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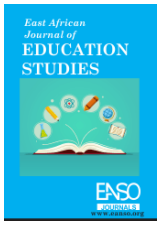

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Original Article

The Influence of Environmental Education on Conservation in Secondary Schools in Mvomero District

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ABSTRACT

Environmental education for a long time has been viewed as a critical step in the process of creating an environmentally literate population, leading to the development of knowledge, changing attitudes and behaviours of a population and as a process to a more environmentally sustainable way of life. The purpose of this study was to investigating the influence of environmental education on conservation in secondary schools in Mvomero District. The study employed mixed research approach and a survey research design. Sample size used on this study was 102 respondents. This study was used simple random sampling technique in selection of form four students and purposive sampling technique in selection of teachers. Primary data was collected through questionnaire and focus group discussion while secondary data was collected through document reviews. The study findings revealed that majority of the respondent's equivalent to 52% strongly agreed that EE has to a large or moderate extent enhanced their knowledge and skills in environmental matters through active learning and demonstration. 35.7% of the respondents indicated that EE had knowledge on the roles of environmental education toward environmental conservations in secondary schools. The study recommends that, there should be constant monitoring and evaluation of the programme to provide necessary baseline data for benchmarking, adequacy or inadequacy of the syllabus content should be analysed and its overall integration into the curriculum adjusted accordingly, and there is need to ensure appropriate capacity building of implementers so as to realize the intended outcomes and impacts.

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INTRODUCTION

Environmental education for a long time has been viewed as a critical step in the process of creating an environmentally literate population, leading to the development of knowledge, changing attitudes, and behaviours of a population and as a process to a more environmentally sustainable way of life (Holt, 2003). Erhabor and Don (2016) viewed environmental education as a process of infusing environmental content into educational system in order to enhance the awareness of the people on environmental issues at all levels of education. It is used in bringing some solutions to the deterioration relationship between man and the environment that result into conservation and sustainable management of the resources in the environment.

A number of seminars and conferences at local, regional, and international levels have been organized specifically to address the issue of environment. One of them is the 1977 Tbilisi Declaration that aimed at fostering environmental awareness, provide opportunities and skills for environmental protection, and create new patterns of behaviour (UNESCO-UNEP, 1978). The declaration's primary objectives include increasing awareness, building knowledge, changing attitudes, and encouraging participation in pro-environmental behaviours. Till now such objectives remain important goals of environmental education efforts around the world.

The most notable so far is Agenda 21 of the UN conference, which was held in Rio de Janeiro in 1992, generally known as "Earth Summit", 1992). Agenda 21 is an action plan for sustainable development for the world in the 21st century. So far, many definitions have been given to sustainable development, but the one most circulated is "meeting the needs of the present without compromising the ability of future generations to meet their needs" (UNCED, 1992).

Indeed, Agenda 21 focuses on environmental protection, which is LinkedIn harmony with economic objectives and social justice. The document states, emphatically, the fact that people's level of knowledge, attitudes, values, and practices are critical to the state of their environment, and how they utilize their environment for their own well-being (Al-Newashi, 2002).

In March 2006, African Ministers of Education made a commitment to implement the UN Decade of Education for Sustainable Development (UNDESD) in the context of the Second Decade on Education in Africa. Their statement of commitment emphasizes the need to situate UNDESD activities within key policy initiatives such as the Millennium Development Goals, the United Nations Declaration on the New Partnership for African Development (NEPAD), the African Union's Second Decade on Education Plan of Action, and the Dakar Framework for Action aimed at achieving the Education for All goals. Since the DESD launch, nations and regions across the world have engaged in developing ESD strategies and frameworks or reviewing existing ones (UNESCO, 2009b).

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Like many other countries, Tanzania as one of the member states in international conferences on the environment, has responded to global concern about the environment and international declarations by including environmental education in the school curriculum at all levels from the 1990's (Kimaryo, 2011). Since then, it has been taught in secondary schools as an infusion of several environmental education themes into some of existing school subjects specifically geography in the country. For instance, concepts related to environmental education such as elements of weather, climate, natural regions, importance of weather, human activities water sources, power use and environmental issues and management are suggested in the geography syllabus (TIE, 2011).

The ultimate aim of environmental education in secondary schools is for awareness-raising and finding solutions for issues and problems on environment (Kimaru, et al. 2014). Examples of such issues and problems include, natural and human-made environmental issues and problems, like drought, floods, poor sanitation, lack of clean and safe water, land degradation due to poor agricultural practices, unsustainable ways of harvesting natural resources like mining, forests and fishing, environmental pollution, loss of biodiversity are threatening the life support system of the environment (MoEVT, 2007). These problems are a result of various factors like population pressure, poor agricultural practices, and high rate of urbanization (Sheridan, 2004).

Traditional evaluations of environmental education have focused on knowledge gains and attitude changes with the assumption that a linear relationship exists between increased environmental knowledge and positive environmental behaviour (Darner, 2009). Recent studies have shown that increased knowledge on environmental education alone does not help in environmental conservation and quality (Ajzen, 2002).

The study by Hines, *et al*., (1987) have found that aspects of environmental education such as cognitive knowledge, positive attitudes towards the environment, and intention to act, were causally related to environmental conservation and this is only in short term. On other hand, it is more difficult to measure such relationship years after they have completed their secondary education (Hanneman, 2013). The reason for this is that, student action skills can be developed through active participation in environment-based problem-solving programs incorporated directly into a school curriculum.

Previous studies in Tanzania have been done on teachers' awareness, attitudes, and participation in environmental education in other different districts. For instance, the study by Kira and Kafanabo (2015) examined secondary school teachers' knowledge level of the concepts of environmental education. Other study by Kimaryo (2011) had investigated the integrating environmental education in primary school education in Tanzania with a focus on teachers' perceptions and teaching practices.

Environmental conservation efforts in Mvomero District have been implemented in order to ensure quality and liveable environments for people. One of the initiatives is through inclusion of environmental education as a vital component of school curriculum as a way of investing in youth so that they can be capable custodians of our environment for the sake of conservation and sustainability (Gachuru, 2010). The youth have great potential which can only be ignored at our nation's peril.

In spite of such efforts, the full quality outcome of interventions towards environmental conservation has not been realized. Moreover, the influence of environmental education in the promotion of environmental conservation is less known. This raises a question on whether there are students' understandings on the concept of environmental education is practical or not. Therefore, this study attempts to assess on the influence of environmental

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education in the conservation of the environment in secondary schools in Mvomero District.

RESEARCH METHODOLOGY

This section presents the methodology that guided the study. The study used mixed research approach and survey research design. The sample size of this study was 221 respondents that include 102 ordinary teachers and 119 students. Questionnaires were used to collect information from ordinary teachers and focus group discussions were used to collect information from students. Quantitative data were analysed by using descriptive statistics while qualitative data were analysed through thematic analysis.

RESEARCH FINDING AND DISCUSSION

The general objective of this study is to assess the influence of environmental education on environmental conservation in secondary schools in Mvomero district. This study was guided by two specific objectives namely to examine approaches and strategies used in integration and implementation of environmental education in secondary schools towards environmental conservations in secondary schools, and to assess the roles of environmental education toward environmental conservations in secondary schools.

Approaches and Strategies Used in Integration and Implementation of Environmental Education

Active Learning and Demonstration

To answer this research question, it was necessary to determine active learning and demonstration. *Table 1* below, indicates that majorities of respondents in the study area strongly agree by (52%), agree (23.5%), neutral (13.1%) and strongly disagree were (11.3%) in the study area. In this regard, EE in secondary schools should be geared more towards the acquisition and enhancement of knowledge and skills on environmental matters among the respondents. Therefore, the general awareness of the secondary school management, teachers, and students on the importance of environmental management is high. These findings are reflecting the statement of the Education and Training policy which directs the learning of environmental education for the sustainable life styles of the learners resulting into protection and conservation of our environment (MoEVT, 2014). Moreover, the study done by Kimaryo (2011) show that, teachers are aware of the importance of environmental management as the policy requests them to enhance it.

Table 1: Active Learning and Demonstration

Active learning	Frequency	Percentage (%)
Strongly agree	115	52
Agree	52	23.5
Neutral	29	13.1
Strongly disagree	25	11.3
Total	**221**	**100.0**

Source: Field Data, 2022

Incorporation of action elements into programs Direct Subsample studies often involved at least one, if not multiple, environmental action components as integral to the program. Program designs deliberately employed action-oriented learning strategies and approaches, including citizen science, service learning, project-based learning, problem-based learning, place-based learning, and issue investigation. Often the action component explicitly tackled environmental challenges through direct physical environmental improvements to degraded land, water, air, and species in the form of

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activities such as removing invasive plant species and replacing with natives; organizing and implementing litter clean-ups; and performing water quality tests and, subsequently, installing complementary filtering wetland systems.

A project-based university course in Australia, for example, included class lectures complemented by field work, such as monitoring and regeneration activities in partnership with a bush care group (Gladstone, et al., 2006). The researchers reported that students increased their knowledge and skills and detailed tangible improvements at the restoration site where, working alongside bush care-group staff, students cleared a large, ecologically important patch of habitat of litter and weeds and planted native seedlings. Another commonly reported form of action was ecological monitoring, wherein participants collected and shared data measured from specific indicators, such as water quality, air quality, or number of species present in an area. In one study, approximately 1000 students in multiple schools across Italy collected roughly 6500 measurements of air quality (Lorenzini & Nali, 2004). The data helped provide an overall picture of air quality in the region and this raised awareness and concern among students and community members.

Role Plays

On the question of role plays as approaches on implementing EE had improved their ability to understand the surroundings, *Table 2* below indicates that majorities of respondents in the study area strongly disagree by (40.3%), agree (24.9%), strongly agree and neutral were (11.8%), and disagree were (11.3%) in the study area.

Table 2: Role Plays

Role plays	**Frequency**	**Percentage (%)**
Strongly agree	26	11.8
Agree	55	24.9
Neutral	26	11.8
Disagree	25	11.3
Strongly disagree	89	40.3
Total	**221**	**100.0**

Source: Field Data, 2022

Similarly, the schools did not have environmental policies. When asked about the policy, teachers sounded ignorant of its existence. The school management, though, indicate that they were aware of the existence of the existence environmental policy as published by the Ministry of Education but they had not made any effort to localize it in their institutions. This is a significant gap regarding implementation of EE on school grounds and over environmental resources. This is because, as Ketlhoilwe (2007) and García-Madruga, et al. (2013) contends, environmental policies are important yard sticks on the evaluation of the success of EE when measured against reflection of EE in school grounds and use of environmental resources. Subsequently, it could be reasoned that schools simply undertake environmental related activities such as litter picking, greening the schools, and daily routines of cleaning the environment randomly and haphazardly as there was no environmental policy to guide systematic responses to environmental concerns in the schools.

Other projects focused on actions with indirect physical or environmental improvements, often with evidence of policy and community engagement outcomes and impacts. Such projects frequently ranged from motivating and supporting inquiries into local environmental issues to sharing data to assist with streamlining conservation efforts; and from guiding development of resource management

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plans for community education purposes to advocating for on-the-ground change. Yet still others included ecological monitoring with the intention of collecting data to share with researchers, scientists, and local, regional, or national agencies or community partners, in service of improving environmental quality and conservation conditions.

Ollervides and Farrell (2007) described university students' sea turtle research and habitat assessment in Mexico, which resulted in submitting a proposal to the Mexican government for a marine protected area, with recommendations for fishing activity zones for resource and ecotourism uses. In Union of the Comoros, East Africa, local residents and scientists collaborated to undertake monitoring activities, resulting in pressure on the local government to initiate legislation protecting critically endangered bats and their habitats, eventually resulting in establishment of a forest reserve (Trewhella et al., 2005). Whether these program-embedded actions involved physically altering or monitoring the environment, or were indirect and focused on policy or community engagement, the results were similar: taking action as an embedded element of the program frequently surfaced and created the opportunity to measure and subsequently report a direct outcome.

Guided Discovery Learning Strategies

Table 3 below indicates that majorities of respondents in the study area disagreed by (40.3%), agreed (23.5%), strongly agreed (13.6%), and neutral and strongly disagree were (11.3%) in the study area. This means that the school system plays the most dominant role in the provision of EE among the respondents. However, efforts should be made to make full use of all the sources in the delivery of EE because each of them can play a vital role.

Table 3: Guided Discovery Learning Strategies

Learning Strategies	**Frequency**	**Percentage (%)**
Strongly agree	30	13.6
Agree	52	23.5
Neutral	25	11.3
Disagree	89	40.3
Strongly disagree	25	11.3
Total	**221**	**100.0**

Source: Field Data, 2022

The study shows that teacher-centred methods are more prominently used in infusing EE in teaching. Despite most teachers acknowledging that student centred methods are most appropriate to teach EE. They contended that time was a significant inhibiting factor such that they were always racing against it to cover the bloated secondary school curriculum within very limited time frame. They also posited that class sizes were as well one of the obstacles towards the use of leaner-centred methods in teaching EE. This is in unison with the findings of Kirmaryo (2011), and García-Madruga et al. (2013) in Tanzania and Kenya respectively. The minority who claimed using students' centred pedagogies in their teaching of environmental issues admitted to the fact that they used them in a very limited way. This was mainly due to the factors pointed out above. However, it should be noted that several authors (Adeolu et al., 2014; Muleya & Kalimaposa, 2014; García-Madruga et al., 2013) stress that in order to produce environmentally responsible graduates; EE should be taught using practical based methods. Notwithstanding this, the results show more inclination of teachers towards theory-based pedagogies. The next section presents and discusses results on the perceptions of teachers

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regarding the impact of infusing EE in teaching on the students.

Intentional, thorough, and innovative measurement and reporting of program outcomes striking feature of several studies that presented evidence of documented, direct outcomes was the thought and preparation dedicated to program reporting and evaluation. Thorough program planning involved taking painstaking care to record quantitative data, such as number of trees planted or amount of trash removed (Uneputty et al., 1998). In several studies, researchers described the ways in which evaluation was an intentional, critical part of program development; this prioritization of evaluation and impact likely facilitated reporting direct outcomes. For example, in their study by Valladares-Padua et al. (2002), they named evaluation as a critical program component and, perhaps relatedly, they reported specific outcomes: the Brazilian environmental education program under study resulted in establishing 11 community agro-forestry nurseries with a yearly mean capacity of 30,000 seedlings. Trewhella et al. (2005) also fore grounded outcomes and impacts of environmental education programs as part of conservation initiatives to address endangered species issues in the western Indian Ocean islands. The researchers discussed program evaluation at length and reported a wealth of quantified data including number of trees planted, population estimates of endangered species based on program monitoring, and number of roosts provided for endangered species.

Investigative Experiential Learning

Table 4 below indicates that majorities of respondents in the study area were neutral by (62%), agree (14.9%), strongly agree were (11.8%) and strongly disagree were (11.3%) in the study area. The respondents were also able to identify the main environmental approaches that had been used in Tanzania today. This calls for further mobilization of students into environmental organizations as vehicles of creating environmental awareness and conservation and deliberate efforts should be made to recognize and reward students' environmental activities which may act as a motivating factor towards creating environmental awareness and sensitization among the respondents.

Table 4: Investigative Experiential Learning

Experiential Learning	**Frequency**	**Percentage (%)**
Strongly agree	26	11.8
Agree	33	14.9
Neutral	137	62
Strongly disagree	25	11.3
Total	**221**	**100.0**

Source: Field Data, 2022

Additionally, students have been reported to waste resources due to the attitude that the school is for the government and she has a lot of money. For example, it was reported that the students were generally of the view that no matter how they used electricity, the Government cannot fail to pay for electricity bills. Furthermore, inactive environmental clubs or lack of them in the schools has been blamed for the unsustainable resource use among students. Clubs are credited for instilling sense of responsibility and actions regarding environmental problems in schools (García-Madruga et al., 2013). In addition, the small number of teachers trained in EE is cited as contributing to lack of action among students. Still, most teachers generally use cleaning of the physical environment, gardening, and vegetation planting as punishment for students and hence the students have been made

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to view greening of the environment in terms of punishment (Ketlhoilwe, 2007). Also, teachers are said to be failing to make students take responsibility regarding cleaning their environment. In this regard, cleaning schedules are made for them and the same teachers strictly supervise cleaning. This makes students to assume that they should only attend to environmental issues under the supervision of the teacher and not through self-initiated action.

Roles of Environmental Education toward Environmental Conservations in Secondary Schools

When the researcher conducts the study, respondents asked if they understand the roles of environmental education toward environmental conservations in secondary schools, the findings from this question are summarized in *Table 5* below, which indicates that promote and manage school infrastructure were (35.7%), act to improve environment (30.3%) while create good learning environment and create skills were (14.5%; 14.5%) respectively and very few were problem solving by (5%).

Table 5: Roles of Environmental Education

Roles of Environmental Education	Frequency	Percentage (%)
Create good learning environment	32	14.5
Promote and manage school infrastructure	79	35.7
Problem solving	11	5
Act to improve environment	67	30.3
Create skills	32	14.5
Total	**221**	**100.0**

Source: Field Data, 2022

Create good learning environment, all students saw the need for having an environmental club in the school. Nevertheless, they all lamented that the club did not exist in their school and that they had never celebrated an environmental day in their time during secondary school. Moreover, most of them could not remember ever going for a school field trip, or simply going out to investigate a local community environmental issue. In view of these assertions, it could be argued that probably the lack of action among students for the environment, is to some extent being influenced by their lack of exposure to aspects that engage them into meaningful actions to inspire them for environmental sustainability (García-Madruga et al., 2013).

Promote and manage school infrastructure, the researcher noted that it was most common during meal breaks for students arbitrarily throw food leftovers and to queue at the taps to wash their dishes whilst water was running continuously without them realizing it is waste. Sinks around the kitchen area were blocked and dirty. Sadly, it had to generally take the initiative of teachers on duty ensure students collected litter and closed taps before they made their way to their classes. In this regard, Sundar (2010) advises that schools must use restrictions on taps like automatic shut offs, and ensure regular maintenance.

Problem solving, the study also sought to find out whether students could participate in cleaning the environment without the supervision of teachers. To this effect, the study discovered that all students believed that they were responsible enough to do the cleaning without the supervision of teachers. This finding is contradictory to the response of teachers. According to the assertions made earlier by

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teachers, students were generally unable to carry out school cleaning without being pushed by teachers. The contradiction could be stemming from the fact that either teachers had overstated the lack of student self-driven action for environmental sustainability or students were being economical with the truth so as to save their image from this author. The latter reason seems more realistic as even the students themselves in the alluded to the fact that they participated in maintaining the environment out of duress from the teachers and felt it was not their responsibility. This is further confirmed by Ketlhoilwe (2007) when he reports that students hate school cleaning.

Act to improve environment, this defeats the observation made by the United States Environmental Protection Agency (EPA) (2015) that schools are to repair water leaks, replace leaky toilets and give priority in preparing learners to be water efficient users. This is one way of transmitting EE goals to instil in learners value for water so as to ensure sustainability of the resource.

Create skills, notwithstanding the observations above, a few respondents made cognizance of the fact that EE has had an influence towards students 'participation in up-keeping the school environment. Associated to this attribute is that environmental education has engineered a positive attitudinal change towards the environment among some learners. This observation concurs with Toili (2007) study on secondary school students 'participation in environmental action in Bungoma County. One of his major findings was that students participated in environmental action majorly because they were coerced into it particularly in their school environment. This is indicative of the limited integration of EE in the school curriculum. However, there is need to set aside more time to EE themes in the syllabus to improve its impact on the respondents. The study showed that the implementation of the integrated EE in the curriculum has not been very effective due to very many constraints particularly in relation to inputs. Therefore, it is unlikely for it to achieve the full projected impact of achieving environmental awareness through the normal education channel. This calls for diversification of sources of disseminating EE knowledge the way it is done in the countries discussed in the literature review.

CONCLUSION AND RECOMMENDATIONS

The influence of environmental education on conservation in secondary schools in Mvomero district is low. High awareness of the secondary school management, teachers, and students over the importance of environmental management education has little effect on their environmental management responsibility. Moreover, the poor role urban schools play in environmental management is attributed by the unpromising methods of teaching used in the schools. In this perspective, environmental management was required to start at school, since it is very complicated, interdisciplinary, and broad program. It has been believed that school especially at the secondary education level, can help to transform the youth as the adults of tomorrow to have sense of possession and become great environmentalists. Then creating a generation which could even change mentality of their relatives and other members of the society that have never attained formal education from depleting environment to biodiversity prolific behaviour.

The study recommend that, there should be constant monitoring and evaluation of the programme to provide necessary baseline data for benchmarking, there should be a bottom up approach in monitoring and evaluation of EE to make sure that it is learner centred and involving all stakeholders, the adequacy or inadequacy of the syllabus content should be analysed and its overall integration into the curriculum adjusted accordingly, and there is need to ensure appropriate capacity building of implementers so as to realize the intended outcomes and impacts.

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