

Environmental Literacy and Practice of Environmental Sustainability among Secondary School  
Students in Busia District, Uganda

Eustance Wandera

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**Declaration**

I, Eustance Wandera, hereby certify that this dissertation is a result of my original research work and has not, to the best of my knowledge, been presented for an award of a Master's degree in any other university. I submit it without any reservations.

Signature..... Date.....

**Approval**

The research work culminating into this dissertation was conducted under our guidance and supervision.

**First Supervisor**

Signature..... Date.....

Dr. Edward Andama

**Second Supervisor**

Signature..... Date.....

Dr. Dennis Zami Atibuni

## **Dedication**

I dedicate this research dissertation to my parents: Mr. Godfrey Owori and Ms. Gertrude Anyango, to my wife: Ms. Jackline Esther Nekesa and my children: Desire Tumwebaze and Einstein Wandera. I am greatly indebted to them for the immense psycho-social, moral, spiritual and financial support during my academic endeavors. May the Almighty God reward them abundantly.

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## Abstract

The purpose of this study was to determine the influence of environmental literacy (EL) on the practice of environmental sustainability (ES) among secondary school students in Busia District. Using a parallel convergent mixed methods and cross-sectional survey design, 452 students in 12 secondary schools were selected using proportionate stratified random sampling to collect quantitative data while simple random sampling and purposive sampling were used to select student and teacher participants respectively to engage in Focus Group discussions (FGD) to collect qualitative data. Of the 452 student participants, 409 submitted completed the EL survey and questionnaire on practice of ES (*validity = .900, reliability = .788*). The EL survey considered the dimensions of environmental knowledge, attitude towards the environment and the behavior in the environment. The results revealed a functional level of EL and a moderate level of practice of ES. Environmental knowledge had weak positive relationship with the practice of ES ( $r = .219, p < .01$ ), attitudes towards the environment also had a weak positive relationship with the practice of ES ( $r = .345, p < .01$ ) but the behavior in the environment had a moderate positive relationship with the practice of ES ( $r = .423, p < .01$ ). There was a moderate positive relationship between EL and ES ( $r = .446, p < .01$ ). These results show that the secondary school curriculum is making the learners to achieve more in environmental knowledge dimension of EL than in the development of positive attitudes towards the environment and pro-environmental behavior leading to a moderate level of practice of ES. I recommend that balanced learning experiences in the school curriculum on the environmental knowledge, attitudes towards the environment as well as the behavior in the environment be given attention by the school management and curriculum planners so as to improve the practice of ES as opposed to emphasizing environmental knowledge for the purpose of students passing examinations.

## **Chapter One**

### **Introduction**

#### **Overview**

This chapter considers the background, the statement of the problem, objectives, research questions hypothesis, scope and significance of the study.

#### **Background**

The background to this study was considered in four perspectives: the historical, contextual, theoretical and conceptual perspectives.

#### **Historical Perspective**

What is referred to as environmental education (EE) today, has its origins in the educational movements of the late 19th and early 20th centuries relating to nature, conservation, and outdoor education of the entire environment of man (Hollweg, Taylor, Bybee, Marcinkowski, McBeth, & Zoido, 2011). These movements were then taken on by international bodies like the United Nations (UN) and accented to by numerous nations all over the world. From the 1970s, the United Nations Educational, Scientific and Cultural Organization (UNESCO) lead in the movements for the better management of the environment as well as establishing a definition of environmental education; as cited by Hollweg et al. (2011), UNESCO (1977) and UN (1992), hold that environmental education should be that education that is aimed at developing a world population that is aware of, and is concerned about the environment and its associated problems, and has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. As opined by Spinola (2015), environmental education should be that form of education that provides environmental literacy with its numerous dimensions among

which include: environmental knowledge, attitudes towards the environment and pro-environmental behaviors.

In the conceptualizations of environmental literacy prior to the 1970s, there seem to have been inadequate public knowledge and awareness about the environmental processes and operation among the majority of the world public (Fah & Sirisena, 2014). According to Fah and Sirisena (2014), the discussions about the environment have been in topics of international debate from as far back as 1972 in the United Nations Conference in Stockholm and 20 years later, the Stockholm commitment to raise public environmental awareness was renewed in 1992 at the Earth Summit in Rio de Janeiro (GoU, 2010, Tosun, & Gursakal, 2016). As was stipulated in Chapter 36 of Agenda 21 of the Earth Summit in Rio de Janeiro, the world governments were to ensure that nations take into account the fact that the developments in the world need to be sustainable to meet the needs of the present generations without jeopardizing the possibilities of future generations to meet their own. The UNESCO was charged with the responsibility for implementing this agenda.

The Johannesburg World Summit on Sustainable Development, 2002 acknowledged that some progress had been made in commitments to sustainable development and also reaffirmed the determination to promote the three pillars of sustainable development, namely: economic development, social development and environmental safeguard. This summit also established another vision for education inclining it towards shaping the world of tomorrow and fostering great respect for the needs of the environment through education for sustainable development (GoU, 2010).

The efforts to fulfil the above environmental world agenda, have received maximum attention from the governments in the world including Uganda by inculcating environmental

education in the formal education systems and in partnership with Non-Governmental Organizations (NGOs) especially in areas of seeking solutions to environmental problems such as global warming, desertification, desert encroachment, flooding and depletion of ozone layer among others that arise from the poor practice of environmental sustainability (Ali, Endut, & Embong, 2017).

In Uganda, on addition to numerous environmental concepts in some subjects of the formal curriculum, Education for Sustainable Development (ESD) has been introduced in educational institutions to enhance, among others, environmental literacy and awareness and to train the activities and practices of students and citizens at large to bring about environmental sustainability (GoU, 2010, 2017).

### **Contextual Perspective**

The international deliberations on environmental sustainability were pronounced in the MDG – 7; that is, to ensure environmental sustainability. (Jordan, 2012) ; and it is as well emphasized in the Sustainable Development Goal (SDG) – 15 which is on Sustainable ecosystems; that is, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and biodiversity loss.

Uganda having ratified to these international environmental sustainability agenda and in consistency with the Uganda Vision, 2040, which is focused at transforming Uganda from a peasantry to a middle income country, put in place a number of strategic interventions to be undertaken to realize the vision, one of these is the ESD strategy (MoES, 2106). Among the most important issues to the implementation of ESD, is the clarification of values that foster Environmental Sustainability (ES), ensuring that environmental resources such as water, forest

and plant cover are available for all generations and ES forming the basis of decisions and relationships in pursuit of economic growth in all national sectors and the public (GoU, 2010).

As observed by Ifegbesan (2008) and Silo (2013), one of the greatest environmental challenges facing developing countries, especially African countries, is the unhealthy disposal of waste. This is evidenced in secondary schools through their failure to act responsibly towards waste, water and sanitation. In secondary schools in Africa, students simply throw their waste anywhere for instance it is easy to find polythene packing, torn papers anywhere in the classrooms and walk ways, among others. After a meal it is common to find students washing dishes at water taps as opposed to doing it in a gazetted place or kitchen sink. Kanene (2016) posits that environmental clubs through their activities in schools are crucial in ensuring that there are proper environmental practices in the schools which when out of school, the students will keep practicing.

As noted in the Uganda's national state of the environment report 2014, education plays a big role in building up the human capital required to support sustainable development; the report also posits that educating people is critical in acquisition of knowledge and awareness of their rights in line with compliance in acceptable environmental practices (NEMA, 2016). In support of the fore going stance, the Uganda National Environment Management Policy (2014), placed environmental education and public environmental awareness into ongoing school curriculum and other activities in education institutions, to which the children of Uganda attend.

According to UBOS (2017), about 1 in every 3 children of secondary school going age are attending secondary school and approximately 1 in every 10 people in Busia District have completed at least senior four. This indicates that the levels of formal education among the adults in Busia District are below secondary school. From the trends of enrolment, the statistics are

promising that more people are embracing secondary education and this therefore means that aspects of environmental literacy that are packaged in the secondary school curriculum, are being passed to a significant number of school going children who can then possibly roll them on in their practices when in and out of school.

In Busia District, an estimated forty six percent of the households properly dispose of solid waste and about eighty nine percent of the households have a toilet/latrine facility (UBOS, 2017). The levels of environmental conservation and sustainability practices in a number of schools and general community in Busia District seem to be fairly low despite the environmental literacy from formal education and the appeals by both central and local governments to the communities to sink latrines, rubbish pits and use of sustainable farming practices. These appeals have been through enactment of environmental laws and local council environmental ordinances as well as issuance of circulars aimed at enhancement or conservation of hygienic environments in homesteads, townships and institutional plants.

In 2010, a circular was issued by the Ministry of Education and Sports (MoES) to all government aided secondary schools requiring them to form environmental clubs to take charge of environmental issues and also develop an environmental management strategy which includes planting grass on bare surfaces in the compound, planting trees in the compound to act as sheds and wind breakers and ensure effective management of the surface water run off through devising means of harvesting water from the roofs. This was done in a bid ensure good practice of environmental sustainability in the schools and indeed many schools heeded to this call.

### **Theoretical Perspective**

This research was grounded on the transformational curriculum theory as postulated by Jan Parker (Parker, 2003), which emphasizes the importance of engaging students in designing



their own interacting aspects of knowledge, action and self. The theory holds that a transformational curriculum which engages the student's love for knowledge as well as reinspire the teacher, develops the student into a mature and critical self thus leading to transformation (Ssozi, 2012).

In line with the topic of the study, theoretically when the school curriculum provides environmental literacy, this should transform the learners who acquire the environmental literacy competencies to change their practices to be in line with environmental sustainability. In my view, if schools could champion transformational curricula by giving emphasis to a sustainable and holistic education that pays keen attention to environmental issues embedded in ESD in the school curricula, it would make environmental education more relevant and more meaningful than it actually is as far as environmental competence transformation of the learners in terms of what they learn in school about the environment to pro-environmental practices.

### **Conceptual Perspective**

The variables of this study: Environmental Literacy and Practice of Environmental Sustainability have been conceptualized variously as discussed below.

Environment consist of abiotic and biotic components (including man) interacting with one another (Ero, 1997). Fadamiro (1995) holds that the term environment refers to all external conditions and influences that affect the life and development of organisms. In line with these definitions, environment can refer to the physical conditions, features and structure both natural and artificial that affect the life and development of both plant and animal organisms.

The traditional definition of literacy is being able to read and write or being knowledgeable in a certain subject (Literacy, 2018). Environmental Literacy (EL) therefore is not just knowledge of environmental and ecological concepts but it incooperates a set of skills

profound to carry out sustainable behaviors, attitude and concern for the environment which then result into profound motivation to perform environmental behaviors (Fah & Sirisena, 2014). An environmentally literate person is one who uses critical thinking, problem solving, and effective decision-making skills to weigh all sides of an environmental issue (McBeth, 1997). In the thinking of Roth (1992), environmental literacy refers to a person's capacity to perceive and interpret the state of the environmental systems and the appropriate action to manage, restore or improve those systems (Roth, 1992).

Putting the above definitions in consideration therefore, this study considers EL to be the cognitively acquired knowledge, positive attitudes towards the environment and pro-environmental behaviors for an individual to interpret the environmental systems and take appropriate action to manage, restore or improve those systems.

According to Morelli (2011), Environmental Sustainability (ES) refers to meeting the resource and service needs of current and future generations without compromising the health of the ecosystems that provide them.

ES in this study means a situation where people interact with their environment to meet their needs without causing such impact that will compromise environment's ability to enable the future generations to also meet their needs.

A number of Environmental Literacy (EL) frameworks have been published, each of which has reflected the UNESCO's environmental objectives by addressing awareness, affective disposition and participation in the environment. The EL attributes addressed in this frameworks point to knowledge or cognitive skills, attitudes and behavior dimensions of EL respectively (Hollweg, et al, 2011)

As observed by Scott (2002), none of us quite learn only what teachers teach, it is much more than this; the meanings we make of the experiences we go through always depends on context and learning accrues from personally and socially constructed interpretation. In other words, what we make of it. What we learn is down to us and our social interactions.

The political leadership need to put forth sustainable environmental management practice policies by drafting inclusive development strategy and laws of their areas of jurisdiction, and availing sufficient resources to manage waste (Aijuka, 2017). This will see the citizens avoid the tough times especially during the rainy season when there is too much bad odor because of poor waste disposal, flooding among others. This implies that apart from just environmental literacy, the environmental laws and resources also have an implication of the level of practice of environmental sustainability

As observed by Walid and Stibbe (2009), the mere knowledge of an environmentally unsustainable trajectory of human activities in terms of practice, is insufficient to change that path, instead, through learning, the students need to undertake education for sustainability to have the knowledge and behaviors necessary to be effective change agents to this trend by putting these attributes into practice to ensure that the environment can serve us now as well as the future generations to come.

Brundtland (1987) holds that, for practices of environmental sustainability to bring about maintenance of ecological integrity, all of earth's environmental systems need to be kept in balance while natural resources within them are consumed by humans at a rate where they are able to replenish themselves. Keeping the environmental systems in balance calls for a number of measures among which include proper disposal of both liquid and solid waste so as not to

contaminate the air, the water and the soils on whose quality we all depend either directly or indirectly.

### **Statement of the Problem**

The aims of secondary education in Uganda is to provide students with basic skills and knowledge to exploit the environment for self and national development in a sustainable way, putting the future generations in consideration. (MoES, 2013). The education system ought to provide the needed environmental literacy for students to make intelligent decisions about their actions in the environment as well as lead to practices that are environmentally sustainable.

Practices such as indiscriminate cutting down of trees, poor disposal of human and household waste, including polythene and plastic materials among others, are evident in Uganda and specifically in Busia District. (NEMA, 2005, 2016). Moreover, poor crop yields arising from unsustainable farming practices are also a very common phenomena. Statistics show that there is a high level of environmental degradation in Uganda arising from poor waste disposal, forest destruction as well as unsustainable farming practices that threaten soil fertility (MWE, 2016, GoU (2017). Busia District suffers from poor waste disposal, indiscriminate cutting of trees , poor farming methods, over fishing, and so on, a sign that possibly schools are not educating the students to acquire environmental literacy or that this literacy is not transforming the learners to a level of being able to put it into practice, a reason for this study.

There is need to investigate how environmental literacy that is supposed to be offered in the schools transforms the students to practices of environmental sustainability. Unless this is done the unsustainable practices in relation to the environment may continue to escalate. This study may fill the gap in a way that when the secondary school managers and administrators know the level of environmental literacy among their students in comparison with the level of

practice of environmental sustainability, they can be able to adjust the school learning experiences accordingly to achieve the desired levels of both environmental literacy and practice of environmental sustainability.

### **General Objective**

The purpose of this study was to determine the influence of environmental literacy on the practice of environmental sustainability among secondary school students in Busia District.

### **Specific Objectives**

The study was guided by the following three specific objectives:

1. To determine the level of Environmental Literacy among the secondary school students in Busia District
2. To determine the level of practice of Environmental Sustainability among the secondary school students in Busia District.
3. To determine the relationship between the level of environmental literacy and the practice of environmental sustainability among the secondary school students in Busia District

### **Research Questions**

1. What is the level of Environmental Literacy among the secondary school students in Busia District?
2. What is the level of practice of Environmental Sustainability among the secondary school students in Busia District?

### **Hypothesis**

**HA1:** There is a statistically significant relationship between the level of Environmental Literacy and the Practice of Environmental Sustainability among the secondary school students in Busia District

**Scope**

The study was carried out in both public and private secondary schools in Busia District Uganda.

According to the MoESTS (2015), in Busia District there were 13 government aided secondary schools and 17 private secondary schools of which 3 were in Samia Bugwe South and the rest in Samia Bugwe North counties. The student enrollment in Busia District in 2015 was 16,556 students (MoESTS, 2015); these numbers were used in the study as the population because they were the latest available statistics

The study focused on the environmental literacy in terms of the environmental knowledge, attitudes towards, and behaviors in the environment possessed by secondary school in content areas of waste disposal, grass/tree planting and cutting and sustainable farming methods.

The study was carried out in a period of one month in the month of June 2018.

**Significance of the Study**

The Ministry of Education and Sports (MoES) planning departments may benefit in the findings of this study by recognizing the relationship between the environmental literacy and practice of environmental sustainability in the schools and the community and also appreciating more, the role of environmental education in the secondary school which is later translated to the community.

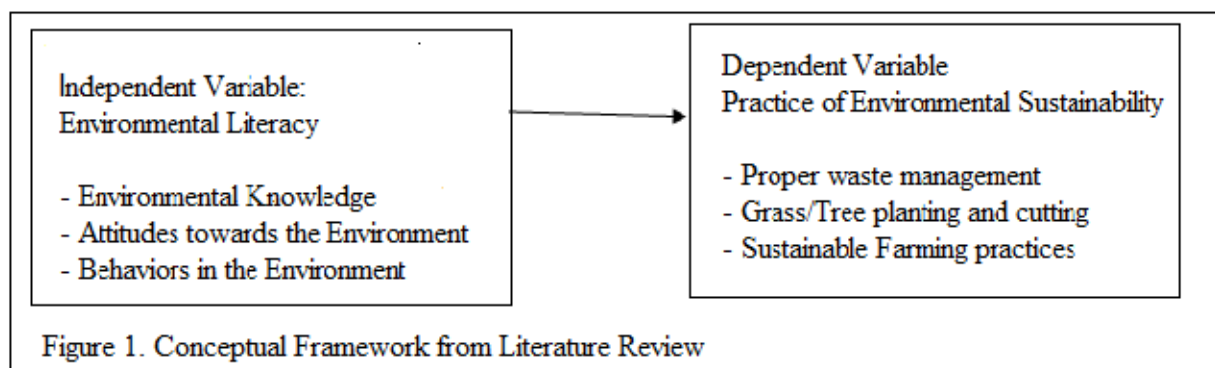
The National Curriculum Development Centre (NCDC) may benefit in the findings of this study by getting in position to link environmental literacy and practice of environmental sustainability in the secondary school curriculum to be learnt by the secondary school students to guide their practices while still in school and even after graduating from school.

The secondary school managers may benefit from the findings of this study by way of appreciating the importance of emphasizing the practice of the environmental literacy competences acquired in the classrooms.

The farmers may benefit from the findings of this study by recognizing the significance of environmental education for better farming practices to improve farm yields.

The findings of this study may also add to the body of literature in environmental literacy and environmental sustainability.

### Conceptual Framework



The two variables of the study are Environmental Literacy (EL) and the Practice of Environmental Sustainability as the independent and dependent variables respectively.

The environmental literacy which is majorly acquired through formal education, ideally is supposed to be translated into the practice of environmental sustainability both in the school and outside the school. Environmental literacy has a number of dimensions among which include knowledge, attitudes and behavior (Roth, 1992) and among other content domains, environmental literacy can be gained in proper waste management, tree/grass planting and cutting and sustainable farming practices.

The practice of environmental sustainability as the dependent variable was therefore considered in regards to waste disposal, tree/grass planting and cutting as well as sustainable farming practices.

Waste was considered as any item, material or substance that one considers useless and worthless at a given time and place. (Mugambwa, 2009). Trees were considered to be any plant that grows typically over four meters with a single trunk and branches which grow in circumference with age and grass is any plant characterized by leaves arising from the nodes in the stem and leaf bases that wrap around the stem and grown as ground cover. (Wikitionary, 2018)

When one acquires EE, he/she is supposed to improve environmental literacy, this is not only knowledge but also better attitude toward the environment and pro-environmental behaviors (Spinola, 2015). When one has a high level of environmental literacy, that is, high level of environmental knowledge, high levels of positive attitudes toward the environment and high levels of pro-environment behavior, he or she is expected to transform these into high level of practice of environmental sustainability



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