compare the median of Likert Scale rating for two categories of schools examined. This procedure was adopted because the sample size was appropriate and the data met the assumptions of parametric tests after transformation. It is sometimes stated that only nonparametric testing may be used when dealing with ordinal scale data. According to Zar (2006), this is not so since there was no theoretical basis in parametric hypothesis testing that required interval or ratio scale data, Pearson's

coefficient of correlation (r) was used to compute the kind of relationship between variables, i.e. pupils, teachers and administrators in the three categories of schools. It was also used to evaluate the validity of the hypotheses stated. Data was entered and analyzed in the Statistical Package for Social Sciences (SPSS) Version 17 computer package.

3.7. Data presentation

The results are presented by use of tables, pie-charts and bar graphs where appropriate. Text was used to explain and clarify the graphically presented results. The results of the analysis were interpreted in relation to the study objectives.

CHAPTER FOUR

RESULTS

4.1. Introduction

This chapter presents the analysis of data collected from the administered questionnaires. The questionnaire contained both open ended and close ended questions that addressed the objectives of the study. The results presented were derived from 196 out of the 198 respondents. The first part of the report describes the characteristics of the respondents. The second section describes and compares the environmental status of schools that had undergone environmental education training and those that had not. The third section of this chapter describes the constraints and opportunities for maintaining desirable environmental conditions in public primary schools in Nairobi.

4.2 Respondents characteristics

Environmental Education (EE) programmes and administrator/teacher education in total managed to obtain 196 completed questionnaires representing 93 % response rate. Each of the sections had unique respondents summarized as follows:

Gender of respondent

51.02% of the pupils who completed the knowledge level questionnaire were females who were closely followed by males at 47.95%. Only two respondents did not indicate their gender as shown in table 4.1 below. Most of these pupils came from Kamukunji, Langata, Dagoretti and Makandara districts of Nairobi.

Table: 4.1 Gender of respondent

Gender	Frequency	Percentage
Male	94	47.95
Female	100	51.02
Non response	2	1.03
Total	196	100.00

Age of respondents

Majority (77.69) of the respondents indicated that they were aged between 10-13 years, followed by those who were aged between 14-15 years at 18.46%. As shown in Table 4.2, two students did not indicated their age, and only one respondent was aged above 15 years.

Table: 4.2. The percentage of respondents among the various age groups of pupils interviewed in the environmental education impact study in 2011

Age	Frequency	Percentage
10-13 Years	101	77.69
14-15 Years	24	18.46
15 years and above	3	2.30
Non response	2	0.77
Total	130	100.00

Frequency of visits at the Giraffe Centre

Respondents were required to indicate the number of times they had visited the Giraffe Centre. A majority (64.29%) of respondents indicated that they had visited the Giraffe Centre only once. This was followed by those who indicated that they had visited twice (20.41%). Another 11.22% of indicated that they had visited the centre three times, while only 2.04% of the respondents showed that they had visited the centre up to four times. Another 2.04% of them did not indicate the number of visits they had made to the Centre (Table 4.3).

Table: 4.3. Frequency visits at the Giraffe Centre

Times	Frequency	Percentage
Once	126	64.29
Twice	40	20.41
Thrice	22	11.22
Four times	4	2.04
Non response	4	2.04
Total	196	100.00

4.3 Major Findings

4.3.1 Training Backgrounds of selected Subjects

The pupils and teachers from schools that had undergone training by the Giraffe Centre had been taken through a comprehensive thematic programme on grounds that the themes covered are in a position to empower them to take positive actions for a better conserved environment. The second sample entailed respondents from schools that had not

undergone through any training by the Giraffe Centre. The sample size comprised of 26 schools i.e. 16 trained schools and 10 schools that had not gone through the training by the Giraffe Centre (Appendix F).

4.3.2 Comparison of Trained Students and Untrained Students

The research findings established that there was a significant difference in terms of knowledge levels of trained and untrained students i.e. F values of 4.322 and P values of 0.006 which are statistically significant at $P = 0.05$ hence reject the null hypothesis. The findings are as shown in table 4.4 below.

Table: 4.4 Comparison of Trained and Untrained Students

ANOVA					
Student	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.871	3	.957	4.322	.006
Within Groups	27.899	126	.221		
Total	30.769	129			

4.3.3 Students Knowledge about Climate Change and its Causes

The research findings established that there was a significant difference between the two samples hence the null hypothesis was rejected i.e. high F values of 43.155 and P values of 0.002 as shown in table 4.5 below hence the null hypothesis is rejected.

Table: 4.5 Students Knowledge about Climate Change and its Causes

ANOVA					
Student					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.846	4	4.462	43.155	.002
Within Groups	12.923	125	.103		
Total	30.769	129			

4.3.4 Knowledge about issues of threatened species

Further the findings showed that despite the fact that the sample did not come from the same population the results were statistically significant at 95% confidence interval that is, F values of 13.924 and P values of 0.003 as shown in table 4.6 below hence null hypothesis was rejected.

Table: 4.6 Knowledge about Issues of Threatened Species

ANOVA					
Student					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.484	4	2.371	13.924	.003
Within Groups	12.285	125	.170		
Total	30.769	129			

4.3.5 Understanding of Purposes of Forest Conservation

Students were further asked to indicate the reasons why they thought it was important to conserve forests. The research findings showed that there was no significant difference between those who were of the opinion that forest conservation was important and those who indicated otherwise as shown in table 4.7 below showing low F values of 1.352 and high P values of 0.262 hence the null hypothesis was not rejected.

Table: 4.7 Understanding of Purposes of Forest Conservation

ANOVA					
Student	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.641	2	.321	1.352	.262
Within Groups	30.128	127	.237		
Total	30.769				
129					

4.3.6 Understanding of Wildlife Conservation Usefulness

Students were further asked to indicate the reasons why they thought it was important to conserve wildlife. The research findings showed that there was no significant difference between those who were of the opinion that wildlife conservation was important and those who indicated otherwise as shown in table 4.8 below, low F values of 1.815 and high P values of 0.148 hence fail to reject the null hypothesis.

Table: 4.8 Understanding of Wildlife Conservation Usefulness

ANOVA					
Student					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.275	3	.425	1.815	.148
Within Groups	29.494	126	.234		
Total	30.769	129			

4.3.7 Overall Environmental Awareness between Trained and Untrained Schools

The research further sought to establish whether there was statistical significance with regards to overall environmental awareness between trained and untrained schools. The findings revealed that there was significant difference in environmental knowledge level between trained and untrained schools as shown by the F value of 4.068 and P value of 0.004 in table 4.9 below hence the null hypothesis is rejected.

Table 4.9 Overall Environmental Awareness between Trained and Untrained Schools

ANOVA					
Student	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.212	25	.608	4.068	.004
Within Groups	15.557	104	.150		
Total	30.769	129			

4.4 Schools Environmental Status

4.4.1 Comparison of Environmental Status in Trained and Untrained Schools

The research findings revealed that the variances among the groups were similar that is, P values of 0.133 which is greater than 0.05 hence equal variances assumed. This study found that the environmental status of trained schools and that of untrained schools was statistically significant (-0.6848 ± 0.25) for trained schools versus (1.8148 ± 0.25) for untrained schools $t(25) = 0.931, P = 0.133$. The findings are as shown in table 4.10 below.

Table 4.10 Comparison of Environmental Status in Trained and Untrained Schools

	Levene's equality of variances		t test for equality of means			95% Confidence interval of the difference		
	F	Sig	t	df	Mean Difference	Std Error Difference	Lower	Upper
= variances assumed	2.408	.133	0.931	25	0.56497	0.60685	-0.6848	1.8148
= variances not assumed			1.223	16		0.46179	-0.9323	1.5438

4.4.2 Environmental Knowledge Compared between Trained and Untrained Schools

The research findings revealed that the variances among the groups were similar that is, P values of 0.51 which is greater than 0.05. This study found that the environmental knowledge retained by pupils of trained schools and that of untrained schools was statistically significant (0.9203 ± 1.28) for trained schools versus (1.4977 ± 1.28) for untrained schools ($t(128) = 8.287, P = 0.51$). The findings are as shown in table 4.11 below.

Table: 4.11 Environmental Knowledge Compared between Trained and Untrained Schools

	Levene's equality of variances		t test for equality of means			95% Confidence interval of the difference		
	F	Sig	t	df	Mean Difference	Std Error Difference	Lower	Upper
= variances assumed	3.882	0.51	8.287	128	0.12090	0.01459	0.9203	1.4977
= variances not assumed			8.653	118		0.01397	0.9323	1.4857

4.5. Understanding of environmental conservation, environmental pollution, climate change and endangered animals and plants

Generally, majority of the students indicated that environmental conservation is ensuring that the environment is clean and avoiding any activities which harm the environment like cutting down tree, charcoal burning, disposal of untreated sewerage into water sources, unsafe disposal of solid waste and adopting preservative measures like planting trees, building gabions, recycling of plastic elements etc. In essence they conceded that environmental conservation is taking care of the environment.

On the other hand, they agreed that environmental pollution is any activity that leads to destruction of the environment or negatively affecting the environment. Some activities that leads to environmental pollution include: cutting down of trees, poaching, industrial effluents, poor disposal of plastic elements and untreated wastes.

Further, they indicated that climate change meant change of weather conditions over a long period of time i.e. 35 years. Endangered species on the other hand comprised of animals and plants exposed to danger i.e. highly poached (animals) and heavily harvested (trees). Some of the reasons why animals and plants are threatened or endangered included; they are hunted because of their valuable parts for example elephant tusks, precious meat and their medicinal value. Famine conditions also make some animals endangered hence forced to migrate.

4.6. Actions to be taken to overcome animals being threatened

Students were further required to indicate some of the actions to be taken to prevent animals and plants from being threatened; they indicated the following: put the animals in protected areas, replant trees, come up with animal orphanages, plant more trees for shelter, capital punishment for poachers, educate people on environment conservation measures, deploy more game wardens to patrol game parks and reserves, fencing game parks and reserves and remunerate game wardens well to motivate them, educate on the importance of conserving the wildlife and control labor turnover.

4.7. Impact of environmental education provided at the Giraffe Center

Majority (85.1%) of the students and the teachers indicated that the environmental education they received at the Giraffe Center had helped them in many ways in the way they view or do things for and in the environment today. They further explained this and

indicated that there are in a position to treat domestic animals at home better than they used to before they visited the Giraffe Centre, they had also educated their siblings about good environment and how to keep it clean, they had planted more trees than there were before the visit, they have also learnt how to protect the environment. The students also educate their colleagues in schools on how to plant trees and how to nurture them, knowledge that they gained at the Giraffe Centre.

4.8. Quality of education received at the Giraffe Centre

Majority (85%) of the students and the teachers indicated that the quality of education received at the Center was excellent while 6% of them indicated that it was good hence better rating. However, 9% of the students and the teachers did not give their opinion on this aspect as shown in and fig. 4.1.



Figure 4.1: Quality of education received at the Giraffe Centre

4.9. Response towards conservation education and awareness

Majority (66.7%) of the respondents indicated that they had registered a 75% positive response from visiting groups towards their conservation education programmes. Another

16.7% positive response towards conservation education programmes was registered by institutions. The findings are as shown in figure 4.3 below. Further, 66.7% of the respondents indicated that their institutions had registered a 25% negative response for their conservation education programmes from the visiting group. 16.7% of the respondents indicated that they had registered a 60% negative response for their conservation education programmes and another 15% of them did not give their opinion on this issue as shown in fig. 4.2.

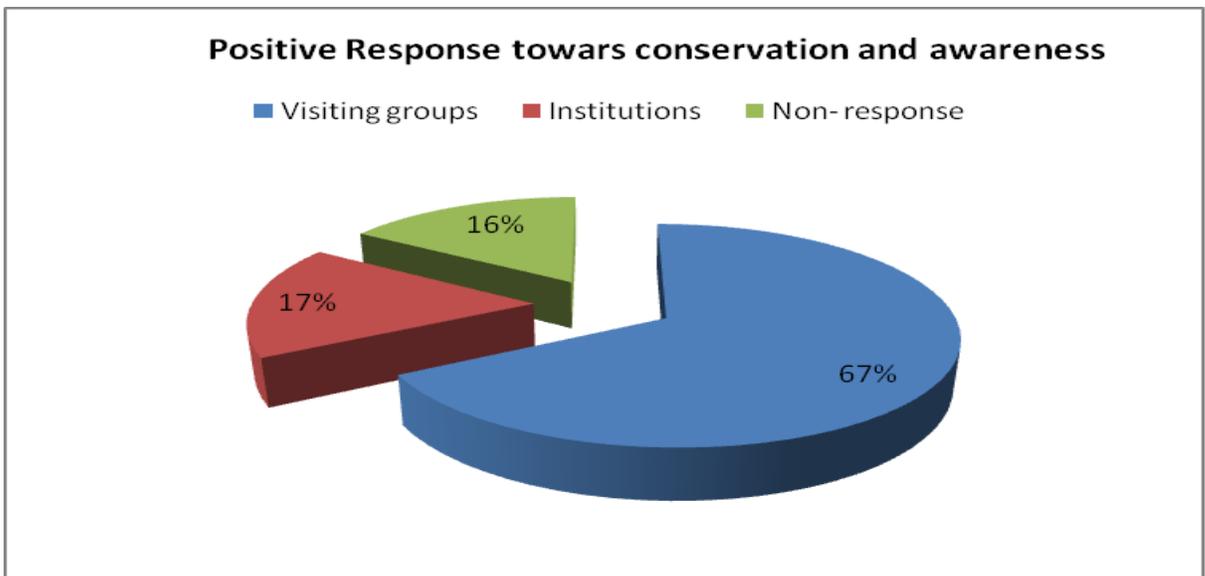


Figure 4.2: Positive Response towards Conservation Education and Awareness

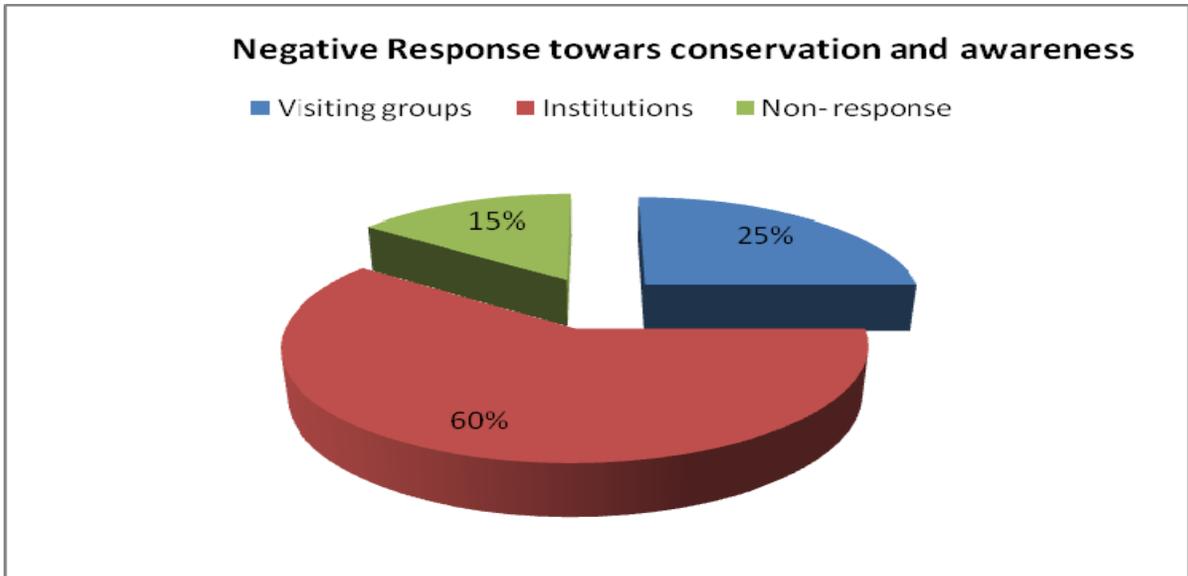


Figure 4.3: Negative Response towards Conservation Education and Awareness

This is attributed to the fact that most groups expect to be either funded for their environment programmes within their schools/communities and therefore get disappointed when they realize it cannot happen, majority of the groups are very willing to participate more and strengthen their schools wildlife clubs, the programmes target the right audience, the visiting groups receive maximum lectures, staging demonstration film shows on conservation, groups are taken around the natural trail, groups are extremely excited about biodiversity. Negative response was registered because sometimes the education officers are not there to give a talk to the visiting groups.

4.10. Promotion of sustainable development through environmental education

Majority (83%) of the students and the teachers indicated that environmental education programmes led to attainment of sustainable development while the remaining 17% of them were of a contrary opinion as shown in fig. 4.5 below. Sustainable education development can be indicated by the following: Acquisition of new knowledge on human

nature, interactions and impacts, adoption of new practices in environmental management, awareness creation on what the environment is, behaviour change from destructive to conserving the environment- behaviour change leads to sustainable development as they strive to meet their needs with consideration for future, awareness of sustainable development issues, attitudinal change in use of water energy etc. by students, increase in action towards conservation, increase and skills and competency, problem solving and adaptability increase, establishment of self-sustaining and eco-friendly initiations, better land use practices, moderate climate, more biodiversity has been achieved, active student/pupils activities in school conservation projects having a positive influence to the surrounding communities, students have been able to put up their own income generating activities.

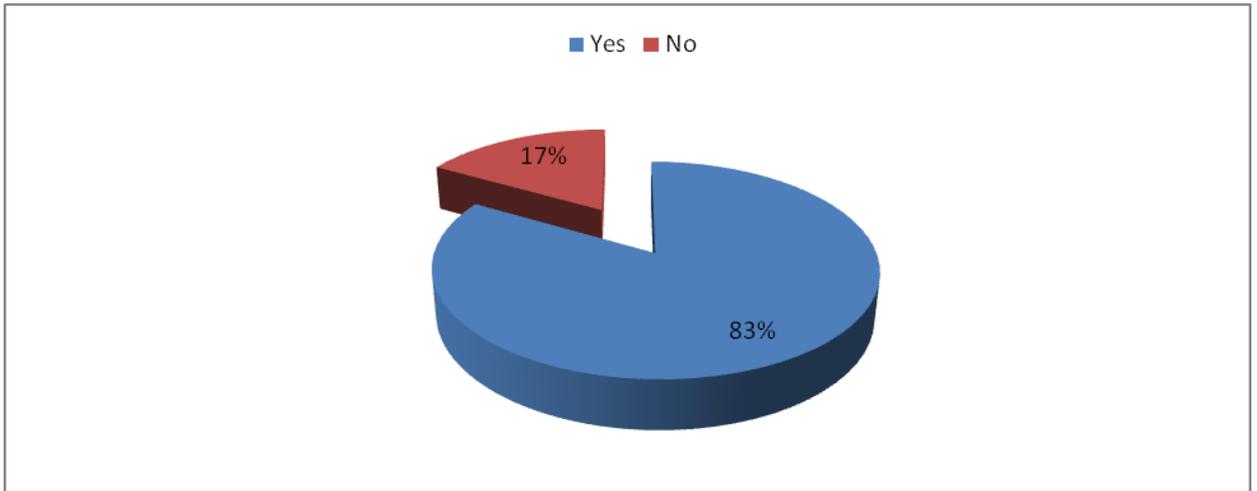


Figure 4.4: Promotion of Sustainable development through Environmental Education

4.11. Engaging learning institutions in embracing sustainable development

Respondents were further required to indicate what their institutions had done to engage learning (schools) institutions in embracing sustainable development. They indicated the following:

Encouraging schools to have more tangible environmental projects at school level, support some short term projects like water harvesting, tree planting etc., involving schools in nature education in the outdoors, organizing lecture sessions, organizing food fairs, sponsoring school programmes, developing demonstration areas, organizing for school exchange programmes, teaching schools on sustainable development, initiation of practical activities to share skills and knowledge rewarding sustainable development initiatives in schools incentives, conducting training programmes for curriculum developers on ESD, run annual competition on CD themes and produce resource material and distribute the same to institutions of learning.

4.12. Encouraging the general public to contribute towards sustainable development

All the respondents indicated that their organizations had encouraged the general public to contribute towards sustainable development. They did this by doing the following: Producing relevant literature and availing the same to the public, participating in public exhibitions, organizing forums that disseminate information to the public, broadcasting of SD information guidelines, training and empowering communities to initiate alternatives and sustainable income generating activities through partnership with other organizations, education and awareness of students and teachers who have been able to influence others, participating in public talks and training, inviting experts from different parts of the

country to give talks, organizing world environmental days celebrations, support groups that do environmental work, give general information freely, educate students and communities on environmental conservation matters and also carrying out activities where the public can participate or learn such as clean ups/ community awareness events/ open rallies, organize food fairs where the general public is exposed to diverse indigenous food plants and medicinal plants where the public is encouraged to nurture/conservate such species for sustainable use today and in the future and create awareness about beekeeping and manufacture of pollinators for enhanced production.

4.13. Encouraged schools in environmental projects

Teachers and students were required to indicate whether their institutions were engaged in school environmental projects. All the students indicated that their institutions had implemented one or more of the following projects; Beekeeping, botanical garden establishment, tree nursery, landscaping, woodlot, greenhouse establishment, fish ponds development, creation of wildlife habitats, waste recycling projects, development of nature trails, water harvesting, health campaigns, composting and use of biogas as a source of alternative energy all these are sustainable schools micro projects that the students said they had learnt at the Giraffe Centre.

4.14. Impact of programmes on students, teachers and the school environmental status

All the teachers and students indicated that the programmes/projects had impacted them positively and the school environmental status in the following areas: Acquisition of new knowledge on diverse energy sources, proper care of seedlings while still in the nursery, making of tree nurseries, bee keeping, roof catchment water harvesting, rabbit keeping,

fish farming, all these and many other projects have increased positive attitude towards wildlife and the environment, this saw the membership of the environmental and wildlife clubs rise, the positive recognition and support of the school clubs by the administration. Various schools became resource centers on issues dealing with environment while others became demonstration centres, increased tree cover and woodlots in schools that have been involved in the training, teachers and students equipped with environmental skills and knowledge, this is seen through how the pupils and the teachers treat the environment, also some teachers teach their pupils out in the environment, increased enrollment for Geography subject, high students up-take in environmental projects, schools have started their recycling projects, youth have engaged in environmental conservation activities after school and surrounding communities within the schools have also been made green by tree planting. Most of the trained schools have taken up water harvesting and water UV treatment in schools; this where pupils fill bottles with water and they are left out in the sun.

4.15. Rating of the Giraffe Centre's achievement in provision of environmental education and awareness Creation

Half (50%) of the teachers and the pupils indicated that the Giraffe Centre's achievements in provision of environmental education and awareness to schools was satisfactory, 33.3% of indicated that it was good and 16.7% rated it very poor as shown in fig. 4.5. This was because of other than the Giraffe Centre relying on schools that visit the Centre on daily basis; the Centre also visits the schools and carries out various activities with the pupils and the teachers such as, tree planting, clean ups as well as monitoring and evaluation of schools concerning environmental education needs. The

schools felt that the environmental education given to them by the Giraffe Centre was relevant to the school curriculum and as much as they received a lot of financial support from the Giraffe Centre, they still needed support from government through the relevant ministries in order to implement much of what they learnt.

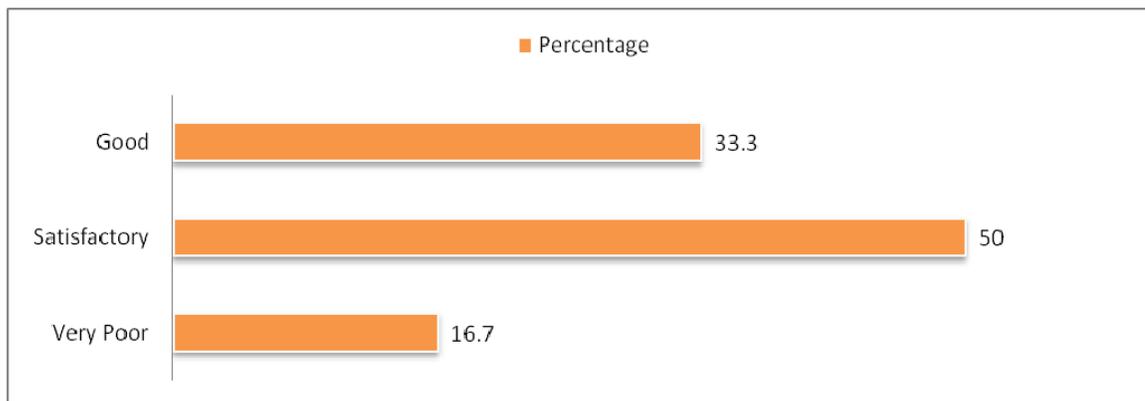


Figure 4.5: Giraffe Centre’s Achievement in Environmental Education and Awareness

4.16. Organization’s major successes as a result of its endeavors

Teachers and pupils were further required to indicate their organization’s major successes as a result of its endeavors to achieve sustainable environmental conservation and other conservation objectives. They indicated the following; have managed to impart skills and knowledge to many schools in Kenya, has nurtured the youth to find careers in sustainable conservation, increased school environmental and wildlife clubs, supported club patrons which has made clubs effective and they are impacting positively on the students, increased donor interest and the community support in programmes, changed perceptions and attitudes of pupils, teachers and the communities adjacent to schools

towards the environment, production of environmental education resource materials and availing them to schools all over the country, large number of students and teachers taught in a year, youths have been empowered and have been able to support themselves through income generating activities that they learnt at the Giraffe Centre, The Giraffe Centre has also taken many Kenyans underprivileged pupils and students to the areas of wildlife interests with the aim of them learning about our wild animals, over 100,000 trees planted yearly, production of resources materials on ESD and their disposal to various learning institutions, generated a lot of interest in the field of conservation and ESD in the education circles and therefore attracted many young people to be involved in this field as a career, raising awareness especially about diversity, values threats and possible actions necessary for conservation of biodiversity and enhanced awareness about threatened animal species through funding.

4.17. Challenges experienced when carrying out education programmes

Teachers and students were further required to indicate the challenges they faced as environmental educators. 66.7% of the respondents indicated that they handled a large number of students, all of them indicated that schools had limited time to visit the centers, 66.7% of them indicated that their schools just came to the centers without booking hence inconveniences are caused, 83.3% of them indicated that they had a limited number of educators hence becomes hard in facilitations, 83.3% of them lacked facilities and finally all of them indicated that they lacked finances for facilitate their operations as shown in fig. 4.6.

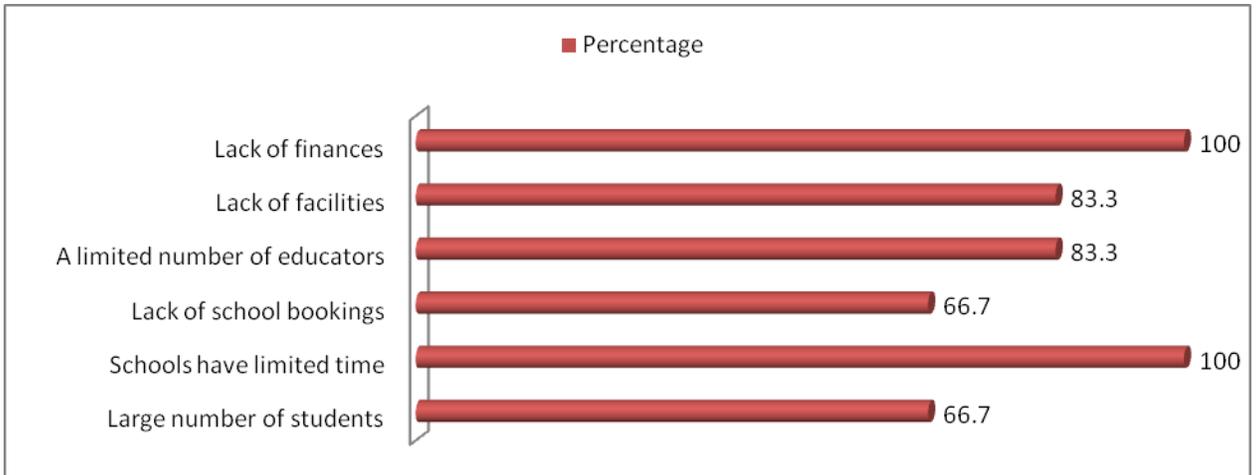


Figure 4.6: Challenges Experienced

4.18. Education programmes offered at the Giraffe Centre

Majority of the students and the teachers conceded that the Giraffe Centre offered oral lectures on environmental conservation, use of printed resource materials, tree planting lessons and teaching on micro-projects as the major programmes taught during the visits.

The findings were as shown in Figure 4.7.

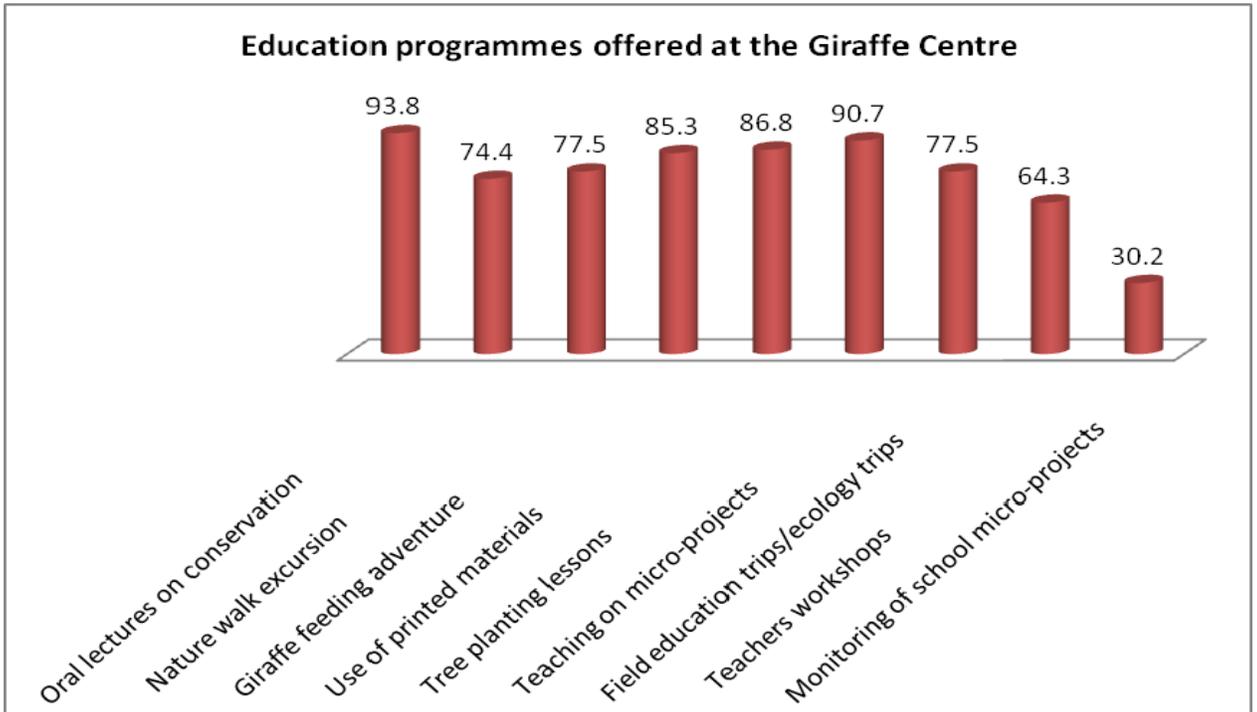


Figure 4.7: Education Programmes at the Giraffe Centre

They found the following as the most informative programmes; watching the nature's movies, walking through the nature trails in the forest, feeding of the giraffes, learning about the tortoises, field education trips and field excursion.

4.19. Activities the students participated in during the visits

Students and teachers participated in the following activities when they visited the Giraffe Centre; listened to a presentation on environmental conservation, planted trees at the tree nursery, feeding of the giraffes, drawing and colouring wild animals pictures, prepared tree nursery beds, transplanting seedlings, nature walks, fuel briquette making and separating waste.

4.20. Impact of education at Giraffe Centre on environmental conservation

All the teachers and pupils indicated that the environmental education provided at the Giraffe Centre had an impact on environmental conservation in the following ways: Has led to minimized poaching of the most threatened animals and forests, elephants, lions, has triggered the local people to treat animals well hence increased wild animals and has led to increased environmental conservation due to realization that there are other business ventures that could help them raise revenue other than game hunting and charcoal burning.

4.21. Rating of the Giraffe Centre's EE and Awareness programmes by schools

51.2% of the pupils and teachers rated the quality of environmental education programmes in their schools as good, 43.9% of them as excellent and the remaining 4.9% of them rated it as satisfactory as indicated in fig. 4.8,

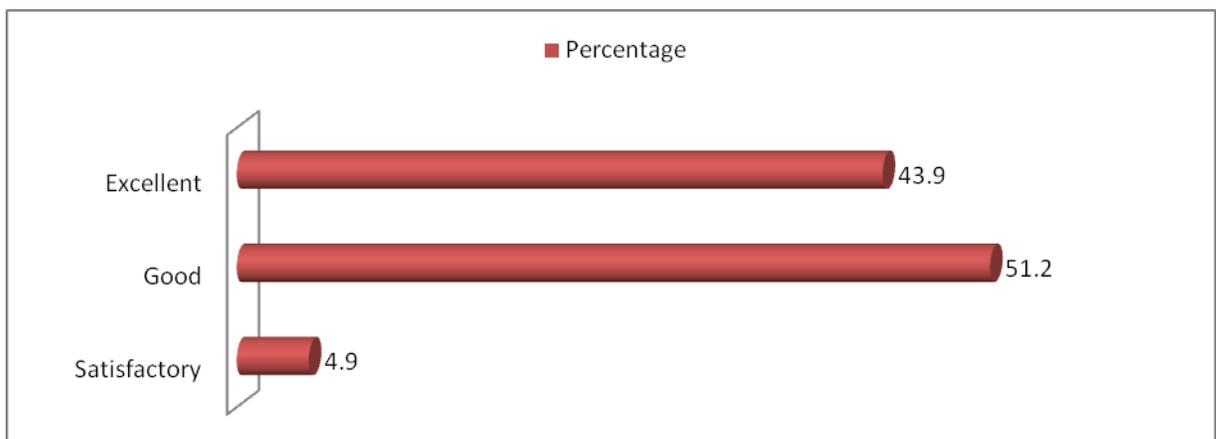


Figure 4.8: Schools Ratings of the EE Programmes

4.22. Visits to other Conservation Education Centres

90.2% of the pupils and teachers indicated that they had visited other conservation centres other than the Giraffe Centre while the remaining 9.8% of them indicated otherwise as shown in fig. 4.9. Some of the institutions included Nairobi animal orphanage, the Butterfly Centre, Kisumu Impala Park, Mamba Animal Village in Mombasa, National Museums of Kenya and the Elsamere.

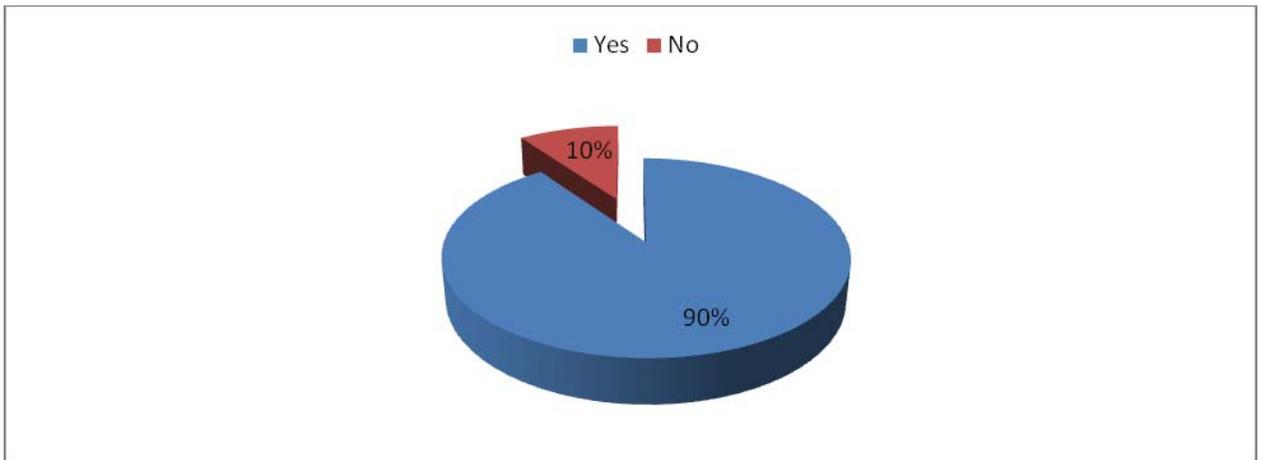


Figure 4.9: Others Conservation Education Centres Visitations

4.23. Rating of other organization's EE and awareness programmes

Majority (51.2%) of the pupils and teachers indicated that the quality of environmental education offered in these other institutions was satisfactory, 31.7% of them rated it as good, 9.8% of them as excellent and the remaining 7.3% as poor as shown in fig. 4.10 below.

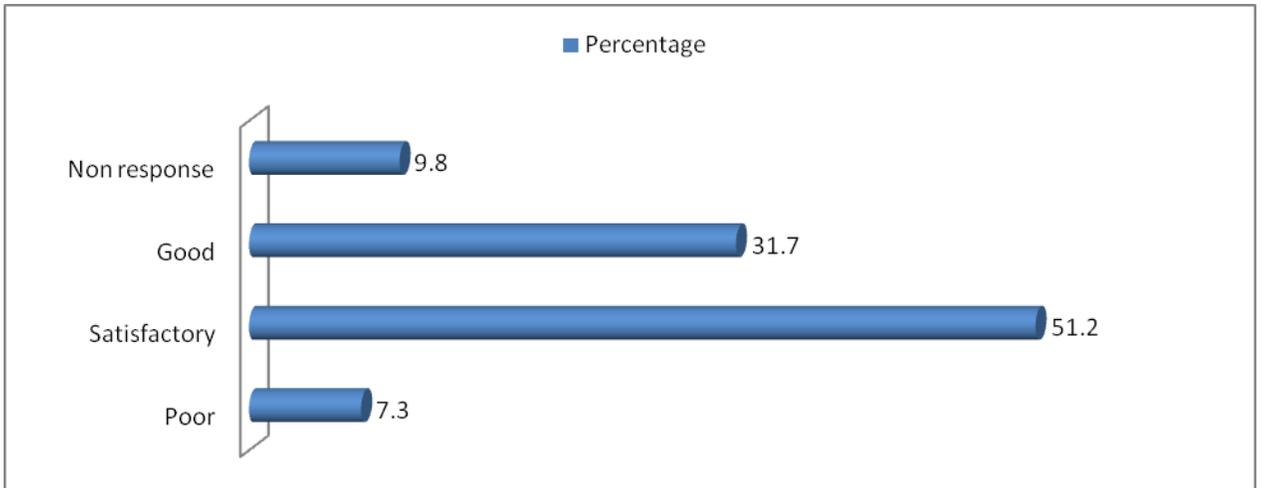


Figure 4.10: Rating of other Conservation Education Centre's Programmes

4.24. Quality of learning offered to students at the Giraffe Centre

68.3% of the respondents rated the quality of education offered to pupils with reference to age/ year of study as good, 24.4% of them as satisfactory and the remaining 7.3% of them as poor as indicated in fig. 4.12 below.

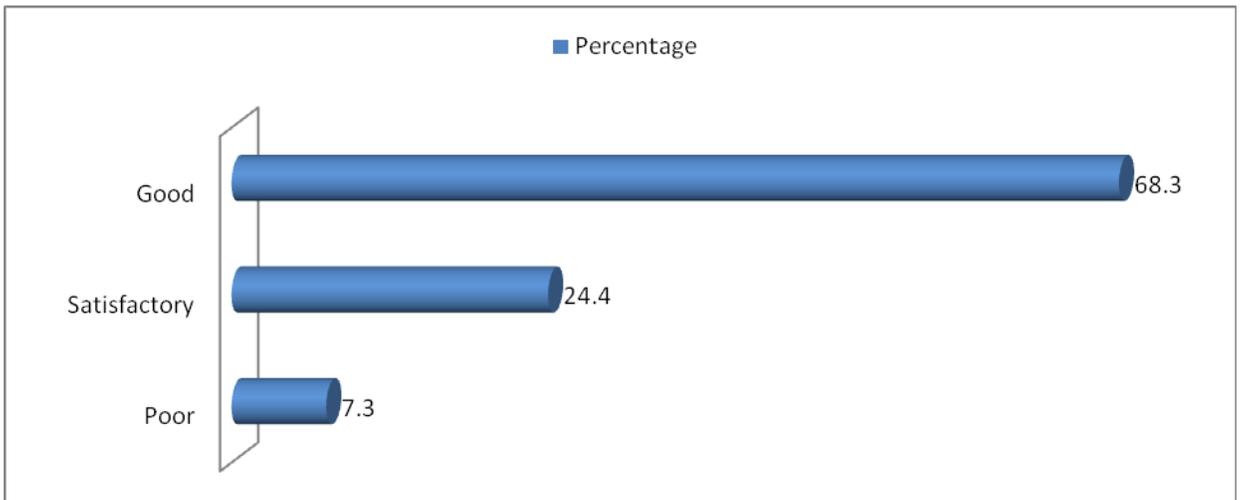


Figure 4.11: Quality of Learning Offered to students at the Giraffe Centre

4.25. Relevance of the Giraffe Centre EE programmes to the school curriculum

Majority (87.8%) of the pupils and the teachers indicated that the environmental education programmes offered were relevant to school curriculum while the remaining 12.2% of them indicated otherwise as shown in fig. 4.13 below. Some of the relevant curriculum sections include: conservation of birds, the history of George Adamson and his adventures, sustainable water conservation, organic farming, container gardening, animal and parts and how to take care them, social studies, tree planting and types of forests, types of animals and their classes; herbivorous, carnivorous and omnivorous as well as types of giraffes and their distribution.

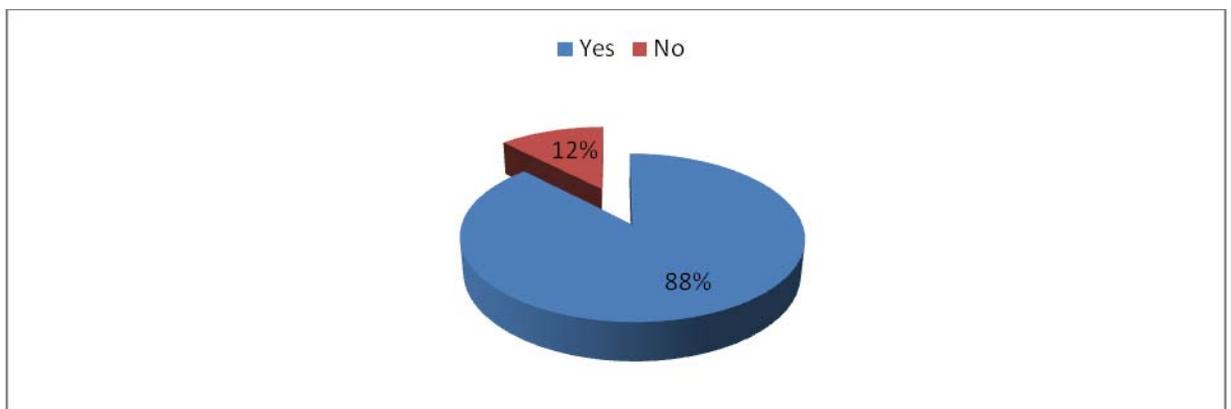


Figure 4.12: Relevance of EE Programme to School Curriculum

4.26. Impact of the EE and Awareness programmes on Sustainable Development

Pupils and teachers indicated that the environmental education programme offered by the Giraffe Centre had impacted on sustainable development in the following ways: the programmes are geared towards empowering the pupils and the teachers on how to conserve the environment, how to utilize the natural resources sustainably with a conscious mind that the future generation needs them, conservation of soil when cultivating so that the fertility is maintained for future use. This has led to the growth in

the tourism sector, has created employment opportunities, has offered monetary support for the country at large, the EE programmes prepare pupils for future life, develops skills and change attitudes for pupils and the teachers to see the environment as an entity that needs to be cared for other than one to be exploited.

4.27. Improved environmental awareness and conservation

Pupils and the teachers were required to indicate what could be done to improve environmental awareness and conservation. They did indicate the following: Allowing pupils to do field study hence enabling them to realize the changes they can make when they conserve the environment, awareness should be based on providing sufficient education on the effects of not conserving the environment, giving trees seedling to the community, carry out environmental and conservation days in schools, engage pupils/students in environment conservation activities e.g. tree planting, reduce entry fees for schools visiting wildlife sanctuaries, National Parks and Game Reserves.

4.28. Things done by schools as a result of the education received at the Giraffe Centre

Pupils and the teachers were also required to indicate the activities which their schools had implemented as a result of education received at the Giraffe Centre. They indicated the following; the pupils and the teachers always makes sure that the school compound is clean, adherence to the eco codes that have been put up in school, such as; ‘keep off the grass’, ‘do not litter, make use of the dust bins’, switch off the lights on your way out, increased the rate at which the schools plants trees, school beautification through planting of flowers, educating others students on sustainable conservation of the environment,

watering flowers and trees more regularly, educating the locals on importance of animals such as; giraffes and water harvesting within the school.

4.29. Hypotheses Testing

In order to test the significant relationship between the environmental education and awareness programmes and their impact to students and teachers the Pearson Product Moment correlation was used. The research data was combined and analyzed to check the strength of the relationship. The analysis was as presented below in Table 4.12. With regards to the quality of education, there was a positive correlation between the variables. Specifically, it was noted that there was a positive correlation between quality of education and increased knowledge level among teachers/ administrators, $r (.584)$ and students, $r (.663)$. Based on these findings we reject the null hypothesis and fail to reject the alternate hypothesis.

Table 4.12: Correlation Coefficients for Variables

		Quality of education programmes	Teacher/Administrator	Students
Quality of education programmes	Pearson Correlation	1		
Teacher/Administrator	Pearson Correlation	.584*	1	
Students	Pearson Correlation	.663*	-.150	1
*. Correlation is significant at the 0.05 level (2-tailed).				

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATION

5.0. Introduction

This chapter provides a summary of the study, discussions and conclusions.

5.1. Discussions

5.2.1. The scope of EE and Awareness programmes and knowledge levels of trained students and teachers

86% of the pupils and the teachers conceded that the Giraffe Centre gave priority to offering oral lectures on conservation, use of printed materials, tree planting lessons and teaching on micro-projects as the major programmes on being carried out on visiting students. They found the following activities to be the most informative: conservation education lectures, nature walks in the forest, watching the nature's movies, giraffe feeding, field educational trips or field excursions, tree planting lessons and learning about tortoises. Indakwa, (2002) also advocates for a shift towards conservation education that is participatory and people-centered as opposed to the old exclusivist systems. This type of education is empowering and it incorporates use of indigenous languages while upholding eco-tourism.

88% of the pupils also indicated that the EE programmes at the Giraffe Centre relevant to the school curriculum hence what they were taught gave them practical experience, this agrees with Zolho, (2005) and Parker, (2008) where they reiterated that, Environmental Education relates the teaching of knowledge and skills to create attitudes and behaviors in

human that are favorable to the environment and as such support the western view of the environment as something we must protect.

Further, according to Otiende, *et al.* (2011), EE is a process of recognizing the values and various concepts of the environment with the aim of determining the skills and approaches necessary for understanding the relationship between man, his culture and the biophysical environment. He goes on to state that, environmental education should not be conceptualized as a single subject but as an encompassing process because that involves all human activities.

51.2% of the pupils and teachers indicated that the standards of the Giraffe Centre's environmental education programmes were very high, mentioning that the way they were taught was better than they were taught or they taught, they also indicated that they were able to learn something new about the environment every time they visited the Giraffe Center. This strongly suggests the need to train teachers to think critically about the holistic aspects of the environment and their role in promoting its sustainable use. It also involves generation and promotion of locally based responses to environmental issues and risks. (Macharia, 2003).

Majority of the pupils and the teachers also indicated that they had learnt something about the environment on visiting the Giraffe Center. Some of the issues they were taught include: Better environment conservation practices, they learnt that giraffes feed from a variety of trees hence the reason to conserve the forests, they learnt how to keep environment clean and they had lessons on how to plant trees. All these is in agreement with Otiende *et al.* (2011) in his words he said that 'environmental education is an

important component of education and should be taught across all levels and in all types of education with the aim of understanding and addressing environmental challenges. There are various approaches that are used in teaching environmental education and he highlighted one of them as “The Problem Solving Approach”. He further said that, this approach is practical and its aim is to find solutions to specific environmental problems.

5.2.2. Actions to be taken to overcome threat on animals

Pupils were further required to indicate some of the actions to be taken to prevent animals and plants from being threatened: They indicated that there is need to do the following: coming up with more protected areas under the Kenya Forest service, plant new forests and replant trees where destruction has taken place, subject poachers to capital punishment and hefty fines, educate people on environmental conservation measures to reduce ignorance, deploy more game wardens to patrol Parks and Game Reserves, fencing Parks and Game Reserves using electric fences and remunerating game wardens and forest guards well to motivate them in order to curb them from being compromised.

They also indicated that more conservation education centres should be created in order to educate pupils about our wildlife so that they grow knowing the importance of it. This could not have agreed more with Edward (2002), Parker and Ward(2008) when they said that, nature education facilities are established with the aim of creating and enhancing awareness and knowledge on wildlife (flora and fauna) as well as understand their economic value. It is also important that the necessary information is provided to enable building up of the crucial support for conservation. Parker and Ballantyne (2005) also, revealed that zoos and aquariums, which are examples of conservation education centres consider education to be a central role, they noted that most zoos and aquariums have

education staff and volunteers trained to provide education programmes to school groups and the general visitors.

5.2.3. Activities that affect environment negatively

Pupils were further required to indicate issues activities affecting the environment negatively. Some the issues indicated include the following: Cutting down of trees without replanting, poor disposal of chemicals into the rivers, disposal of untreated sewerage, poor farming activities, disposal of industrial effluents to water bodies, poor disposal of solid waste, littering of the environment.

In order to make the environment better than it is today, pupils and the teachers indicated that the following should be done: Build gabions to control soil erosion, use latrines instead of bushes, plant more trees to increase the forest cover in the country, educate people on the essence of environmental conservation, establish environmental days for public exhibitions and exposure, treat poisonous gases and effluents coming from the industries, plant flowers for beautification, establish litter bins for rubbish collection and easy disposal, encourage others to conserve the environment in their small ways, avoid directing sewerage to rivers and other water bodies and put up animal orphanages for endangered animals and plants.

The pupils further agreed that the environment should be conserved because forests make the environment beautiful, for example; forests have aesthetic value, for medicinal purposes, beautiful sceneries that attract tourists, they attract rainfall, they provide firewood and timber for domestic and industrial use respectively, for furniture making, Animals inhabit in forests, forests control soil erosion and purify the air. Wild animals

should be protected to attract tourist hence the country earns foreign exchange. Water bodies should be preserved because some animals live in water, provide safe water for domestic use, both humans and animals, for industrial use, generation of hydroelectric power, transportation and for recreation such as; swimming.

Majority of the pupils indicated that the environmental education they received at the Giraffe Center had helped them in the way they view or do things for and in the environment today. They further ranked the quality of education at the Giraffe center as the best they have ever received.

5.2.4. Determining the factors that influence change of environmental status in trained schools.

From the questionnaire responses, majority of the pupils indicated that their schools environmental status changed after training at the Giraffe Centre because they understood the importance of a clean environment, they wanted to create conducive environment for learning, they also wanted to make the school compound beautiful, others said that they planted trees in order to create homes for the birds in their schools, others planted trees because they wanted to reduce the impact of climate change. Majority of the pupils and the teachers as well indicated that their institutions had well tendered flower beds and lawns. They explained this by indicating that beautiful flowers were planted outside offices, classrooms and parade grounds. They also highlighted that flowers have an aesthetic role in environmental conservation.

Majority of the pupils and the teachers indicated that there was no scattered litter in their schools hence better environmental image, pupils in most of the schools disposed their litters appropriately, they had trash cans in their classrooms, an aspect of proper waste

management that they were taught at the Giraffe Centre, while some schools could afford to buy trash cans those that couldn't recycled old water jerricans. Majority of the schools had well utilized litter pit following the training but waste separation was a challenge to most of the schools, hence the need to implement these facilities in schools and out of the 26 schools evaluated only one school had an incinerator, which was not in maximum use. From the questionnaire responses, a gain majority of the pupils indicated that their schools had at least 20 well planted and growing trees. Many of these trees were labeled indicating the local names of the trees and their economic uses that the students could relate with. This is one way to entice the students to actually take care of the trees, just because they have a benefit that directly targets them. Majority of the schools had well demarcated pathways for student use hence plants and flowers are not tampered with by students/pupils. Majority of the respondents indicated that their schools had tree nurseries in their schools hence an indication for intentions for tree planting in institution thus making the environment clean and that water harvesting was one of the conservation strategy that had been put in place.

5.3 Conclusions

Results from this study clearly show that Giraffe Centre's EE programmes promote sustainable environmental awareness and conservation to a great extent in schools. Most of the variables measured showed a significant increase of environmental awareness consciousness in students and teachers that had gone through training at the Giraffe Centre, similarly there was a significant difference in the environmental status of schools that had been trained compared to those that had not. From these observations it can be concluded that:

1. The Giraffe Centre's EE and awareness programmes are relevant and that they influence pupils and teachers positively towards environmental conservation.
2. The Giraffe Centre's EE and Awareness programmes promote primary schools to uphold sustainable development, by adoption of various schools projects such as; tree planting, school greening, sustainable waste management and fish ponds.
3. Pupils and teachers that had been trained by the Giraffe Centre, had a better understanding of the environment, they had positive attitudes towards conserving the environment while pupils that had not been trained would take a second thought if directed to plant a tree, as most of them viewed it as dirty work.
4. Students and teachers visit the Giraffe Centre more than once, but every time of their visit they learn new aspects of environmental conservation.
5. Different methods of teaching were outlined and scored highly, but those pupils that have visited the giraffe Centre for more than one time would prefer to be taught using audio visual methods, they said that they would remember more when they see than when listen only.
6. Pupils and the teachers felt that, there are times when they have visited the Giraffe Centre and never learnt much, this was attributed by the large numbers of pupils/ students at the Centre and therefore they feel that measure need to be put in place to correct this.

5.4 Recommendations

From the findings of the study, the researcher makes the following recommendations for application:

1. Giraffe Centre's should consider develop an EE and ESD curriculum and accredit the Teachers workshops through affiliation with one of the local universities, especially one that offers Environmental Education degree programme. This will give it a more formal recognition as well as make it more credible.
2. During the study, teachers felt that there is need for the Giraffe Centre to produce more EE and ESD resource materials as these materials are limited and teachers had problems acquiring them.
3. Pupils felt that the Giraffe Centre should shift from the oral lecture method of teaching and use short videos which would capture most of the pupil's minds and leave a lasting impression on them. The teachers felt that for the high school and tertiary students, the Centre should embrace technology and use power point presentations as opposed to giving oral lectures.
4. Increase the duration of training during the Teachers workshops to a minimum of four days: The Training of Trainers workshops were rated to be very informative and empowering in the line of conservation awareness, but the teachers felt that the three days allocated for the training was very short.

5.5 Suggestions for Further Research

Arising from this study, the following directions for future research in Environmental Education were recommended as follows: First, this study focused largely at the Giraffe Centre in Nairobi and therefore, generalizations cannot adequately be extended to other

Conservation Education Centres in the country. However, since the recommendations are reflections of the lessons learnt from the study, they are considered valuable, especially to the planning of future EE programmes at the Giraffe Centre. It is therefore believed that other conservation education centres in Kenya can benefit from the insights generated by the findings of this study. I therefore recommend that a broad based study covering all conservation education centers in other counties be done to establish the impact of environmental education programmes on sustainable environmental awareness and conservation. Secondly, it is important to carry out similar study in National Parks and Game Reserves to assess similar effects. Finally, it is also suggested that future research should focus on the different aspects of sustainable environmental awareness and conservation.

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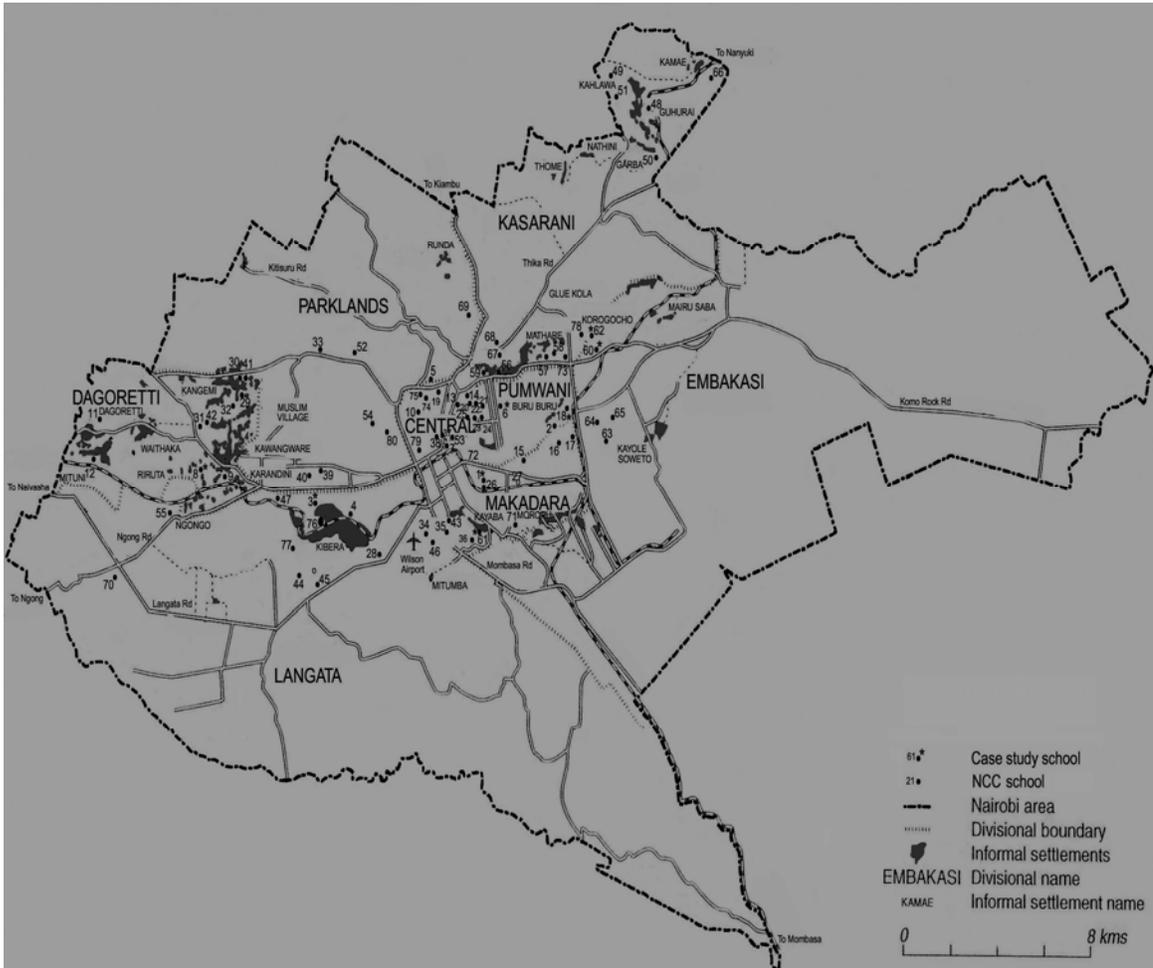
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APPENDICES

APPENDIX A

MAP OF NAIROBI COUNTY



.....
.....
d. Endangered/ Threatened animals and plants

.....
.....

4. What causes plants and animals to be threatened?

.....
.....

a. What actions can be taken to overcome this problem?

- a)
- b)
- c)
- d)
- e)

5. Highlight 5 things that affect the environment negatively:

- a.
- b.
- c.
- d.
- e.

6. Outline 5 things that you can do to make our environment better than it is today:

- a.
- b.
- c.
- d.
- e.

7. Why should we conserve our;

(A) Forests;

- a.
- b.
- c.

- d.
- e.

(B) Wild Animals;

- a.
- b.
- c.
- d.
- e.

(C) Water Resources

- a.
- b.
- c.
- d.
- e.

8. Do you feel that the environmental education that you received at the Giraffe Centre has helped you in any way concerning how you treat/ view or do things for and in the environment today?, Yes [] No []

Explain briefly

.....

9. Rate the education that you got at the Giraffe Centre

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

10. What would you like to be when you grow up? Why?

.....

11. Would you recommend your friend to come and learn at the Giraffe Centre?,

- Yes [] No []

Explain briefly

APPENDIX C

SCHOOL ENVIRONMENTAL STATUS CHECKLIST

I am a student at Kenyatta University; I am conducting a research on the impact of nature education centres in promoting sustainable environmental awareness and conservation, a case study of the Giraffe Centre. 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 _____

Tick against to confirm the presence of the following whole school environmental activities

1. Presence of eco codes []
2. Well tendered flower beds/ lawns []

Explain _____

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. []
- 15. Any other (specify)

THANK YOU AND GOD BLESS YOU

APPENDIX D

**A CHECKLIST TO EVALUATE THE SCOPE OF THE ENVIRONMENTAL
EDUCATION PROGRAMMES**

I am a student at Kenyatta University; I am conducting a research on the impact of nature education centres in promoting sustainable environmental awareness and conservation, a case study of the Giraffe Centre. 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.

NMK [] **AFEW** [] **WCK** [] **EFSC** []

Enumerator _____ Questionnaire No. _____ Date _____

Tick against the programmes that you were taken through at the Giraffe Centre

- 1. Oral lectures on conservation []
- 2. Nature walk excursion []
- 3. Giraffe feeding adventure []
- 4. Use of printed materials []
(posters, guide books & brochures)
- 5. Tree planting lessons []
- 6. Teaching on micro-projects []
- 7. Field Educational trips / Ecology trips []
- 8. Teachers workshops []
- 9. Funding & monitoring of school micro-projects []
- 10. Others that you would like have covered (Specify)
-

11. Which ones did you find to be the most informative? List them in their order of priority

- a)
- b)
- c)
- d)
- e)

THANK YOU AND GOD BLESS YOU

3. Do you think the environmental education given at the Giraffe Centre has any impact in environmental conservation? Yes [] No []

Explain briefly;

.....
.....

(B) Rate the institution in relation to the education programmes

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

4. (A) Have you visited any other conservation institution/ organization other than Giraffe centre? Yes [] No []

If yes, which one(s)?

Rate these other organizations in relation to the education programmes

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

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

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

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

5. How would you rate the quality of learning offered to the pupils/ students during the visit in reference to the age/ year of study? Tick one (use the scale provided below)

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

6. Are there any parts of the education programme that you found relevant to the school curriculum? Yes [] No []

If yes specify

.....
.....

7. Do you think Giraffe Center's education programmes have any impact on Sustainable Development? Yes [] No []

Explain

.....

8. What do you think can be done to improve environmental awareness and conservation? Explain why;

9. What do you think would be the most appropriate channel/ media to be used by conservation education organizations/ institutions for learning institutions?

a)

Explain

10. (A) List down things that you/ your school have done for the environment as a result of the education received at the Giraffe Centre:

a)

b)

c)

d)

e)

- (B) (a) Would you recommend another school to visit the **Giraffe** Centre?

Yes []

No []

(b) Explain

(c) Which other organization would you recommend?

.....

.....

.....

.....

.....

THANK YOU AND GOD BLESS YOU

APPENDIX F

SCHOOLS INTERVIEWED IN NAIROBI COUNTY

	TRAINED SCHOOLS		UNTRAINED SCHOOLS
1.	Uhuru Primary School	1.	Peter Kibukosya Primary School
2.	Muthurwa Primary school	2.	Joseph Kangethe Primary School
3.	Ofafa Jericho Primary school	3.	Wangu Primary School
4.	Enoomatasiani Primary School	4.	Shadrack Kimalel Primary School
5.	Olkeri Primary School	5.	Embakasi Primary School
6.	Kimathi Primary School	6.	Murema Primary school
7.	South B Baptist Primary School	7.	New Pumwani Primary School
8.	Gikambura Primary School	8.	Ndurarua Primary school
9.	Gitiba Primary School	9.	St. Georges Primary school
10.	Harambee Primary School	10.	Kiwanja Primary School
11.	Baba Dogo Primary School		
12.	Langata West Primary School		
13.	St. Elizabeth Primary School		
14.	St. Bakhita Primary School		
15.	St. Catherine's Primary School		
16.	Reuben Primary School		