CONTRIBUTIONS OF CONSERVATION EDUCATION CENTRES TOWARDS ENVIRONMENTAL AWARENESS AND CONSERVATION AMONG PRIMARY SCHOOL CHILDREN IN ENTEBBE MUNICIPALITY, A CASE OF UGANDA WILDLIFE CONSERVATION EDUCATION CENTRE (UWEC) – ENTEBBE.

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A RESEARCH REPORT SUBMITTED TO DEPARTMENT OF PLANT SCIENCES, MICROBIOLOGY AND BIOTECHNOLOGY, FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELORS OF SCIENCE DEGREE IN CONSERVATION BIOLOGY OF MAKERERE UNIVERSITY-KAMPALA

JUNE, 2018
DECLARATION

I EDENYU ABRAHAM hereby declare that this report is my original work, except where cited, and has not been presented for any degree or any other award in any other University in Uganda.

SIGN .......................... DATE 12/June/2018

APPROVAL

This work was approved by Dr. Patrick Mucunguzi (Assoc. Prof)

SIGNATURE.......................... DATE..........................
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May God bless you All.
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<th>Description</th>
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<tbody>
<tr>
<td>$H_1$</td>
<td>Alternative hypothesis</td>
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<td>$H_0$</td>
<td>Null hypothesis</td>
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<td>CAM</td>
<td>Conservation Awareness Model</td>
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<td>CECs</td>
<td>Conservation Education Centres.</td>
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<td>EA</td>
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<td>EE</td>
<td>Environmental Education.</td>
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<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature.</td>
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<td>NEMA</td>
<td>National Environment Management Authority</td>
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<td>SPSS</td>
<td>Statistical Package for Social Science</td>
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<tr>
<td>UBOS</td>
<td>Uganda Bureau Of Statistics</td>
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<td>UCDC</td>
<td>Uganda Curriculum Development Centre.</td>
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<td>UNEP</td>
<td>United Nations Environmental Programme</td>
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<td>UNESCO</td>
<td>United National Educational Scientific And Cultural Organization</td>
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<td>UWEC</td>
<td>Uganda Wildlife Conservation Education Centre.</td>
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<td>WCU</td>
<td>Wildlife Clubs of Uganda.</td>
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ABSTRACT

The overall purpose of the study was to evaluate the contributions of UWEC in promoting environmental and conservation awareness among Pupils in Entebbe Municipality. Schools that have gone through UWEC’s education programmes were called ‘Trained schools’ while those which had not yet benefited from UWEC’s programmes between 2013 to 2017 were called ‘Untrained schools’. A total of 12 primary schools out of 40 schools in Entebbe Municipality were sampled. Only students of 10 years above constituted the sample population. The results of this study have revealed the need to refocus the environmental education and awareness programmes towards creating more awareness about the value, among pupils, of biodiversity conservation. A descriptive survey design was adopted targeting Primary pupils in Primary schools in Entebbe Municipality. Purposive sampling was used to select ‘Trained Schools’ while simple random sampling was used to select ‘Untrained schools’. Lottery method was used to select respondents. 106 respondents participated in the study; 50 ‘Trained’ ones and 56 ‘Untrained ones’. The level of awareness was measured basing on the Conservation Awareness Model (CAM), (Fig 3.1) that was developed. The respondents’ attitudes were measured on a five point Likert Scale ranging from strongly agree (1) poor to (5) excellent (Rensis likert, 1932; Jamiesons, 2002; Alim, 2010). This generated an ordinal scale data which was used in statistical analysis, after transformation, to understand the impact of environmental education on the pupils. Results were presented by use of tables and bar graphs. Results show that the EE and Awareness programmes offered at UWEC increase the environmental awareness level of recipients; Generally, majority of trained pupils had higher level of awareness (Table 4.10 and Table 4.11) basing on the CAM model which was developed. Classification ability and knowledge of cause of environmental problems ie 82% and 80.5% respectively and Minority (17.9%) of untrained pupils were able to correctly classify the animal. The findings revealed that there was significant difference in Conservation Awareness level between ‘Trained’ and ‘Untrained’ respondents, at 95% confidence interval, ANOVA statistics, as shown by the F value of 3.544 and P value of 0.0032 in Table 4.11, hence the null hypothesis was rejected. This means that the trained pupils had more conservation knowledge than untrained ones. By implication, these findings show that the environmental education and awareness programmes offered at UWEC impart sustainable environmental conservation knowledge.
CHAPTER ONE: INTRODUCTION

1.0 Over view
This chapter looks at brief back ground to the study, problem statement, research objectives, Hypotheses, Research Questions and the significance of the study.

1.1 Background
Environmental problems have tremendously increased at the global, regional and local levels during the last few decades (Holmberg, Svanstrom, Peet, Mulder, Balas, & Segalas, 2008). Issues related to environmental problems have become a major concern for the international community particularly for educational policy makers and curriculum developers (UNESCO, 2005). Several intervention measures and strategies have been considered. Conservation Education is one of them (UNESCO, 2005; McCrea, A, 2005) and is considered to be among the most important steps (Elizabeth, 2014). The use of out-of school education together with incorporating conservation education to the school curriculum to enhance public awareness of the need for environmental preservation and protection is another vital step (Davis, Rea & Waite, 2006; Howe & John, 2015).

Uganda is one of the youngest countries in the world; about 50% of the population is below 25 years and about 75% of the population is 35 years and below (UBOS, 2014). Most of these young Ugandans are of school going age and most of them are at school. This would be of great importance if all these young Ugandans are imparted with adequate environmental knowledge so as to enable them carryout development activities in future, while considering environment also as a priority.

One of the most challenging objectives of conservation education is to produce people who are aware of their environment and are ready to conserve it for future generations (Gutierrez & Jacobson, 1992; Tsuma, 2013; Elizabeth, 2014). Our environment comprises of abiotic components, such as land, water, atmosphere, climate and biotic elements such as animals, microorganisms as well as human social factors (Oonyu, 2009). In the context of these complexes, interrelated factors, Environmental Education (EE) is an important tool for solving various anthropogenic environmental problems (Barker & Rogers, 2004). EE creates environmental awareness among communities since it is conducted in both formal and informal settings (US Department of Education Secretary Arne Duncan, Sep 2010). Also EE contributes towards
increased appreciation of the value of all resources and the need to manage these resources sustainably and rationally (Kartikeya & Sarabhai, 2004). Without EE people will continue to mismanage and destroy the environment on which their existence depends (Stapp, W.B, 1969). EE therefore should aim at raising pupils’ environmental awareness and instilling positive environmental values (Boland, 2009; Basile, 2000; Maloney, M., Ward, M., & Braucht, G., 1975). The ultimate aim of EE is to enable people to understand the complexity of the environment and the need for citizens to adapt their activities and pursue their development in ways which are harmonious with the environment. EE must also help create an awareness of the economic, political and ecological interdependence of the modern world so as to enhance a spirit of responsibility and solidarity among students as early as possible irrespective of their future careers (Gathuku, 2013; Waswa, Kerich & Macharia, 2007). It is the action of man, as planner, builder, farmer, citizen or consumer which causes environmental degradation (Gathuku, 2013; Waswa, Kerich & Macharia, 2007). It is thus on man’s attitude that the future of our air, water, soil, forests and mineral wealth ultimately depends. This is why it is so important that every one becomes environmentally-conscious through proper environmental education especially at an early age (Gathuku, 2013; Waswa, Kerich & Macharia, 2007).

Environmental education provides important opportunities for students to become engaged in real world issues that transcend classroom walls (Boland, 2009). They can see the relevance of their classroom studies to the complex environmental issues confronting our planet (Basile, 2000), can acquire the skills they need to be creative, problem solvers and powerful advocates (Gathuku, 2013; Jensen, 2011; Ayako uozumi, 2010).

It's believed that Early exposure of the young generation to the value of conserving nature enables a country to produce citizens who mind about the effects of their activities on the environment (Hungerford, & Volk, 1990; Elizabeth, 2014; Gathuku, 2013). Thus, an early investigation of whether the current conservation education to the young generation has any potential to change the students’ attitudes towards conservation should be conducted. If there is a need to adjust and review how the conservation education always needs to be done (Elizabeth, 2014). This helps to reduce, in early stages, the unawareness levels about the environmental conservation thus environmental problems too can be addressed since illiteracy about the causes and effects of
environmental degradation, among citizens, is the major challenge for environmental conservation (Gathuku, 2013; Patrick, Mathews, Ayers & Tunnicliffe, 2007).

A basic premise in youth education literature is that attitudes are acquired at a young age and may be carried into adulthood (Basile, 2000; Eagles & Muffitt, 1990). Therefore, to enhance a person’s positive conservation attitude, conservation education should begin at an early age and continue throughout his or her youth. A properly and scientifically well delivered Conservation education should be able to improve negative attitudes of the recipients towards the environment, which may positively enhance environmentally responsible behavior (Pomerantz, 1991). Yet; the lasting effects of conservation education programs are not widely known (Westphal & Halverson, 1985).

Even though conservation education centres may not be the overall solution for all environmental ills bedeviling Uganda, it is seen as a more encompassing way of teaching and learning environmental conservation issues outside classroom (Waswa, 200). Understanding of the environment should bring about awareness and connection within the environment which eventually triggers ones knowledge into action (Waswa, 2007; Bornman, 1997; Fien, 1993:19).

Uganda Wildlife Education Centre popularly known as the Entebbe Zoo main objective is to educate the Ugandan youths on the importance of conserving wildlife and the environment (Elizabeth, 2014).

The purpose of UWEC is to provide environmental education, aimed at creating awareness and sensitizing, Ugandan youths and the public on the need to appreciate and conserve Uganda's biodiversity. To date, UWEC has hosted thousands of young Ugandans and their teachers on environmental education programmes. This programme is of immense popularity with the number of school children visiting the centre having risen as compared to past decades (Elizabeth, 2014; www.uwec.org).

In line with one of the policy objectives of Uganda wildlife policy; to promote conservation education and awareness across the nation, UWEC was confirmed as a lead agency for conservation education and awareness in Uganda (NEMA, Kaggwa, R., Hogan, R., & Hall, B., 2009) thus the centre these days provides various conservation education programmes to schools through school visits to the centre and the outreach programmes of the centre.
UWEC was continuing to perform its duties so as to achieve its mandates but with no clear findings of whether the programmes they offered had any impact on the Pupils, Students and Teachers who visit the centre. So there was a need to find out the contributions of UWEC towards environmental awareness among Pupils in Entebbe Municipality.

1.2 Problem Statement.
Conservation Education Centres, which UWEC is of one them in Uganda, have not been able to realize their expected mandates of executing conservation education effectively to the learners (Parker, 2005). Simply because most people go to UWEC to merely spend their leisure (Hancocks, 2001; Indakwa, 2002; Reading & Miller, 2007) only a few go for conservation learning and yet the government of Uganda has set aside UWEC as a lead agency for conservation education and awareness so as to reduce on ignorance levels about biodiversity conservation among young Ugandans.

UWEC management spends millions of money every year, caring for the animals, which are being used as ambassador species to convey conservation messages to all students, teachers and other people who visit the centre. UWEC also has a plan to open up more satellite Zoos across the country, with the same claimed objective of disseminating conservation education. However, no information or little (if any), reveals whether UWEC is achieving its goals; whether the students and teachers, practice what they learn when they visit UWEC; whether the information delivered to students and teachers during UWEC’s educations programmes, have impacts on students’ and teachers’ knowledge, attitude, awareness about environment.

Therefore the aim of this study was to evaluate whether the environmental education disseminated by UWEC has really contributed in any way towards the environmental awareness, change of attitudes and understanding of environment by the pupils in Entebbe municipality.

1.3 Overall objective
The overall objective of this study was to evaluate the contribution of Uganda Wildlife Conservation Education Centre (UWEC) in creating awareness and promoting environmental conservation among Pupils in Entebbe Municipality.
1.3.1 The specific objectives

1. To identify conservation education programmes UWEC offers to pupils.
2. To assess the pupils’ level of conservation awareness.
3. To examine the pupils’ attitudes towards conservation.

1.4 Research Hypotheses

1.4.1 Null hypothesis \((H_0)\). Environmental education offered by UWEC does not significantly increase environmental conservation awareness and positive attitude of the recipients.

1.4.2 Alternative hypothesis \((H_1)\). Environmental education offered by UWEC significantly increases the environmental conservation awareness of the recipients.

1.5 Research Questions

The study is motivated by the need to understand the contributions of conservation education centres in creating environmental awareness in schools with the aim of promoting sustainable environmental conservation. The objectives above guided the formulation of the following research questions that will guide the researcher in the research process:

1) What is the scope of environmental conservation education offered by UWEC?
2) What environmental knowledge do pupils gain after visiting UWEC?
3) To what extent has knowledge gained at UWEC changed the attitudes of students and teachers towards the environmental conservation?

1.6 Significance of the study.

This study shown the significance of environmental conservation education programmes offered by UWEC to school Pupil who visit the Centre by providing literature on contributions of conservation education centres towards environmental awareness in schools.

The results of this study will contribute to future review and improvement of environmental education programmes in Uganda in attempt to create environmental awareness and conservation. In addition, it is hoped that the results will also help in refocusing environmental education programmes towards creating more awareness, to Pupils of Entebbe Municipality, about the value of Conservation. Lastly the results of this study have revealed the need for more conservation
education centres in our country, Uganda so as to offer adequate conservation education even to other parts of the country, with UWEC remaining as a lead agency.

1.7 Definitions of Key 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.

**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.

**On-site conservation Programmes:** Education programmes provided for organized groups visiting facilities within specific area.

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

**Pupil:** A participant who was randomly chosen from the population of Primary Pupils from 12 sampled Primary schools Entebbe Municipality and he/she was between 10-15 years old.
CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter highlights Environmental Education (EE), Forms of environmental education, Environmental education centres, Objectives of Environmental Education, Principles of Environmental Education, Status of environmental and conservation education in Uganda, Conservation Education Centres in Uganda, About UWEC, Role of Conservation Education Centres and Importance of environmental education.

2.1 Environmental Education (EE)

Environmental education (EE) is a process of learning about the environment in order to benefit from it sustainably (Muthoka, 2004; UNEP, 2008; Basile, 2000). EE can also be defined as a process that aims at developing environmentally literate citizens with skills, knowledge and inclinations to make informed choices concerning the environment (Gopal & Anand, 2005; De Beer, Dreyer, & Loubser, 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 & John, 2005). Out-door education is entrenched on a curriculum enriched through teaching that involves out-door experiences (Davis, Rea & Waite, 2006; Susan, K, 2006). Environmental Education is aimed at producing citizens who are knowledgeable about the biophysical environment and its associated problems (Elizabeth, 2014; Stapp, 1969), aware of how to solve these problems, and motivated to work towards their solution (Crowther, 2011). Therefore EE, should be 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 should be able to change people’s perceptions and attitudes towards the natural environment (De Beer, Dreyer, & Loubser, 2005; Crowther, 2011). This leads to improved environmental stewardship by the general public (Crowther, 2011; Susan, K, 2006).

The problems EE addresses should be those familiar to the learners in their own home, community and nation (Ballantyne & Packer, 2008) and thus EE should help the learners acquire the knowledge, values and skills necessary to help solve Environmental problems, first within their
locality (Ali, 2009; Day, B. R., & Monroe, M. C., 2000). This means that environmental education should involve learning from the environment as well as about the environment (Ajiboye & Olatundun, 2010).

In order to prevent knowledge previously acquired from becoming out of date, and to ensure the lasting effectiveness of the action undertaken, environmental education must constantly restate its guiding principles, renew its content and its methods and encourage the constant readjustment of the various social groups to new situations (UNESCO, 1977; Day, B. R., & Monroe, M. C., 2000).

2.2 Forms of environmental education.

Three forms of environment education exist: Formal education, Non-formal education, and Indigenous form (UNESCO-UNEP, 1977). Distinctions have to be made in the role of education, either formal or non-formal, for developing an increased awareness and understanding of environmental problems among the general public (UNESCO-UNEP, 1977); for preparing certain occupational groups whose responsibilities bear directly on environmental problems and opportunities (for example, engineers, planners, architects, medical personnel, teachers, administrators, industrial managers) and for training specialists for research or other work related to conservation (Ballantyne, R., & Packer, J., 1996; Gopal & Anand, 2005; Ayako, U., 2010).

2.3 Objectives of Environmental Education.

Awareness, knowledge, and attitude have been identified as the three most important objectives in the environmental education (EE) research literature ((Athman & Monroe, 2000; Callicott & Rocha, 1996; Day & Monroe, 2000; Gough, 1997; Palmer, 1998). The ultimate aim of EE is to shape human behaviour (Otiende, Ezaza & Boisvert, 2011). The young generation has to undergo a new thorough environmental education that will change their mindset in order to solve the unawareness problem of biodiversity conservation (Otiende, Ezaza & Boisvert, 2011). 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 & John, 2015; Ayako, U., 2010). According to Kimutai (2006) and Ayako, U. (2010), 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.

The Objectives of Environmental Education include: (1) Awareness - to help social groups and individuals acquire an awareness of and sensitivity for the total environment and its allied problems (and/or issues). (2) Sensitivity - to help social groups and individuals gain a variety of experiences in and acquire a basic understanding of the environment and its associated problems (and/or issues). (3) Attitudes - to help social groups and individuals acquire a set of values and feelings of concern for the environment, and motivation for actively participating in the improvement and protection of the environment. (4) Skills - to help social groups and individuals acquire skills for identifying and solving environmental problems (and/or issues). (5) Participation - to provide social groups and individuals with the opportunity to be actively involved in working towards the resolution of environmental problems and/or issues at all levels (UNESCO, 1977).

Therefore, there was a need to find out whether UWEC has already designed its conservation education programmes aimed at achieving those objectives. Jensen (2011) found that the experience of viewing live animals can have a powerful impact on learners to construct a new understanding of wildlife, of the natural world, and of the role of humans intervening in this natural world. His research showed that visits to the zoo alone yield a statistically significant increase in scientific learning, and this impact can be increased by the zoo’s educational interventions. This learning experience and the increase in knowledge can be enhanced by providing educational materials and presentations (Jensen, 2011; Elizabeth, 2014). Furthermore, Johnson-Pynn and Johnson (2005) reported a positive increase in the knowledge of conservation of the learners who attended Conservation Education programmes in East Africa. However, the educational value of a visit to a zoo is influenced by a number of factors that precede the visit, such as prior knowledge, the mass media, age, gender, and whether it is the learner’s first or subsequent visit (Jensen, 2011). Marcinkowski, T. (1997) came to the conclusion that the evaluation of Conservation Education programmes allows us to confirm that our programmes are delivering the information we intend, and that, in the end, when the wrong message is perceived, we can try a different approach.

2.4 Principles of Environmental Education

The Tbilisi guiding principles for Environmental Education stipulate that it should: (1) consider the environment in its totality – natural and built, technological and social (economic, political,
technological, cultural-historical, moral, aesthetic); (2) be a continuous lifelong process, beginning at pre-school level and continuing through all formal and non-formal stages; (3) be inter-disciplinary in its approach, drawing on the specific content of each discipline in making a holistic and balanced perspective possible; (4) examine major environmental issues from a local, national, regional and international point of view so that the learners may receive insight into environmental conditions in other geographical areas; (5) focus on current and potential environmental situations, while taking the historical perspective into account; (6) promote the values and necessity of local, national and international co-operation in the prevention and solution of environmental problems; (7) explicitly consider environmental aspects in plans for development and growth; (8) enable learners to play a role in planning their learning experiences, and to provide an opportunity for making decisions and accepting their consequences; (9) relate environmental sensitivity, knowledge, problem-solving skills and the clarification of values to every age, but with special emphasis on environmental sensitivity to the learner’s own community in the early years; (10) help the learners to discover the symptoms and the real causes of environmental problems; (11) emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills; (12) utilize diverse learning environments and a broad array of educational approaches to teaching-learning about and from the environment, with due stress on practical activities and first-hand experiences (UNESCO, 1977; Ballantyne, R., & Packer, J., 1996; O’Brien, S. & Roberta M., 2007).

2.5 Status of environmental and conservation education in Uganda.
The UCDC recommended teaching of EE in both primary and secondary schools (UCD, 1999). The Ministry of education report (2002) states that the objectives of EE in Uganda’s primary schools are to develop positive attitudes about the environment, to manage and conserve available resources, and to develop awareness and appreciation of the environment. The Wildlife Clubs of Uganda is doing its level best to offer Non-formal conservation education to children through various activities (Wildlife Clubs of Uganda, 2014). However, little is known whether the knowledge imparted on children has any impact on their perception, awareness, attitude and knowledge about environmental conservation.
2.6 Conservation Education Centres.
Conservation Environmental education centres are facilities that provide conservation information and undertake education programmes (Kartikeya, & Sarabhai, 2004). Conservation 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, 2008). The centres can, preferably, be located in different environments to include forests, beach, and estuaries and in fresh water areas (Oonyu, 2009). Examples of Conservation Education Centres are: Zoos, botanic gardens, national parks, wildlife sanctuaries, Museums and Aquariums (Packer, 2005). These have education staff and volunteers trained to provide education programmes to school groups and the general visitors (Packer, 2005).

2.6.1 Zoos. In Uganda, UWEC, started as ‘Entebbe Zoo’ before it was declared a lead agency for conservation education centre.

2.6.2 Botanic gardens. In Uganda, there are mainly two botanic gardens; Entebbe Botanic garden found in Entebbe and Tooro Botanic Garden in Fortportal. All these offer conservation education activities to student when they visit them. They also carry out ex-situ conservation of flora.

2.6.3 National Parks. In there are 10 National Parks, all under control and management of Uganda Wildlife Authority. These include: Murchison Falls National Park, Kibale Forest National Park, Queen Elizabeth National Park, Bwindi Impenetrable Forest National Park, Mount Elgon National Park, Kidepo Valley National Park, Semiliki National Park, Mgahinga Gorilla National Park, Rwenzori Mountains National Park and Lake Mburo National Park.

2.6.4 Wildlife Sanctuaries and Aquariums. 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 (Parker & Ballantyne, 2005). These are in form of orphanages and breeding sites for the endangered organisms in order to restore their numbers (Parker & Ballantyne, 2005). 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 & Ballantyne, 2005).

In Uganda, these include: Ngamba Island Chimpanzee Santuary, Entebbe Reptile Village.
2.6.5. Herbaria and Museums. In Uganda, Museums include: Uganda Museum and Makerere University Museum. The Herbaria in Uganda is mainly the Makerere University National Herbarium. All these offer conservation education programmes to students at various levels of education.

2.7 About UWEC

2.7.1 Background of UWEC.

The Uganda Wildlife Education Centre (UWEC) was opened in 1952 by the colonial government as a reception centre for wild animals that were found as casualties: sick, injured, orphaned, or confiscated from illegal trade. In the early 1960s it changed its role to a traditional zoo and became known as Entebbe Zoo, where even non-indigenous species such as bears and tigers were kept as an attraction. However, as a result of the political turmoil in the 1970’s and inadequate government funding, the zoo experienced a serious breakdown of infrastructure, and the loss of valuable animals. It continued on its downward slide until May 1994, when the government of Uganda recognized the need to set up an institution that would provide leadership in educating Ugandans about the benefits of conserving the country’s biodiversity, one of the kingpins of the recovery process that the country was going through, as a benefit to tourism. The UWEC was founded, and has since grown to be one of the most respected Environmental Education institutions in Africa and beyond, for successfully carrying out its mandates to educate Ugandans on the importance of conserving the country’s biodiversity, to rescue and rehabilitate injured, orphaned and/or confiscated wildlife, and to breed endangered wildlife species in captivity with the aim of re-introducing them back into the wild (Elizabeth Venter, 2014).

2.7.2 Vision of UWEC. To be the leading centre in biodiversity conservation education in Africa.

2.7.3 Mission. Uganda Wildlife Conservation Education Centre exists to educate the public on conservation of wildlife, with emphasis on the young generation, in partnership with other stakeholders.
2.7.4 Mandates of UWEC
Mandates of Uganda Wildlife Conservation Education Centre include: (1) Conducting and managing conservation education in Uganda. (2) Edutainment; the centre is mandated to offer education as well as entertainment so as to make visitors appreciate the value of biological resources. (3) Showcasing Uganda’s unique wildlife heritage and ecosystem through the centre. (4) Establishing and managing a wildlife bio-bank at the centre. (5) Providing for rescue, rehabilitation and release of wild species. (6) Promoting wildlife breeding, with a focus on rare, endangered and endemic species, for release back to the wild as well as for commercial purposes. (7) Stocking and restocking of indigenous and exotic wildlife. (8) Establishment of regional satellite zoo centres in the country.

2.7.5 Values of UWEC.
These include; honesty, integrity, accountability, respect for wildlife and nature, professionalism, customer focused service. (a) Honesty; UWEC exhibits the highest level of honesty in all dealings with its visitors, clients, and all stake holders in general. (b) Integrity; integrity will be hallmark of UWEC’s dealings with all its visitors, internal and external clients, and all other stake holders in general. (c) Accountability; UWEC will hold itself accountable to entire public, to the different international conventions that the country is signed to, both in its operations and management. (d) Respect for wildlife and nature; UWEC will at all times hold in respect the wildlife and nature of this earth and will hold this priority in all its operations and dealings; will strive to create awareness of issues affecting this nature and wildlife and will advocate tirelessly for the utilization of the same. (e) Professionalism; UWEC will conduct itself and its business in a professional manner with due respect accorded to ethical operation of its business and following of “best practice” in all its dealings. (f) Customer focused service; all this will be done in a customer-focused manner that takes due care of the interest and feelings of all stakeholders.

2.8 Role of Conservation Education Centres.
2.8.1 Education. Conservation education Centres/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 (IUCN, 2010). Conservation education centers provide the necessary information that enables building up of the crucial support for conservation (Indakwa,
Packer (2005) reveals that zoos, which are examples of conservation education centres, consider education to be a central role. People have become increasingly isolated from nature due to urbanization (Jackson, 2010). Zoos provide access to animals and the natural world that people would otherwise not have been able to experience (Hancocks, 2001; Jensen, 2011). Zoos increase commitment to field based conservation, education and science (Schaul, 2012).

2.8.2 Conservation of species. Breeding in captivity (Schaul, 2012; MacDonald & Hofer, 2011). According to the World Association of Zoos and Aquariums (2005), qualitative measures that indicate the successful achievement of conservation include the following: (i) increasing secure populations of species in the wild; (ii) increasing areas/volumes of secure, sustainable habitat; (iii) greater knowledge and the application of species biology, ecology and conservation science; (iv) more political awareness of environmental issues with better environmentally-friendly decision-making and higher conservation Priorities; (v) increasing the capacity in habitat areas by means of training, education and public awareness.

2.8.3 Recreation. Studies of Conservation centres visitors have shown that the main reason people visit these centres is for family outings and other recreational reasons (Hancocks, 2001; Indakwa, 2002; Reading & Miller, 2007). The initial results of a study done at UWEC indicated that the respondents rated the need to see animals as the main motivator (Allenby, 2011; Elizabeth, 2014).

2.8.4 Research. Conservation education centres, especially Zoos and aquariums, are in position to make a unique contribution to conservation-directed research since they can provide representative populations of a wide range of the world’s wildlife (Allenby, 2011; MacDonald & Hofer, 2011; Elizabeth, 2014). Zoos and aquariums serve as a platform for researchers and the public to communicate and to interpret the outcomes of research, explaining the implications for the conservation action (World Association of Zoos and Aquariums, 2005). According to the World Association of Zoos and Aquariums (2005), “There are two main divisions of research in zoos and aquariums: (1) research that is aimed at new knowledge to help the institution achieve its goals E.g research on husbandry, visitor preferences, educational and interpretation methods, conservation approaches etc and (2) research that is undertaken in a zoo by others to achieve their own goals,
without being inconsistent with those of the organization. Zoos and aquariums give priority to research that can contribute to the conservation of the populations and the habitats in the wild, to be more effective in delivering conservation in situ (World Association of Zoos and Aquariums, 2005). Only through sustained research programmes will zoos and aquariums are successful in identifying conservation problems, in prioritizing actions, in implementing conservation education interventions (World Association of Zoos and Aquariums, 2005; Elizabeth, 2014).

2.9 Importance of environmental education.

Environmental education promotes attitudes, which encourage individuals to discipline themselves in order not to impair the quality of the environment and to play a positive role in improving it (UNESCO-UNEP, 1977; Elizabeth Venter, 2014; Davis, Rea & Waite, 2006). However, they failed to reveal its impacts on students’ attitudes and awareness about conservation. EE empowers 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 (Gathuku, 2013; Davis, Rea & Waite, 2006; De Beer, Dreyer, & Loubser, 2005; O’Brien, S. & Roberta M, 2007).

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). Mostafa (2010) and Day, B. R., and Monroe, M. C. (2000) stressed the importance of environmental education as a means of creating awareness of the complex and urgent problems of environment as a basis for their solution.

The ultimate aim of EE is to enable people to understand the complexity of the environment and the need for citizens to adapt their activities and pursue their development in ways which are harmonious with the environment. EE must also help create an awareness of the economic, political and ecological interdependence of the modern world so as to enhance a spirit of responsibility and solidarity among students as early as possible irrespective of their future careers. It is the action of man, as planner, builder, farmer, citizen or consumer which causes environmental degradation. It is thus on man’s attitude that the future of our air, water, soil, forests and mineral wealth ultimately depends (Gathuku, 2013; Cara K. Kruse & Jaclyn A. Card, 2004;
O'Brien, S. & Roberta M, 2007). This is it is so important that every one becomes environmentally-conscious through proper environmental education especially at an early age.

Environmental education provides important opportunities for students to become engaged in real world issues that transcend classroom walls (Gathuku, 2013). They can see the relevance of their classroom studies to the complex environmental issues confronting our planet and they can acquire the skills they can need to be creative problem solvers and powerful advocates (Basile, 2000; Ajiboye & Olatundun, 2010; Ballantyne & Packer, 2008). Thus early exposure of the young generation to the value of conserving nature will enable our country, Uganda, to produce citizens who mind about the effects of their activities on the environment. Thus an early investigation of whether the current conservation education given to the young generation has any potential to change the students’ attitudes towards conservation needed to be conducted conservation.

A basic premise in youth education literature is that attitudes are acquired at a young age and may be carried into adulthood (Gathuku, 2013; O'Brien, S. & Roberta M, 2007; Basile, 2000; Eagles & Muffitt, 1990). Therefore, to enhance a person’s positive conservation attitude, conservation education should begin at an early age and continue throughout his or her youth. Conservation education may also change negative attitudes towards the environment, which may positively enhance environmentally responsible behavior (Pomerantz, 1991; Gathuku, 2013). Yet, the lasting effects of conservation education programs are not widely known (Westphal & Halverson, 1985; Gathuku, 2013; Waswa, Kerich & Macharia, 2007). Conservation education programs may promote environmental action, but the time needed for this alteration may involve subsequent programs for effective behavioral change (Gathuku, 2013; Waswa, Kerich & Macharia, 2007). Zoological parks have a positive effect on environmental attitudes (Marshdoyle, 1982; Mazur, N. & Clark, T. (2001).), but it is not known, in Uganda, whether positive attitudes lead to positive behavior. Conservation education research in settings other than schools is limited (Moorcroft, Desmarais, Hogan & Berkowitz, 2000). The results of the studies that do exist indicate that conservation education camp programs have a positive effect on attitude toward the environment, with participants showing greater attitude change than they would through traditional classroom programs (Dettmann Easler & Pease, 1999; Shepard & Speelman, 1985). Conservation education improves participants knowledge about conservation issues (Knapp & Barrie, 1998; Knudson,
Cable, & Beck, 1995). however, their attitude toward the issues and their behavior intent did not change. Jordan and Seger (2001) discovered that after a zoo conservation education program, youth experienced positive changes in knowledge, concern, participation, personal responsibility, and ability to help. When an animal husbandry component was added to a zoo conservation education program, youth reported more knowledge, a more positive attitude, and more behavioral intent to act environmentally responsibly than they had before the component (White & Jacobson, 1994; Crowther, 2011; Waswa, Kerich & Macharia, 2007). After zoo visitors are aware of conservation issues, they may develop positive attitudes that lead to supporting conservation efforts and, hopefully, adopting environmentally responsible behavior (Crowther, 2011). Effective educational techniques may lead to environmentally responsible behavior (Gathuku, 2013). Through effective conservation education programs, we can begin to act effectively toward dealing with current conservation issues (Oluyemi, A., Ogundiwin1, A., Adegbie, I., Adegbe & Olayemi, A. A., 2014; Hungerford & Volk, 1990).
CHAPTER 3: MATERIALS & METHODS

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

This study was carried out in Entebbe Municipality which lies at 0°.04N, 32°.28E, 37 kilometers South of Kampala, the Capital City of Uganda. Situated in Wakiso district, the municipality is located on a peninsular into Lake Victoria covering an area of approximately 56.2 Sq km. 

The study was carried out in Primary schools in Entebbe Municipality. The municipality provides both urban and rural characteristics and therefore it enabled the researcher to capture views of both the urban, rural and slum settings. Schools that have been frequently visiting UWEC since 2013 to 2017 and have also benefited from UWEC’s out-reach education programmes were considered as ‘Trained schools’ and those that have not yet gone through UWEC’s education programmes were considered as ‘Untrained schools’ and both constituted the target population. Schools that benefited from any of the Centre’s education programmes between the years 2013 and 2017 and ones school that have not yet experienced the Centre’s education programmes formed the sample size. 

There are 40 primary schools in the municipality, of these 65% are privately owned while 35% are government aided schools. 45% of the primary schools are in Central ward, and only 3 schools (7.5%) are in Kigungu ward.

3.3.1 Research Design

The study relied on a descriptive survey design. This was used to investigate the awareness levels and attitudes towards environment between the two categories of respondents.

A combination of qualitative and quantitative methods were used to generate data and information on the level of knowledge retained by trained pupils as well as environmental activities or projects carried out at the schools as a result of the education obtained from UWEC.

Data was collected both from trained and untrained schools selected randomly from the list of the two categories of schools within Entebbe Municipality.
A sample of trained schools was purposefully selected from a list of schools that were provided by the UWEC record office. In contrast, the untrained schools that have never been trained at the centre were selected randomly from the Ministry of Education database. The principle of randomization was applied where names of trained schools written on small pieces of paper that were then placed in a basin and thoroughly mixed, and the 7 schools that were picked first constituted sample of untrained schools.

3.3.2 Research stages
The research went through the following stages till the attainment of the result:

Stage one: this involved collecting secondary information from UWEC’S records office. The information that was needed by the researcher from UWEC includes:

i. List of various conservation education programmes offered at UWEC.
ii. Detail of procedures showing how the education programmes are performed or executed to the students.
iii. A list of schools, with in Entebbe Municipality, that have been frequently visiting and have also benefited from the UWEC’s school out-reach Conservation education programmes from 2013 to 2017.

Stage two: this was made after stage one and it involved selecting schools sampled basing on the list provided, seeking permission from the schools that constituted the sample (permission also provided appointment days for interaction between the researcher and pupils). It’s at this stage that a list of untrained schools was obtained from the ministry of education database.

Stage three: this involved actual collection of primary data through use of questionnaires, observations and interviews. Primary data was obtained only from schools that constituted the sample. Questionnaires were delivered face to face to the respondents.

3.4. Sample and Sampling Procedures
Simple random sampling was used to identify untrained trained schools out of the total number of schools in Entebbe Municipality. Trained schools were purposefully identified from UWEC’s records. Trained schools were those schools, within Entebbe Municipality, that have been
frequently visiting UWEC and have also benefited from the UWEC’s school out-reach Conservation education programmes from 2013 to 2017. **Untrained schools** were those that had not yet gone through UWEC’s education programmes and had not benefited from UWEC’s school out-reach conservation education programmes. Respondents from each category of schools constituted the target population. **Trained schools** were purposefully identified, while a list of all untrained schools was made and random numbers used to draw a required sample from the list. The sample of schools was assumed to be a representative of all the schools of each category (trained and untrained schools) in Entebbe municipality. After selecting the schools to be sampled for each category of schools, systematic random sampling was used to select representative individual respondents in every school included in the sample. Only Pupils of **10 years** above were sampled (interviewed).

**3.5 Number of schools sampled and the number of respondents interviewed.**

Five schools in Entebbe Municipality happened to have frequently visited UWEC and also benefited from Out-reach education programmes of the Centre (Trained schools). Seven Untrained schools were sampled. 10 respondents from each trained school were sampled; totaling to 50 trained respondents. 8 respondents were sampled from each untrained school totaling to 56 untrained respondents sampled.

**Table 3. 2 Number of schools sampled and Number of respondents interviewed**

<table>
<thead>
<tr>
<th>School category</th>
<th>No. of schools sampled</th>
<th>No. of pupils sampled per school</th>
<th>Total No. of pupils sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained**</td>
<td>5</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Untrained.</td>
<td>7</td>
<td>8</td>
<td>56</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td></td>
<td>106</td>
</tr>
</tbody>
</table>

(source: field data, 2018). **schools that have been frequently visiting UWEC and have also benefited from UWEC’s school outreach education programmes from 2013-2017**

**3.6 Data collection tools and materials**

Primary data was collected through field observations of environmental status of the school, use of questionnaires and interview schedules. This was complemented by secondary data to more adequately address or answer some of the research questions and meet the objectives.
3.7 Research instruments
The following instruments were used to collect data for the study:
1. Pupils’ environmental awareness, attitude and knowledge questionnaire.
2. School environmental status checklist.
3. EE scope evaluation checklist for the education programmes offered at UWEC.

3.7.1 Pupils’ environmental awareness, attitude and knowledge questionnaire
The questionnaires for Pupils consisted both closed and open ended questions that were considered relevant to the data that was sought. The questions were framed to elicit responses that reliably answered the research questions. 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. 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 quantitatively by assigning numerical scores to the responses of individuals (Nganga, 2010; Ali, 2009).

3.7.2 School Environmental Status, EE Scope Checklists, local environmental problem checklist
The checklists, both for the environmental status and for the scope of Environmental Education offered by UWEC constituted a set of questions that reflected the standard of the environment in different schools as well as different activities undertaken at that particular school. The EE scope checklist outlined different activities that pupils are taken through during the education programme. The local problem checklist listed local environmental problems.

3.8 Piloting of Research Instruments
To test the validity and reliability of the data collection instruments, piloting was done in 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 be able to measure what they were intended to measure. Comparison was 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 where need arose.

3.9 Data Collection Procedures
The schools to be sampled were consulted in advance in order to obtain their consent and booking of appointments. The direct method of administration of questionnaires was used. Purposeful sampling (for trained schools). Simple random sampling (for untrained schools). Lottery method; to select respondents. Respondents of atleast 10 years of age were selected. Questionnaires were personally administered. Trained schools (those that benefited from UWEC’s programmes, atleast from 2013-2017). Untrained schools (Those that have not benefited).

Data was collected through: Field observations of environmental status of the school, Checklist for the education programmes offered at UWEC. Use of questionnaires (Knowledge, Awareness and Attitude level questionnaire for the Pupils. Knowledge and Awareness questions based on Mostafa model (Mostafa, 2010). Attitude questions based on likert scale (Rensis likert, 1932; Jamiesons, 2002; Alim, 2010).

3.10 Data Analysis Procedures
The data that was collected from the questionnaires and the checklists was 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 Pupils’ attitudes towards environmental awareness and conservation as described in chapter 3 under the section on data collection instruments. The respondents attitudes was measured on a five point Likert Scale ranging from strongly agree (1) poor to (5) excellent (Ali, 2009). This generated an ordinal scale data which was used in statistical analysis to understand the impact of environmental education to the Pupils. To measure the level of conservation awareness, I generated a simple model, which I called Conservation Awareness Model (Fig 3.1). This model assumed that if a pupil is able to correctly assign a species to its taxonomic class, if a child is able to identify the value of any component of biodiversity, if a child is able to highlight the environmental problems and their solutions, then that child is considered to having Conservation Awareness. The scale used in the model was derived from Uganda’s School rating grades. The model assumes that, the more the number of pupils with high grades, more environmentally aware those pupils are.
In this model, four items are considered, for a pupil, to be aware about conservation:

1. Classification ability; the principle behind this is that you cannot conserve what you don’t know.
2. Knowledge of Biodiversity use; the principle behind this is that conservation is no longer protection from human use, but it’s all about sustainable use (CBD, 2009; IUCN, 2010)
3. Knowledge of Environmental problems;
4. Knowledge of Solutions to those Environmental problems;

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Awareness Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-29%</td>
<td>Least aware</td>
</tr>
<tr>
<td>30-49%</td>
<td>Moderate awareness</td>
</tr>
<tr>
<td>50-69%</td>
<td>More aware</td>
</tr>
<tr>
<td>70-84%</td>
<td>High awareness</td>
</tr>
<tr>
<td>85% - 100%</td>
<td>Highest awareness</td>
</tr>
</tbody>
</table>

3.1 Data presentation
The results were presented by descriptive statistics such as use of tables and bar graphs where appropriate.

Text was used to explain and clarify the graphically presented results. The results of the Analysis was interpreted in relation to the study objectives.

3.12 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. Delay of appointments by school admin due their busy schedules, since the research was conducted during school days. Limited resources (time and funds). In some schools I found new principals while those that had interacted with the UWEC had been transferred. 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 4: PRESENTATION OF 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 106 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.

4.2 Respondents characteristics.
106 questionnaires were administered and completed, representing 100 % response rate. Each of the sections had unique respondents summarized as follows:

4.2.1 Gender of respondents.
About 50.9% of the pupils who completed the knowledge level questionnaire were females who were closely followed by males at 45.3%. Only four respondents (3.8%) did not indicate their gender as shown in table 4.1

Table 4. 1 Respondents' gender characteristics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>54</td>
</tr>
<tr>
<td>Male</td>
<td>48</td>
</tr>
<tr>
<td>Non response</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
</tr>
</tbody>
</table>

(Source: field data, 2018)

4.2.2 Respondents’ Age.
75.5 % of the respondents indicated that they were aged between 10- 13, 18.9% were aged between 14-15 and 5.7% were more than 15 years of age as shown in Table 4.2.
Table 4. 2 Age of Respondents.

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-13</td>
<td>80</td>
<td>75.5%</td>
</tr>
<tr>
<td>14-15</td>
<td>20</td>
<td>18.9%</td>
</tr>
<tr>
<td>&gt;15</td>
<td>6</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

(Source: field data 2018)

4. 2.3 Respondents visit to UWEC.

Respondents were also required to indicate whether or not they had visited UWEC. All the 50 trained respondents indicated that they had visited the centre. 16 respondents from untrained schools indicated that they also visited the centre, 40 respondents from untrained agreed that they had never visited the centre (Figure 4.1).

![Figure 4.1 Number of Respondents who had visited UWEC.](image-url)
4.2.4 Frequency of visits at UWEC
In total, 106 respondents were interviewed. 50 respondents were from trained schools and 56 respondents were from untrained schools. Respondents were required to indicate the number of times they had visited the UWEC. A majority (58%) of trained respondents indicated that they had visited the UWEC for more than four times. This was followed by those who indicated that they had visited thrice (32.0%). Another 10% of untrained respondents indicated that they had visited the centre twice. 71.4% of the untrained respondents showed that they had never visited the centre. Another 14.3 % of them indicated they visited the Centre once as shown in Figure 4.2.

![Bar chart showing frequency of visits to UWEC](image)

Figure 4.2 Frequency of visit to UWEC.

4.3 Environmental education Programmes offered at UWEC.
The research sought to document the various conservation education programmes UWEC offers to pupils. The programmes were provided by the Education Officer at UWEC. These programmes are divided into on-site conservation programmes and out-reach education programmes. On-site programmes are conducted within the centre while out-reach programmes are through outreach programmes i.e. the staff organizes and conducts them outside the UWEC’s premises through visits to schools, other conservation centres, etc. The programmes are summarized in Table 4.3.
Table 4.3 Environmental education programmes offered at UWEC.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>EDUCATION PROGRAMMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-site education programmes</td>
<td>Oral lectures on conservation on site education programme</td>
</tr>
<tr>
<td></td>
<td>Use of printed materials (posters, guide books, brochures, information Panel)</td>
</tr>
<tr>
<td></td>
<td>Thematic guided education (Science and Social Studies)</td>
</tr>
<tr>
<td></td>
<td>Animal exhibit based education programme</td>
</tr>
<tr>
<td></td>
<td>Children’s camp conservation education programme</td>
</tr>
<tr>
<td>Out-reach education programmes</td>
<td>Species specific Conservation Education Programme (e.g. Lion Conservation Education, Rhino Conservation Education, Elephant Conservation Education, Cheetah Conservation Education).</td>
</tr>
<tr>
<td></td>
<td>Ecosystem-Based Conservation Education Programme (e.g. Wetland Ecosystem Conservation Education Programme, Forest Ecosystem Conservation Education Programme).</td>
</tr>
<tr>
<td></td>
<td>Bush Meat Crisis Africa (BMCA) Education programme</td>
</tr>
<tr>
<td></td>
<td>School Conservation Challenge Education Programme.</td>
</tr>
<tr>
<td></td>
<td>Nature walks.</td>
</tr>
<tr>
<td></td>
<td>Teachers’ workshops.</td>
</tr>
</tbody>
</table>

(Source: Field data, 2018)

4.3.1 Oral lectures on conservation on site education program.

According to the manager education department and education officer at UWEC, during this programme, pupils who visit the centre are first gathered in one place, and conservation messages or facts given to them. The pupils are given a chance to express their views on what they think is the importance of biodiversity conservation, threats to biodiversity, solutions to environmental problems. Afterwards, the UWEC staff then engages or shares his/her the views and opinions about biodiversity.

4.3.2 Use of printed materials (posters, guide books, brochures, information Panel).
In this programme, printed materials with conservation messages and biodiversity facts are distributed to the pupils in a simplified manner, in a visualized way, in a language that is easily understood by the pupils.

4.3.3 **Thematic guided education** (Science and Social Studies).
During this programme, pupils are urged to list the topics they are taught at school, in subjects of science and social studies, for primary pupils and biology and geography for secondary students.

4.3.4 **Animal exhibit based education** programme. Here, conservation messages are given to pupils, while they are viewing the animal through the exhibit.

4.3.5 **Species specific Conservation Education Programme** (e.g. Lion Conservation Education, Rhino Conservation Education, Elephant Conservation Education, and Cheetah Conservation Education). During this programme, mainly the endangered and species are selected to be revealed to the pupils. The cause of threats to species, the role of the species in the ecosystems, and other facts about that species are revealed to pupils.

4.3.6 **Ecosystem-Based Conservation Education Programme** (e.g. Wetland Ecosystem Conservation Education Programme, Forest Ecosystem Conservation Education Programme). Here, the fragile ecosystems like wetlands, forests are selected. The threats to that ecosystem are outlined in the print, video-clip and then showed to pupils. The pupils are also encouraged to participate in essay writing about a selected ecosystem.

4.3.7 **Bush Meat Crisis Africa (BMCA) Education programme**. Here, specifically, poaching facts are highlighted to the pupils.

4.3.8 **School Conservation Challenge Education Programme**. During this programme, the pupils are mobilized into environmental clubs, and then school gardening programmes like tree planting is done by pupils.
4.3.9 Nature walks. Here, the school environmental clubs are taken out to other conservation areas like national parks, botanic garden, with support from UWEC management. This is aimed at exposing the pupils to the various fauna and flora in the wild.

4.3.10 Teachers’ workshops. Here, teachers get engaged, together with the UWEC educators, to share conservation messages, which teachers are urged to share with the pupils during the class sessions.

4.4 Comparison of Conservation awareness levels of Trained Students and Untrained pupils.

The research findings established that there was a significant difference in terms of Conservation awareness and knowledge levels of ‘Trained’ and ‘Untrained’ Pupils i.e. F values of 3.636 and P values of 0.005 which are statistically significant at P = 0.05 hence reject the null hypothesis.

This means that ‘Trained’ pupils had more awareness level than the ‘Untrained’ pupils. The findings are as shown in table 4.4

Table 4.4 Comparison of Conservation awareness level of Trained Pupils and Untrained ones.

<table>
<thead>
<tr>
<th></th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2.415</td>
<td>3</td>
<td>0.805</td>
<td>3.636</td>
<td>0.005</td>
</tr>
<tr>
<td>Within groups</td>
<td>23.470</td>
<td>106</td>
<td>0.221</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25.885</td>
<td>109</td>
<td></td>
<td>3.636</td>
<td></td>
</tr>
</tbody>
</table>

(Source; Field data, 2018).

4.4.1 Pupils’ knowledge of Classification

The study sought to find the ability of pupils to correctly assign a given animal to its correct taxonomic class (mammal, reptile, birds) that they had seen when they visited UWEC. The number of pupils who correctly assigned the animals are summarized in fig 4.3. Generally, all trained pupils had high awareness on classification (Mean % = 82). Mammals and Birds had received
highest awareness levels (mean % = 90 and 86 respectively). This was tested basing on pupil’s ability to write correctly four species of that particular class/category.

To test whether, the mean percentages obtained were significantly different, ANOVA statistical test was performed at 95% confidence interval that is, F values of 7.352 and P values of 0.0012 as shown in table 4.5 hence null hypothesis was rejected. This means that ‘Trained’ pupils had more awareness level than the ‘Untrained’ pupils.

Table 4.5 Pupils' knowledge of classification.

<table>
<thead>
<tr>
<th>Pupil</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>5.007</td>
<td>2</td>
<td>2.504</td>
<td>7.352</td>
<td>0.0012</td>
</tr>
<tr>
<td>Within groups</td>
<td>6.487</td>
<td>66</td>
<td>0.098</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>11.494</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Author, 2018)

Figure 4.3 Classification Ability of the respondents
4.4.2 Conversation value of wild animals.
The study also sought to find out pupils’ knowledge of reasons why it is important to conserve the wild animals. This was asked basing the Species Based Education Programme, Ecosystem Based Education Programmes and Bush Meat Crisis Education programmes where the pupils are exposed to various uses of biodiversity conservation. So there was a need to prove pupils’ level of knowledge gained by pupils. Mean % for trained (42.8%) =medium awareness about conservation values. Mean % for Untrained (51.8%) =More awareness. Mean % for both trained and untrained (47.6%) = moderate awareness. Mostly non-consumptive values were listed by pupils (Tourism attraction, study purposes and recreation). Majority of trained pupils identified tourism as conservation value of wild animals. Majority of untrained pupils stated that generating government revenue is the conservation value of wild animals. None of the trained stated food provision as conservative value of wild animals. The pupils’ responses were summarized in fig 4.4.

\[
\begin{array}{c|c|c}
\text{Understanding of Wild animal Conservation Values.} & \text{Mean %} & \text{Response} \\
\hline
\text{Bring tourists} & 96 & \text{% of Trained} \\
\text{For study purpose} & 60.7 & \text{% of Untrained} \\
\text{For food} & 44.6 & \\
\text{Source of Gov't revenue} & 85.7 & \\
\text{For recreation} & 50 & \\
\text{MEAN%} & 42.8 & \\
\end{array}
\]

Figure 4. 4 Wild animal Conservation Values identified by Pupils.

ANOVA statistic, at 95% confident interval, was used to determine whether there was a significant difference between the mean percentages obtained in Figure 4.4 above. 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 4.6, low F values of 1.525 and high P values of 0.124 hence fail to reject the null hypothesis. This means that both ‘Trained’ and ‘Untrained’ pupils had the same understanding of the wild animal conservation values, irrespective the extra knowledge the ‘trained’ pupils had received from UWEC’s education programmes.

Table 4. 6 Understanding the significance difference of knowledge of wild animal values between trained and untrained pupils.

<table>
<thead>
<tr>
<th>Pupils</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1.072</td>
<td>3</td>
<td>0.357</td>
<td>1.525</td>
<td>0.124</td>
</tr>
<tr>
<td>Within groups</td>
<td>24.812</td>
<td>106</td>
<td>0.234</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>25.884</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4.3 Reasons for conserving wetlands.

The study also further sought to find out pupils’ knowledge of reasons for wetland conservation. This question has its basis on the Ecosystem Based Conservation Education programme, where pupils are made aware of the threats, values of conserving that ecosystem. So there was a need to find out the level of knowledge gained by pupils. The responses were summarized in Table 4.7.

Table 4. 7 Respondents' knowledge of value of conserving wetlands

<table>
<thead>
<tr>
<th>Reason</th>
<th>Trained</th>
<th>Untrained</th>
<th>% of trained</th>
<th>% of Untrained</th>
<th>General %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of fish</td>
<td>50</td>
<td>55</td>
<td>100%</td>
<td>98.2%</td>
<td>99.1%</td>
</tr>
<tr>
<td>Source of water</td>
<td>45</td>
<td>52</td>
<td>90%</td>
<td>92.9</td>
<td>91.5%</td>
</tr>
<tr>
<td>For tourism</td>
<td>34</td>
<td>9</td>
<td>68%</td>
<td>16.1%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Habitat for water animals</td>
<td>15</td>
<td>4</td>
<td>30%</td>
<td>7.1%</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

(Source: field data, 2018). Note these percentages do not necessarily add up to 100%.

32
Generally, most pupils identified source of fish and water as being the main reasons for conserving wetlands (99.1% and 91.5% respectively). This indicates that pupils had the highest level of awareness on the fish and water provisioning function of wetlands.

The researcher further went to find out whether the mean percentages obtained above (Table 4.7) had significant differences for the two categories of pupils. The ANOVA results, at 95% confidence interval, showed that there was no significant difference between those who were of the opinion that wetland conservation was important and those who indicated otherwise as shown in table 4.8 showing low F values of 1.131 and high P values of 0.219 hence the null hypothesis was not rejected. This means that both ‘Trained’ and ‘Untrained’ pupils had the same understanding of the values of wetland conservation, irrespective the extra knowledge the ‘trained’ pupils had received from UWEC’s education programmes, specifically, Ecosystem Based Conservation Education Programme.

**Table 8  Significance level of Respondents’ knowledge of Values of conserving Wetlands.**

<table>
<thead>
<tr>
<th></th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>0.535</td>
<td>2</td>
<td>0.268</td>
<td>1.131</td>
<td>0.219</td>
</tr>
<tr>
<td>Within groups</td>
<td>25.146</td>
<td>106</td>
<td>0.237</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25.681</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Field data, 2018)

**4.4.4 Knowledge of threats to environment.**

The study sought to determine pupils’ knowledge of threats to environment. Mainly the anthropogenic activities were identified. This question was based on all the education programmes, since, in all the programmers, the threats to environment are emphasized to the pupils. Generally, there is more awareness about the threats to environment among the pupils (with the least score of 51.9% of the respondents stating charcoal burning).

Majority of the ‘Trained’ Pupils stated poaching and poor waste disposal as the major threat to the environment ie 96% and 90% respectively. However, in general, majority of the pupils (83%)
stated poaching as the major threat to environment conservation, followed by deforestation (70.8%). The results were summarized in Fig 4.5.

Figure 4.5 Knowledge of Harmful human activities to the environment.

4.4.5 Pupils’ Knowledge about harmful human activities to the environment.

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 35.35 and P values of 0.0016 as shown in Table 4.9 hence the null hypothesis was rejected. This means that Trained’ pupils had the more understanding of the threats to environmental conservation than ‘Untrained’ Pupils, thus, it can be concluded that the ‘trained’ pupils gained extra knowledge about threats to environment, from UWEC’s education programmes.

Table 4.9 Pupils’ knowledge of Harmful human activities to the environment

<table>
<thead>
<tr>
<th>Pupil</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>14.562</td>
<td>4</td>
<td>3.641</td>
<td>35.35</td>
<td>0.0016</td>
</tr>
<tr>
<td>Within groups</td>
<td>10.545</td>
<td>102</td>
<td>0.103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25.107</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: field data, 2018).
4.4 General Conservation Awareness.
The research then sought to find out whether there was general difference in overall level of the awareness between ‘Trained’ and ‘Untrained’ Pupils. This was measured basing the classification ability, knowledge of the threats to biodiversity, values of conserving wild animals and wetlands. The mean percentages of pupils on attributes used in the Conservation Awareness Model were obtained. Generally, majority of trained pupils had higher level of awareness (Table 4.10) basing on the CAM model which was developed. More level awareness was realized among ‘Trained Pupils’ in Classification ability and knowledge of cause of environmental problems i.e. 82% and 80.5% respectively, and Minority (17.9%) of untrained pupils were able to correctly classify the animal. The results were summarized in Table 4.10.

Table 4. 10 General Conservation Awareness of the pupils.

<table>
<thead>
<tr>
<th>Conservation awareness attribute</th>
<th>Mean % of Trained</th>
<th>Mean % of Untrained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification ability</td>
<td>82</td>
<td>17.9</td>
</tr>
<tr>
<td>Knowledge of cause of environmental problems</td>
<td>80.5</td>
<td>54.5</td>
</tr>
<tr>
<td>Conservation Values</td>
<td>42.8</td>
<td>51.8</td>
</tr>
</tbody>
</table>

(Source; Field data, 2018).

The researcher further sought to establish whether there was statistical significance with regards to overall conservation awareness between trained and untrained schools. The findings revealed that there was significant difference in Conservation Awareness level between ‘trained’ and ‘untrained’ respondents, at 95% confidence interval, ANOVA statistics, as shown by the F value of 3.544 and P value of 0.0032 in table 4.11 below hence the null hypothesis was rejected. This means that the ‘Trained pupils’ had more conservation knowledge than ‘Untrained’ ones.
Table 4.11 Overall level of significance of Conservation Awareness level between ‘Trained’ and ‘Untrained’ pupils.

<table>
<thead>
<tr>
<th>Pupil</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean sum of squares</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>12.140</td>
<td>23</td>
<td>0.528</td>
<td>3.544</td>
<td>0.0032</td>
</tr>
<tr>
<td>Within groups</td>
<td>12.416</td>
<td>83</td>
<td>0.149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24.286</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.5.1 Attitude towards some ‘unusual’ animals: snakes, tortoises.
The study further sought to find out pupils’ attitudes of the strange animals. The pupils common attitudes were reflected Fig 4.6 below. This attribute of attitude measurement was based on the principles and rights of survival. So, pupils’ opinions on what they would do to strange animals in their vicinity ‘reflected’ how they perceived the value of that animal.

Most trained pupils recommended strange animals to be taken to UWEC. A few of the trained stated that they would kill it.

![Figure 4.6 Relating Pupils' attitudes towards some strange animals like snakes, tortoises.](image)

4.5.2 Measuring pupils’ attitudes basing on their reasons of recommending their friends also to visit UWEC.
Basing on what the pupil was exposed to, when he/she visited the centre, the attitude of that pupil was evaluated basing on his/her reasons for recommending the friend also to visit the centre.

<table>
<thead>
<tr>
<th>Pupils' reasons</th>
<th>% of trained school</th>
<th>% of Untrained school</th>
<th>% of total number of pupils (both trained and untrained school)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To see the wild animals</td>
<td>60</td>
<td>32.1</td>
<td>45.3</td>
</tr>
<tr>
<td>To study about animals</td>
<td>80</td>
<td>26.8</td>
<td>51.9</td>
</tr>
<tr>
<td>To go to the beach</td>
<td>4</td>
<td>17.9</td>
<td>11.3</td>
</tr>
<tr>
<td>To climb on the camel</td>
<td>10</td>
<td>8.9</td>
<td>9.4</td>
</tr>
</tbody>
</table>

Figure 4. 7 Relating respondents’ reasons for recommending a friend to visit UWEC.

4.5.3 Measuring Pupils’ attitudes based on the rating of education they received at UWEC.

All programmes have tried to influence attitudes of pupils as most of them rated the programmes as being ‘good’. Some of the respondents (16 pupils) from Untrained category of schools indicated that they had ever visited UWEC. However, majority of them (7 Untrained pupils) had visited the centre only once. Taking ‘excellent’ to be the highest rank/rating and ‘very poor’ to be the lowest rating thus positive attitude and negative attitude respectively. The more the number of visits to the site, the more positive attitudes the pupils had.
4.6 Other conservation centres

The research also sought to understand the various conservation centres that pupils were aware of. The essence behind this question was to know the most ‘known and familiar’ conservation centre to the pupils. The assumption made was that the more the number of pupils who that site, the more the pupils might have benefited from the centre’s activities. Thus Entebbe Botanic Garden was most identified by the pupils (Fig 4.9).

Figure 4.9 Other Conservation Education Centres visited by Pupils.
CHAPTER FIVE: DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

5.0 Overview
This Chapter looks at the general discussion of the results, conclusions and recommendations and limitations of the study.

5.1 DISCUSSION

5.1.1 Conservation education programmes offered at UWEC.
Much CE programmes offered at UWEC try to show main components of biodiversity. It agrees with UNEP (2010) recommendations, that CE should be holistic to capture main components of the environment. However, UWEC lacks practical conservation projects targeting children. This thus contradicts with Shibia (2010) who recommended Conservation Education Centres to have hands-on training for the pupils. UWEC’s programmes however, are similar to the findings of Gathuku (2009) who studied Girrufe Centre’s programmes in Kenya. All programmes have tried to influence attitudes of pupils as most of them rated the programmes as being ‘good’ (Figure 4.6). Bornman, G.M. (1997) stressed that a successful education programme should be able to enhance Pupils’ attitudes towards the understanding of the environment. However, he also found out that change of attitudes depends on how frequently a pupil is exposed to the environmental issues and the incentives the respondents are receiving from the Environmental organizations.

5.1.2 General Level of awareness
This was measured basing the Conservation Awareness Model (Figure 3.1), which was divided into in three components: (1) Classification ability, (2) Knowledge of cause of environmental problems, (3) knowledge of conservation values.

5.1.2.1 Classification ability
Generally, majority of trained pupils were able to classify. Pupils had physically visualized the animals and thus were able to recall their phenotypes. This coincides with study done by Gathuku (2009) where he also found out that, pupils who had participated in an excursion were able to name various animal species they had seen. Jensen (2011) also concluded that the experience of viewing live animals can have a powerful impact on learners to construct a new understanding of wildlife, of the natural world, and of the role of humans intervening in this natural world. His research showed that visits to the zoo alone yield a statistically significant increase in scientific learning, and this impact can be increased by the zoo’s educational interventions.
Packer (2013) emphasizes the need for CECs, to make pupils be able to access the biological organisms for their long term impact. Conservation, roots from ability to classify. Mammals were most correctly identified. Mammals are more Conspicuous; Pupils can easily remember. Mehta & Heinen (2016) suggests that larger animals are easily remembered by pupils because of the funny behavioral displays they always make. E.g Chimpanzees, thus early exposure of children to fauna and flora makes them develop, at an early age, the zeal for conservation interest. However, according to Packer (2017), it depends on how often that child is exposed to the wild species.

5.1.2.2 Knowledge of human causes of environmental problems.

Majority of the respondents identified Poaching and poor waste disposal. The UWEC’s bush meat programme emphasizes poaching issues. This may have imparted more awareness to the pupils about the dangers of poaching, thus the majority of the respondents identified it as an environmental problem. Poor Waste disposal is common in the Municipality (Entebbe Municipality Environment Dept report, 2017). Thus pupils are aware of local problems. Pupils in their clubs mainly engage in easy writing with the help of their teachers and UWEC facilitator. According to Jensen (2011), knowledge of animals and their habitats is the fundamental building-block for learning about wildlife conservation. The over-exploitation of the populations of wild species, mainly through the harvesting of animals and plants for food, material or medicine, at a rate above the reproductive capacity of the population, is one of the major threats to the survival of the biodiversity population (WWF, 2008; WWF, 2010), while species like the rhino and tigers are faced with extinction because of poaching and illegal trade (De Beer et al, 2005). Johnson-Pynn and Johnson (2005) and Palmberg, I., and Kuru, J. (2000) also reported a positive increase in the knowledge of conservation of the learners who attended the Conservation Education programmes. Therefore, it can be concluded that zoos play an important role in the conservation of species and their habitats, through the Conservation Education programmes they present.

5.1.2.3 Knowledge of conservation values.

Most trained pupils identified tourism as main value for conserving wild animals. Most Untrained pupils noted government revenue. Both signify tourism. Pupils are aware of sustainable wildlife use. This agrees with Otiende & Boisvert (2011) who found out that those children who were near
tourism sites demonstrated more knowledge on tourism. Results are in line Sustainable Development goal 7. Results disagree with those of Oluyemi, A., Ogundiwin1, A., Adebare, I., Adegoke., Olayemi, A. A.,(2014) that children are too young to be loaded with conservation messages, they just attend for excitement. However, Kaltenborn (2007) also challenged him by emphasising the pro-environment behavior which originates from childhood. Pupils didnot include any ecological value, thus make emphasis should be made on revealing to pupils of Entebbe about the ecological importance of conservation. Packer (2017) notes that failure to know ecological values by children is due to more scientific words normally used. Thus need to simplify the words for the immature brains of pupils. Thus in conjunction with findings of Oluyemi, A., Ogundiwin1, A., Adebare, I., Adegoke and Olayemi, A. A.,(2014), EE generally improves childrens’ understanding of the ecological words but it should be a continuous process.

5.13 Respondent’s attitudes towards some strange animals.
Most trained pupils recommended strange animals to be taken to UWEC for tourism, study purposes. A few of the ‘Trained’ stated that they would kill it. Most ‘Trained’ pupils stated that they were emphasized, during training, not to kill animals. This contradicts with Davis, Rea & Waite (2006) who found out that conservation education offered to children reveals to them, at early age, the value of wildlife and eventually turn to be professional ‘poachers’. However, my results and those of Gathuku (2009), Packer (2013) and Mostafa (2010) show that conservation education reveals to children an early exposure on non-consumptive uses of wildlife like tourism, thus they tend to grow with the spirit of conservation and sustainable use. Elizabeth Jacob (2014) and Susan, K. (2006) also stated that conservation education can influence behaviour changes, along with a person’s upbringing. Social environment is his/her belief in the ability that he/she can bring about change (Litchfield & Foster, 2009; Balmford, A. & Cowling, R.M, 2006). Bamberg and Möser (2007) and Bornman, G.M (1997) see the intention to act and the ‘objective situational factor’ as determining factors of pro-environmental behaviour, where intention is viewed as summarizing the interplay of cognitive variables, namely action skills, knowledge of action strategies and issues, as well as personality variables, namely attitudes, locus of control, and personal responsibility (Bamberg & Möser, 2007; Balmford, A. & Cowling, R.M, 2006). Environmental education changes people’s perceptions and attitudes towards the natural environment. This leads to improved environmental stewardship Figure 4.6 where ‘Trained’ pupils
disagreed with the killing of strange animals. This matches with conclusions of Crowther, De Beer and Dreyer (2011) and Loubser (2005) that environmental education improves environmental stewardship of general public, especially the individuals with had an early exposure to environmental issues.

**Relating respondents' reasons for recommending a friend to visit UWEC.**

Figure 4.7 indicates that majority of respondents recommended their friends to visit UWEC mainly to see animals and for study purposes. This coincides with early results of a study done at UWEC by Allen (2011) and Elizabeth (2014) that the respondents rated the need to see animals as the main motivator. Ernesto Lasso de la Vega. (2004) also revealed that attitudes of young students (ages 11 and 12 yrs.) changed positively after outdoor experience such as camping, hiking or fishing along with better social behavior and higher moral judgment.

Though the results, generally, indicate that the Conservation Education programmes were successful in increasing the learners’ intention to change behaviour. However, this study further indicated that although attending UWEC Conservation Education programmes has the potential to increase the attitudes and values of learners, this was not always the case, for example in Figure 4.4, the mean percentage of ‘Trained’ pupils who know the conservation value of wild animals and wetland was generally lower than the mean percentage for the ‘Untrained’ pupils (42.8% and 51.8% respectively). This indicated, according to the Conservation Awareness Model) that ‘Trained pupils’, despite of having gone through UWEC’s education programmes, ‘Trained Pupils still had lower awareness level than ‘Untrained’ ones. This may be attributed to the modes of delivery of information, to young pupils, about the value of conservation. There is a need, for UWEC, to re-focus their education programmes towards making pupils gain more awareness about the value of conservation. This can be by changing education procedures towards ‘visual-oriented other than audio-oriented. Ajiboye, J. O. and Olatundun, S. A. (2010) and Cara K. Kruse and Jaclyn A. Card. (2004) came to the conclusion that the evaluation of Conservation Education programmes allows us to confirm that our programmes are delivering the information we intend, and that, in the end, when the wrong message is perceived, we can try a different approach.

Jensen (2011) also concluded that learning experience and the increase in knowledge can be enhanced by providing educational materials and presentations. However, he noted the
educational value of a visit to a zoo is influenced by a number of factors that precede the visit, such as prior knowledge, the mass media, age, gender, and whether it is the learner’s first or subsequent visit. Therefore education, in general, leads to positive perception on biodiversity conservation as reported by Mutanga, C. N., Vengesayi, S., Gandiwa, E. and Muboko, N. (2015).

5.2 CONCLUSIONS.
UWEC, in collaboration with other conservation education centres have played a good role in creating awareness among pupils in Entebbe Municipality. Based on the percentages of pupils who are aware of causes of environmental degradation, values of wildlife conservation. Results from this study clearly show that UWEC’s EE programmes promote environmental awareness and conservation to a great extent in schools. Most of the variables measured showed a significant increase of environmental awareness consciousness in ‘Trained Pupils’. From these observations it can be concluded that Pupils are able to retain what they are taught, thus there is a need to continuously conduct environmental education, so as to impart conservation knowledge to the young generation.

5.3 RECOMMENDATIONS
Further research should be done on pro-environmental behavior of children. A connection between knowledge of conservation issues, attitude toward those issues, and subsequent action to support preservation and environmental quality, however, needs further study. Same or related research should be done in other areas. Finally, UWEC should structure its education towards enhancing knowledge of Conservation values among children so as to improve on children’s’ knowledge of biodiversity conservation values while they are still young.
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Ernesto Lasso de la Vega. (2004). *Awareness, knowledge, and attitude about environmental education: responses from environmental specialists, high school instructors, students, and parents.* A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Education in Curriculum and Instruction in the College of Education at the University of Central Florida Orlando, Florida


**APPENDICES**

Appendix 1 A checklist of Conservation education programmes offered at UWEC

I am EDENYU ABRAHAM, a student at Makerere University, I am conducting a research on the *Contributions of Conservation Education Centres in promoting sustainable environmental awareness and conservation in schools in Entebbe Municipality, a
case study of the Uganda Wildlife Conservation Education Centre. This research is a requirement for the award of a bachelor’s of science degree in conservation biology of Makerere University. Your answers will be treated with confidentiality and will be used for academic purpose only.

Please tick against the education programme offered at UWEC

- Oral lectures on conservation
- Nature walks
- Use of printed materials (posters, guide books, brochures, etc)
- Field education trips
- Teachers’ workshops
- Thematic guided education
- Animal exhibit based education programme
- Children’s camp conservation education programme
- Others (specify)

THANK YOU SO MUCH AND MAY THE ALMIGHTY GOD REWARD YOU ABUNDANTLY.

Appendix 2 Pupils’ environmental awareness and knowledge questionnaire

I am EDENYU ABRAHAM, a student at Makerere University. I am conducting a research on the Contributions of Conservation Education Centres in promoting sustainable environmental awareness and conservation in schools in Entebbe Municipality, a case study of the Uganda Wildlife Conservation Education Centre. This research is a requirement for the award of Bachelor of Science Degree in Conservation Biology. Your answers will be treated with confidentiality and will be used for academic purpose only.

Instruction:

Please read each item carefully before answering them.

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

☐ General information

Please Tick One

Gender: Male [ ]; Female [ ]; Age………………

School…………………………………………. Location: ………………………………………

1 (A) . Have you ever visited UWEC? YES [ ] or NO [ ]

If YES, How many times have you visited UWEC?
a. Once [ ]  b. Twice [ ]  c. Thrice [ ]  d. Four > [ ]

2 A. Were you taught anything concerning environment and wildlife protection? Yes [ ] No [ ], if yes specify; …………………………………………………………………………………
(B) Name four examples of birds, mammals, reptiles, that you saw at UWEC

Birds: (i) ................................ (ii) ................................ (iii) ............................... (iv) ...........

Mammals: (i) ................................ (ii) ................................ (iii) ............................... (iv) ...........

Reptiles: (i) ................................ (ii) ................................ (iii) ............................... (iv) ...........

3a) Which of the following human activities has contributed most to the uncontrolled destruction of the environment? (Tick 4 of the most common)

Human settlement [ ]

Clearing land for farming [ ]

Wild fires [ ]

Cutting for firewood [ ]

Sale of timber [ ]

Charcoal burning [ ]

Others, please specify ...........................................................................................................

(b) What should people in Entebbe Municipality do to conserve their environment (Give at least 3 solutions)

........................................................................................................................................

(c) Which of the following human activities have contributed to the low standards of cleanliness of Entebbe Municipality? (Tick any 2 of the most common)

Oil spills from motor vehicles [ ]

Poor sewage disposal [ ]

Poor waste disposal by people [ ]

Congestion in town [ ]

Others please specify ........................................................................................................

4. Why should we conserve our;
(A) Forests;
a………………………………b)………………………………c)………………………………
d……………………………………e)……………………………………

(B) Wild Animals;
a……………………………………d)……………………………………
b………………………………………e)……………………………………
c …………………………………..

(C) Wetlands
a…………………………………….c)……………………………………
b…………………………………….d)……………………………………

5 Outline at least 5 environmental problems that you know in your community
(i)…………………………..(iv)……………………………………
(ii)……………………………..(v)……………………………………
(iii)……………………………………………………………………

To test for the pupils’ attitude towards environmental conservation.

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

7. Rate the education that you got at the UWEC
1. [   ] 2. [   ] 3. [   ] 4. [   ] 5. [   ]

8 What would you do if you find a strange animal like a snake, tortoise, etc, around your compound
Leave it to go its way [   ]
Kill it [   ]
Report to your guardian or parent [   ]
Advice your parent to report to UWEC [   ]
OTHERS Please specify ………………………………………………………………………...
9 Some animals and plants are NOT worthy to conserved AGREE [ ], DISAGREE [ ], NOTSURE [ ].

10 Visiting UWEC is of NO value to the pupils. AGREE [ ], DIAGREE [ ].

11 Would you recommend your friend to come and learn at UWEC?.

Yes [ ] No [ ]

Explain briefly why

THANK YOU SO MUCH AND MAY THE ALMIGHTY GOD REWARD YOU ABUNADANTLY

Appendix 3. Schools sampled.

<table>
<thead>
<tr>
<th>Trained schools</th>
<th>Untrained schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Joseph primary school</td>
<td>Chardric Namate P/S</td>
</tr>
<tr>
<td>St Agness P/S</td>
<td>Marine P/S</td>
</tr>
<tr>
<td>St Johns P/S</td>
<td>Airforce P/S</td>
</tr>
<tr>
<td>Entebbe Christian P/S</td>
<td>Nakiwongo P/S</td>
</tr>
<tr>
<td>Entebbe International P/S</td>
<td>Shangish Modal P/S</td>
</tr>
<tr>
<td></td>
<td>Rainbow P/S</td>
</tr>
<tr>
<td></td>
<td>Tom and Jery P/S</td>
</tr>
</tbody>
</table>

APPENDIX 4: General Awareness responses.

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was taught something concerning environment and wildlife protection.</td>
<td>50 33</td>
</tr>
<tr>
<td>Disagreed that they were taught something concerning environment</td>
<td>0 23</td>
</tr>
<tr>
<td>and wildlife protection</td>
<td></td>
</tr>
<tr>
<td>Ca;Birds</td>
<td>43 14</td>
</tr>
<tr>
<td>Ca;Mammals</td>
<td>45 10</td>
</tr>
<tr>
<td>Ca;Reptiles</td>
<td>35 6</td>
</tr>
<tr>
<td>“YES” there is uncontrolled cutting down of trees in environment?</td>
<td>50 56</td>
</tr>
<tr>
<td>Human activity: Poor waste disposal</td>
<td>35 40</td>
</tr>
<tr>
<td>HA; Clearing land for farming</td>
<td>50 40</td>
</tr>
<tr>
<td>HA; Charcoal burning</td>
<td>50 56</td>
</tr>
<tr>
<td>HA: Cutting for firewood</td>
<td>45</td>
</tr>
<tr>
<td>WPSD: Plant trees</td>
<td>36</td>
</tr>
<tr>
<td>WPSD: Control soil erosion</td>
<td>4</td>
</tr>
<tr>
<td>WPSD: Not throwing rubbish in the environment</td>
<td>30</td>
</tr>
<tr>
<td>WPSD: By not practicing poaching</td>
<td>46</td>
</tr>
<tr>
<td>Impacts of ED: Floods during the rainy season</td>
<td>48</td>
</tr>
<tr>
<td>IED: Outbreak of diseases</td>
<td>30</td>
</tr>
<tr>
<td>IED: Human wildlife conflicts</td>
<td>23</td>
</tr>
<tr>
<td>IED: Reduction in amount of rainfall</td>
<td>50</td>
</tr>
<tr>
<td>IED: Disappearance of plant and animal species</td>
<td>48</td>
</tr>
<tr>
<td>LEP: Oil spills from motor vehicles</td>
<td>0</td>
</tr>
<tr>
<td>LEP: Poor sewage disposal</td>
<td>2</td>
</tr>
<tr>
<td>LEP: Poor waste disposal by people</td>
<td>45</td>
</tr>
<tr>
<td>LEP: Congestion in town</td>
<td>20</td>
</tr>
<tr>
<td>Wastes: Papers</td>
<td>20</td>
</tr>
<tr>
<td>Wastes: Tins</td>
<td>45</td>
</tr>
<tr>
<td>Wastes: Bottles</td>
<td>45</td>
</tr>
<tr>
<td>Wastes: Plastics</td>
<td>40</td>
</tr>
<tr>
<td>Wastes: Food remains</td>
<td>5</td>
</tr>
<tr>
<td>PSWD: Put them in the same waste bin.</td>
<td>3</td>
</tr>
<tr>
<td>PSWD: Separate and put them in different waste bins.</td>
<td>3</td>
</tr>
<tr>
<td>PSWD: Use them to make manure.</td>
<td>20</td>
</tr>
<tr>
<td>PSWD: Separate and recycle organic waste and use PSWD; inorganic waste to make manure.</td>
<td>8</td>
</tr>
<tr>
<td>PSWD: Separate and use organic waste to make manure and recycle inorganic waste.</td>
<td>16</td>
</tr>
<tr>
<td>EP: Poaching</td>
<td>48</td>
</tr>
<tr>
<td>EP: Deforestation</td>
<td>43</td>
</tr>
<tr>
<td>EP: Charcoal burning</td>
<td>25</td>
</tr>
<tr>
<td>EP: Poor waste disposal</td>
<td>45</td>
</tr>
<tr>
<td>WCF: For timber</td>
<td>35</td>
</tr>
<tr>
<td>WCF: For firewood.</td>
<td>40</td>
</tr>
<tr>
<td>WCF: Provide local medicine</td>
<td>5</td>
</tr>
<tr>
<td>WCF: Rainfall formation</td>
<td>43</td>
</tr>
<tr>
<td>WCWA: Bring tourists</td>
<td>48</td>
</tr>
<tr>
<td>WCWA: For study purposes</td>
<td>32</td>
</tr>
<tr>
<td>WCWA; Government revenue</td>
<td>2</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---</td>
</tr>
<tr>
<td>WCWA; For food</td>
<td>0</td>
</tr>
<tr>
<td>WCWA; For recreation</td>
<td>25</td>
</tr>
<tr>
<td>Wetland Use; Source of fish</td>
<td>50</td>
</tr>
<tr>
<td>Wetland use; Source of water</td>
<td>45</td>
</tr>
<tr>
<td>Wetland use; For tourism</td>
<td>34</td>
</tr>
<tr>
<td>Wetland use; Habitat for water animals</td>
<td>15</td>
</tr>
</tbody>
</table>

Ca= Classification ability. HA=Human Activity that affect environment negatively. IED=Impacts of Environmental Degradation. LEP= Local Environmental Problems. PSWD=Proper Solid Waste Disposal.. EP=Environmental Problems. WDSD=What People Should Do to conserve Environment. WCF= Why Conserve Forests.

Appendix 5. Frequency of visit to UWEC.

<table>
<thead>
<tr>
<th>RESPONSE</th>
<th>TRAINED</th>
<th>UNTRAINED SCHOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never visited</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Once</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Twice</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Thrice</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Four &gt;</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>50</td>
<td>56</td>
</tr>
</tbody>
</table>

(Source; Field Data, 2018)

Appendix 6 Understanding of Wild animal Conservation values.

<table>
<thead>
<tr>
<th>Conservation value</th>
<th>% of Trained</th>
<th>% of Untrained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bring tourists</td>
<td>96</td>
<td>60.7</td>
</tr>
<tr>
<td>Purpose</td>
<td>% of total</td>
<td>Mean %</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>For study purpose</td>
<td>64</td>
<td>44.6</td>
</tr>
<tr>
<td>For food</td>
<td>0</td>
<td>41.1</td>
</tr>
<tr>
<td>Source of Gov’t revenue</td>
<td>4</td>
<td>85.7</td>
</tr>
<tr>
<td>For recreation</td>
<td>50</td>
<td>26.8</td>
</tr>
<tr>
<td><strong>MEAN %</strong></td>
<td>42.8</td>
<td>51.8</td>
</tr>
</tbody>
</table>

(Source: Field data, 2018)

Appendix 7 Awareness levels for the classification of animals between trained and untrained pupils.

<table>
<thead>
<tr>
<th>Animal class</th>
<th>% of trained</th>
<th>% of Untrained</th>
<th>General %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>86</td>
<td>25</td>
<td>53.8</td>
</tr>
<tr>
<td>Mammals</td>
<td>90</td>
<td>17.9</td>
<td>51.9</td>
</tr>
<tr>
<td>Reptiles</td>
<td>70</td>
<td>10.7</td>
<td>38.7</td>
</tr>
<tr>
<td><strong>MEAN %</strong></td>
<td>82</td>
<td>17.9</td>
<td>48.1</td>
</tr>
</tbody>
</table>

(SOURCE: FIELD DATA, 2018)