

Assessing the Implementation of Environmental and Sustainability Education: The Case of Robe College of Teacher Education

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Abstract

This study aimed at assessing the implementation of environmental and sustainability education by Robe College of Teacher Education staff in Oromia Regional State, Ethiopia. The study sought to assess (1) staff perception towards environmental and sustainability education; (2) teaching strategies used by teachers while implementing environmental and sustainability education (3) environmental issues addressed during environmental and sustainability education; and, (4) factors hindering the implementation of environmental and sustainability education. A mixed research methods were employed to collect data for the study. Household survey, key informant interview and personal observation were the sources of data. Five management committee members, thirty teachers selected from all the departments, and five work team leaders were included in the sample. Descriptive statistics (frequencies, percentages, mean and standard deviation) was employed for data analysis using statistical package for social sciences (SPSS) software version 20. Result revealed that although the staff had positive perception towards environmental issues, and there were some effort to create awareness; respondents' understanding was found to be low, and practices of environmental measures had great variations. The interview and observation results were consistent with the quantitative findings. In short, the result implies that the staff need to be better familiarized with the notion of environment and sustainability; the teacher education curriculum needs to be revisited. Besides, there should be an effective law enforcement mechanism for effective implementation of environmental activities.

Keywords: *environment, environmental sustainability, sustainability education, implementation of environmental and sustainability education*

Introduction

The importance attached to education for sustainable development has grown over the past three decades or so throughout the world. The Rio Summit is largely responsible for the term “education for sustainable development (ESD)” which is now used more broadly than “environmental education”. Sustainability in higher education is encouraged by governments in many nations, particularly in Europe and several emerging nations, and has resulted in profound ideals in many fields and professions that characterize complex and interdisciplinary nature having social, economic and environmental relevance (Stevenson, 2007). According to Kasimov et al., (2002), resolutions made in the Ministerial Conference on the Environment and the Global Summit in Johannesburg strongly indicate that ESD should be one of the top priorities for the international community. Buckler and Creech (2014) also suggested that the United Nations

decade for Education for Sustainable Development has made educational strategies to support the social transition to sustainability through the formal education system, as well as non-formal and informal learning environment. Furthermore, it was indicated that education for sustainability must emphasize the connectivity of many stakeholders thus; teachers worldwide have started sustainability education projects at the local level focusing on a variety of topics, and civil society partners have developed initiatives to embed education for sustainable development in non-formal settings and educational institutions.

Education for sustainable development, as explained by Tibaijuka (2007), continues to set up thorough teaching and learning procedures that place an emphasis on an interdisciplinary and holistic approach that encourages critical thinking and creativity in education. It promotes this goal based on the idea that human behavior may be changed to stop environmental destruction tendencies. Cooper et al.'s (2000) study also has revealed that the involvement of students in active teaching learning process and the participation of societies in environmental issues lead to considerable improvement in retention of knowledge. And further, it enhances motivation and results in higher order learning and development of practical skills. This implies that professionals' participation in active learning processes and societies' involvement in environmental concerns significantly boost students' knowledge and motivation, which in turn can bring about higher order thinking, better experience and good practical skills.

However, as reported by scholars such as Didham and Ofei-Manu, 2018 and Jickling and Wals, 2008, education for sustainability can assure human kind's survival in the future. Besides, Ockwell et al. (2010) argue that maintaining a harmonious balance between humans and nature has been one of modern society's greatest challenges. While describing the contribution of education in the context of sustainability, they further argued that education in developing countries is not saving their respective nations. This shows that despite the fact that the problems' scope varies from local to global, modern human society is grappling with serious social, economic, and physical environmental issues like climate change, depletion of natural resources, and biodiversity loss. There is an indication that the issue of environmental sustainability hasn't been fully incorporated into the curriculum so that it might not be well understood by the majority in educational institutions. Tal and Peled (2017) confirmed that increased un-sustainable lifestyles and environmental issues could be resulted from the difficulty of integrating environmental and sustainability education in educational institutions.

In Ethiopia, policy-wise, the education and training Policy of 1994 gives due emphasis to environmental and sustainability issues both in its vision and objectives by focusing on developing students' creative, productive, and problem-solving ability and skills, and addressing the needs and problems of the society (Serageldin et al., 1998). Thus, it was hoped to produce citizens who possess national and international outlook on the environmental issues. This is an indication that education has been given a key role policy-wise in solving problems and bringing sustainable development to Ethiopia. Specifically, Aklilu (2012) noted that teacher education colleges are in the position to provide a more coherent setting to integrate place-based environmental and development issues. They can play a significant role in enhancing the culture

of critical thinking among the various segments of the society although issues centering on environmental education and sustainability are sparsely incorporated. Moreover, through critical observation it could be noticed that some teachers in the educational institutions reduce the process of teaching and learning to a one focusing on transferring knowledge written in curricula materials into their students' mind. Against this backdrop, this study seeks to assess the implementation of environmental and sustainability education among college staff.

Statement of the Problem

The integration of education for sustainable development into teacher education has so far achieved only limited success; internationally only very few teachers have had any exposure in their training to sustainability issues (Gough, 2016).

In Ethiopia, several researchers (e.g. Aklilu, 2006; Gebrekidan, 2006; Girma, 1994) conducted studies on teachers' awareness and attitudes toward environmental and sustainability issues in Ethiopia coming up with different results. For instance, Girma (1994) pointed out that nearly half of the trainees in the teacher education institutions of Ethiopia who took part in the study primarily aimed at assessing the integration of environmental education had only very little mastery of environmental knowledge. Similarly, Gebrekidan (2006) reported that, in terms of training, there was a severe shortage of teachers with adequate training on issues related to the environment. Another study conducted by Dalelo (2011) identified that one of the most obvious gaps in environmental challenges is the underdeveloped integration of climate change education in the nation's formal education system. Moreover, the author has made clear that poor learning outcomes are frequently the result of excessively bookish and didactic modes of instruction, which are frequently caused by low levels of practical engagement on the part of educational institutions, a lack of teacher preparation, and an exam-driven system. The study also indicated that lack of institutional capacity and a shortage of trained human resources which had a meaning for low-level implementation of sustainability education are other obstacles. In other words, as Ethiopia aspires to achieve sustainable development by putting its people at the core of the three pillars (social, economic, and environmental), the education system has a considerable lack and needs a system that enhances pedagogy and gives students the chance to learn about the state of the nation's environmental issues, the causes of those issues, and strategies to encourage remedies through environmental sustainability education.

The studies conducted in Ethiopia indicate that while the significance of teacher education has been recognized, at least at policy level, as a key factor in implementing environmental and sustainability education system, there is a recognizable lack of awareness and attitudinal differences of the complex inter-relationship between environment and education as the major factor contributing to the implementation of social, economic, and bio-physical environmental problems prevailing in Ethiopia. In addition, previous studies (e.g. Gebrekidan, 2006; Girma, 1994) concentrated more on exploring teachers' understandings and awareness of education for sustainable development in general terms. Practical experience and understanding emerged from the studies show the existence of gaps between the intended environmental and sustainability education goals and what is being practiced in educational organizations. Particularly, at Robe

College of Teachers Education (based on informal discussion with some staff and practical observation), the College community has significantly conflicting understanding on environmental and sustainability education. Workers lack a grasp of environmental and sustainability education, including its socio-economic benefits and necessity. Furthermore, many of the teaching methods employed by teachers to teach students are conceptual and rarely practiced. This, in turn, has a substantial impact on graduates' ability to illustrate the importance of environmental and sustainability education in the bio-physical and socio-economic environment of their local community. Besides, this problem is not recently studied and it was difficult to find empirical evidence on staff's awareness, perceptions, and practical implementation of environmental and sustainability education strategies at college level.

Objective and Research Questions

Because environmental issue is among global concerns and its all-time study is valuable, this Study attempts to assess the implementation of environmental and sustainability education strategies particularly at Robe College of Teacher Education (CTE) in Oromia Regional State, Ethiopia. Therefore, the study aimed to answer the following specific research questions: (1) How do the College staff perceive environmental and sustainability education? (2) What teaching strategies do teachers use in implementing environmental and sustainability education? (3) What practices related to social, economic, and biophysical environmental issues indicated environmental sustainability strategies in the College? (4) What are the hindering factors and, in turn, solutions for the implementation of environmental and sustainability education strategies in the College?

Literature Review

Conceptual Overview: Environmental Education, Education for Sustainable Development and Education for Sustainability

Environmental Education: the term “environmental education” first appeared toward the end of the 1960s and is generally used to describe any educational activity (conducted in or outside of the classroom). It aims to impart knowledge about the natural and social environments, encourage respect for the environment and fellow humans, and provide instruction in working to improve both (Tal, 2017). We teach students that they are a part of or apart from the natural world by what is included in or deleted from the curriculum. Stapp et al. (1969) stated that environmental education should be an integral part of the education process. It aims at practical problems of an interdisciplinary character; build a sense of values; and contribute to public wellbeing. The author further explains that the main focus of environmental education should be on the learners' initiative, their participation in activities, and guidance from both the current and upcoming topics of concern. However, interdisciplinary education started to gain widespread acceptance in the 1980s.

Education for Sustainable Development: the Brundtland Commission (formerly the World Commission on Environment and Development) defined sustainable development as development that meets the needs of the present without compromising the ability of future generation to meet their own needs (Brundtland et al., 1987). This concept recognized that while

development may be required to satisfy human needs and enhance quality of life, it must not be done at the expense of the environment's ability to support both current and future requirements. Hence, the notion of sustainability evolved in the 1990s and it involved consideration of how current environmental actions may influence future generations emphasizing that each nation must determine its own appropriate path (Tilbury, 1995). More recently, education for sustainable development, which is based the idea of education for sustainability (EfS) was developed and broadly incorporated democratic values, civil cooperation, social values, and environmental education components; and that can be considered as the contemporary face of environmental education; and in the words of Sauvé (2005) as the path that the world needs to follow.

One of the goals of education for sustainable development is to prepare students for an active role in a society that places a priority on sustainability. It is argued that 1970s and 1980s were considered as turning point for public concern about the environment. These years demonstrated increased effort to integrate environmental programs into their educational systems at all levels. Their programs also aimed at producing an informed citizenry, who care about the future of the planet and engage in appropriate pro-environmental behaviors (Palmer, 1998).

Education for Sustainability: Wals (2014) argued that an important goal of sustainable development is to get a thorough grasp of the sustainability challenges that are at stake, both now and in the future, in the context of active citizenship in society although, because of how quickly and constantly the world changes, what we consider today may not be so tomorrow. Because sustainability issues, as noted by Lambrechts et al. (2013), are characterized by complexity and uncertainty. Education for sustainable development must evolve in order to be able to provide the skills and competencies that enable it to deal with this complexity and uncertainty. As a result, education for sustainable development calls for societies to be flexible, adaptive, and resilient. Based on this, various levels of education for sustainable development related works are being carried out at the global level. For instance, the United Nations Economic Commission for Europe (UNECE) Strategy for education for sustainable development endorsed by UNECE member states in 2005 as an operational tool to achieve its goal commits governments to integrate sustainable development concepts into their formal, informal and non-formal education systems, and is currently being implemented in a large number of European Union states (Jucker & Nuoffer, 2015).

Higher Education's Role in Environmental and Sustainability Education

The emphasis of higher education institutions should be to promote interdisciplinary thinking and analysis, which is the basis of sustainable development. This can be done by teaching the more complex interrelations between economic, social and environmental concepts. This is being done in several countries at the tertiary level in terms of the concept of sustainable development within particular academic disciplines and in terms of the institutions' day-to-day operations (Zervakis & Wahlers, 2007). Sustainability education must go beyond teaching environmental problems and the three pillars and need to include a more integrated set of

principles (Gibson, 2006), which better reflect the interdisciplinary nature of the concept and the need to address tradeoffs between environmental, economic and social outcomes.

The role of higher education institutions with regard to environmental sustainability initiatives is becoming more and more common as environmental sustainability becomes a global issue of rising importance. Colleges and universities must actively contribute to the sustainability movement as their purpose is to educate society's citizens. Even if students are accustomed to their surroundings, each university is distinct and has its own culture, approach, and geographic region that it can solve concerns and challenges pertaining to the local as well as the national and international community by using their current expertise and skilled people. According to Ram (2014), by creating strong regional information networks, colleges and universities can share information and may encourage respect for human rights and friendly neighborhood relationships. This indicates that they have a responsibility and a right to point out any issues. They can actively promote environmental balance by developing instruments to address these complex social, cultural, and environmental issues. In short, teaching program, research and community service activities should all contribute to the establishment of sustainable education.

Teaching Program

The framework of the curricula in the teaching program should include the necessary information regarding environmental issues. Dresner and Gill (1994) argue that young students require the greatest ability to educate the public about the state of the environment today outside the classroom. Thus, students should become familiar with all the knowledge and abilities pertaining to the environment. The curriculum ought to inspire students to get involved and address environmental issues. In addition, as noted by Erdogan and Uşak (2009), teaching and learning outside of the classroom as a part of extracurricular activities or non-formal activities offers opportunities to develop environmental awareness, environmental consciousness, and environmental responsibility. It has a critical position in the fields of environmental education and education for sustainable development.

Research

Higher education is not complete without research. Research is an investigative tool for learning new facts or seeking out novel concepts for the advancement of society and an individual. Higher education research, according to Ayeni (2010), is regarded as one of the most potent tools for environmental development worldwide, particularly in the promotion of healthy environment, the sustainability of resources, and the conservation of non-renewable resources for the benefit of society and mankind. This indicates that higher education research must have an impact on policy that would help society's transition to sustainable way of living. Therefore, scientific studies conducted on issues related to environmental sustainability in higher education institutions are particularly pertinent to both local and regional development processes as well as the national science systems.

Community Services

In order to improve the ability for research and teaching, and to build capacity to provide an appropriate solution to the problem in society, higher education institutions must establish long lasting relationships between academic institutions and communities (Kerr, 2001). Such initiatives by higher education institutions are crucial to the development of communities. Higher education institutions must engage in community-based research if they are to support a robust knowledge-based economy in their nations. Increased productivity and income from these activities can help nations make significant strides in advancing their social, economic, scientific, technical, and political developments. Stevenson (2007) argues that educational institutions can help students become more competent and knowledgeable with the demands of their societies that are supportive of sustainable development. In addition, according to Jadhav et al. (2014), students of today have to be thought to be the generation that cares the most about the environment, and students from which future leaders in the community will be drawn.

Environmental and sustainability education: Potential for people's empowerment

Environmental education encourages citizens to make wise decisions about their environmental behavior based on the awareness, information, skills, and attitudes instilled in them (Walker, 1997). The author noted that as a multidisciplinary field that draws from the social, physical, and biological sciences, the discipline uses a variety of methods and resources. To achieve its objectives, it relies on both formal and informal teaching techniques which are ultimately helpful in motivating citizens to take informed decisions that are beneficial to the environment and development.

Fien and Tilbury (2002) claim that environmental education can be an approach that bridges a variety of learning styles from a variety of nontraditional, multiple intelligences like naturalistic, interpersonal, or intrapersonal intelligences. The researchers further argue that the methodology and objectives of environmental and sustainability education can be incorporated into Agenda 21's goals for sustainable development in education, and education that emphasizes sustainable development and critical thought that has a higher chance of success. Hence, its nature makes it an ideal strategy for development generally as well as the improvement of teachers' and students' knowledge and skills regarding environmental issues. Notably, Kollmuss and Agyeman (2002) state that environmental and sustainability education can empower communities to cultivate, conserve, and thereby maintain healthy interplay between elements in the overall process of a system. It can also play a significant role in achieving desired behavioral change by educating people about the biophysical and socioeconomic environment, equipping them with necessary knowledge and skills for manipulating it, and promoting positive environmental behaviors.

Research Methodology

Description of the Study Area: The study was conducted at Robe College of Teachers Education which is located in Robe town of Bale zone, Oromia regional state. The study area is located at about 432 km away from Addis Ababa, Ethiopia's capital.

Methodology: This Study employed a mixed-method research design in order to gather relevant data about the practicability and come to reliable conclusions. A mixed research approach was employed where the qualitative approach helped to hear the voices and sense the feelings of respondents. Similarly, the quantitative approach was used to obtain detailed information and statistically analyze survey responses. According to Creswell (2003), a mixed research approach has come of age since the mid-1990s and also referred to as a multi-modal design and it is a way of capitalizing on the value of both quantitative and qualitative methods. In addition, Morse and Niehaus (2009) define mixed method research design as being concerned with the use of two or more research methods in a single study, when one of these methods is not complete in itself. Basing this, this Study also incorporated qualitative and quantitative methods to obtain in-depth information.

Sampling procedures: For the selection of survey participants, eleven departments in the college were purposefully included. Thus, out of a total of 70 academic staff, 30 instructors were selected through simple random probability sampling technique. Besides, 5 management committee members, 5 supportive staff work team coordinators and 2 club coordinators were included in the study using purposive non-probability sampling technique for the purpose of interviewing.

Data collection methods: the study used household survey questionnaire (both open-ended and close-ended questions), interviews, and personal observation to gather primary data. For the close-ended survey questionnaire, a true/false item, multiple choice items, and statements with a response format of five points Likert Scales were used to identify the sources of knowledge, the teaching strategies, and factors hindering the implementation of environmental activities; and statements which reflect practical activities were used to assess environmental and sustainability education issues. The content validity of the survey questionnaire was scholarly assessed by the colleagues and its reliability was determined by conducting a pilot study before the actual use. Finally, the results of data collected from household surveys, interviews, and observations were triangulated. In addition, to collect qualitative data, the researcher developed eight key questions and carried out interviews with management committee members, work team coordinators and the club coordinators of the college. The interview, which lasted for 20 minutes (on average) with each interviewee, was conducted in Afan Oromo and finally translated to English for data analysis. Moreover, the researcher used document analysis method to collect and analyze secondary data.

Data analysis methods: the qualitative data were discussed in text to explain the study's findings whereas the quantitative data were analyzed using the Statistical Packages for Social Sciences (SPSS-20 Version), and descriptive statistics such as frequencies, percentages, means and standard deviation were used to summarize, describe and interpret the study findings.

Ethical considerations: the researcher has clearly stated the purpose of the study and its benefit for the institution and the nation as a whole, kept the anonymity of participants and

confidentiality of their responses, and respected the human interest and safety of those people who participated in this study. Besides, all the pictures were used in the document with permission.

Results

Survey respondents' profile:

Regarding the respondents' sex and educational background information, among the 30 survey participants, 28 (93.3%) were male and 2 (6.7%) were female; and 27 (90%) had masters' degree (M.A., M.Sc., or M.Ed.) and 3 (10%) had bachelor's degree (B.A., B.Sc., or B.Ed.). This implies that the educational background (level) helped the study process since each respondent was supposed to possess at least good awareness about the issue and thereby could provide information that can enhance the quality of the study.

Concerning interviews, among 10 key informants, 8 were male and 2 were female. Regarding their educational background, both female respondents hold first degree (B.A/B.Sc.) whereas 3 of the male respondents hold second degree (M.A/M.Sc.) and 5 hold first degree (B.A/B.Sc.). The educational background helped the study process in a way that each informant had at least good awareness about the issue and could give information that can enhance the quality of the study.

I. Teachers' understanding and perception towards environmental and sustainability education

Three specific concepts were provided in response to the first fundamental research question. The concepts deal with teachers' perceptions and understandings of environmental and sustainability education.

1. Teachers' understandings about environmental and sustainability education

Three categories of responses were found for the open-ended questions regarding teachers' understandings or awareness of environmental and sustainability education.

First, some respondents had a good understanding of the issue. However, they replied differently. Their responses could be summarized as: environmental and sustainability education is about using resources in a sustainable way in order to benefit the coming generations; it is about educating individuals as to how to use and sustain the environment for the future; it is education about creating a healthy relationship between human living system and the earth as well as environmental responsibility; it is about teaching students to use and conserve about their environment continuously; it is about conservation of the environment; it is education that allows individuals explore environmental problems and engage in actions; it is an education through which we acquire knowledge to conserve natural resources and support the wellbeing of living standard. Second, seventeen respondents had a limited scope understanding. They responded to the concept relating only to using various teaching methods and performing the teaching-learning process in the class. Thirdly, eight respondents revealed that they were unaware of the problem and preferred not to respond to the question.

This was further demonstrated through an interview whereby four key informants described environmental and sustainability education as a form of instruction meant to increase environmental awareness so that our community at large and students in particular can at least gain a better understanding of maintaining environmental resources. The issue was related to environmental protection, according to two informants, in terms of preserving and utilizing resources wisely to secure the survival of the current generation and establish a sustainable future generation. However, one of the respondents specifically described it as a skill focused education and added, “It is a type of education that promotes the ability to solve problems and think about the physical world in a way that prevents humans from having a negative impact on it. Environmental and sustainability education thus impacts critical thinking skills so that they do not contribute to the problems.” Five respondents were unable to comment on the idea behind the problem. This demonstrated the lack of awareness of environmental and sustainability education among many staff members.

2. Teachers’ source of awareness about environmental and sustainability education

Table 1 below presents respondents’ sources of environmental and sustainability awareness.

Table 1: *Respondents source of awareness about environmental sustainability education*

Source of awareness	Mean	Std. Dev.
The content of the course teachers teach	3.93	.74
Other reference books teachers read/use	3.90	1.03
National or local conferences on the issue	2.10	.89

As could be seen in Table 1, the content of the courses that the respondents teach is statistically described by the 3.93 mean, and 0.74 standard deviation. This implies that the source of most respondents possess good understanding of the issue, while other respondents’ sources of understanding were reference books they read about environmental issues, as depicted by the 3.9 mean and 1.03 standard deviations. National or local environmental conferences were the third source of respondents’ understanding of the issue, as shown by 2.1 mean and 0.88 standard deviation. This implies that the content of courses teachers teach are good sources of teachers’ awareness about environmental and sustainability education.

3. Teachers’ attitudes towards teaching environmental and sustainability education

22 (73.3%) of the respondents had positive attitudes toward teaching environmental and sustainability education because they believed that environmental and sustainability education is education about using resources in a sustainable way so as to benefit both the current generation and future generations. Three respondents described that environmental and sustainability education should be seen as a process intended to create a global population. It is concerned about the environment as a whole and the problems it is associated with thus, it encourages toward solutions of the current problems and the prevention of new ones.

Similarly, 8 (80%) of the interviewees were optimistic that the college staff could raise the issue of the significance of environmental and sustainability education and vigorously implement

various activities related to it. Even one of the respondents shared his idea by saying "Our staff can act as a catalyst for environmental and educational reform at our college and in the neighborhood". Another respondent described his emotion as "Most of our teachers and supportive staff," he said "are highly committed that they can enable our students and transform knowledge and experiences regarding environmental issues to the local communities". In addition, another third respondent added "that is the case, although almost all of our staff have no training on this issue. But, as a global environmental problem is creating huge life problem, the local knowledge and experiences we have can help us to implement the environmental activities."

II. Strategies teachers use in implementing environmental and sustainability education

The second basic question of the study refers to the identification of the strategies that teachers use in implementing environmental and sustainability education; thus, two specific concerns (specific teaching methods and ways of integrating the issue into the pedagogical practices) were forwarded to respondents.

Table 2: *Teaching methods applied towards environmental issue*

Teaching Methods Teachers Apply	Mean	Std. Dev.
Holistic	3.67	.66
Lecture	4.00	.69
In-classroom learner-centered	3.93	.91
Field-based	2.47	1.11
Promoting 21st C skills (critical thinking, problem solving, communication and collaboration, IT skills)	2.43	.82
Preparing seminars and short-term trainings	2.00	.64
Through experimental activities	2.37	.85
Encouraging multilateral collaboration among organizations, local communities, scientific communities and NGOs	2.10	1.03

According to Table 2 above, the respondents use a variety of teaching techniques for subjects connected to the environment. As depicted by a mean of 4.00 and a standard deviation of 0.69, the majority of respondents strongly agreed that many lecturers frequently employed the lecture technique. A mean of 3.67 and a standard deviation of 0.66 indicated that many teachers also frequently used holistic approaches where this can be supported by the notion of Larson et al. (2013) describing interdisciplinary and holistic teaching methods for sustainability can include both formal and informal learning. Hence, using an interdisciplinary approach for teaching sustainability can help encapsulate the complexity inherent when integrating ecological, social and economic theory and practice. Preparing seminars and short term training, fostering multilateral collaboration among organizations, local communities, scientific communities and NGOs, teaching through experimental activities, promoting 21st century skills (critical thinking, problem solving, communication, collaboration, and IT skills), and utilizing field based teaching methods, as indicated by their respective means (2.00, 2.10, 2.37, 2.43, and 2.47), were teaching methods that were rarely used by teachers in teaching environmental issue.

Table 3: *Integration of environmental sustainability issues into curriculum*

Teaching Methods Teachers Apply	Mean	Std. Dev.
Reorienting the existing course contents towards sustainability as to what to teach and how to teach	3.93	.58
Adding new environmental and sustainability contents to the existing course contents	3.27	1.05
Adopting teaching methodologies and activities that address issues which are pertinent to environment and sustainability without changing the meaning and aim of the original version	3.67	.88

As can be seen from Table 3 above, besides using different teaching methods, teachers used to integrate the issue of environmental sustainability into their curriculum. With a mean of 3.93 and a standard deviation of 0.58, Table 3 indicates that teachers did some integration by reorienting the existing course contents towards sustainability as to what to teach and how to teach environmental issues. A mean of 3.27 and a standard deviation of 1.05 indicate that teachers did some integration by adding new environmental sustainability contents to the existing course contents, and a mean of 3.67 and a standard deviation of 0.88 indicate that teachers integrated environmental issues by adopting teaching methodologies and activities that address issues without changing the meaning and aim of the original version.

A similar question was presented for the interview. According to information obtained from key informants the college planned to plant trees with its regular summer (Kiremt) program, and the conservation of planted trees was well implemented. The key informants also raised that besides regular tree planting, the College prepared garbage and selected areas to collect solid wastes to keep the environment clean and was repairing machinery so as to increase their service lifespan.

Key informants further explained that for the last six consecutive years, the College prepared programs and used mainly the supportive staff to implement different situational activities, but these activities were not regularly performed. The respondents also added that, even though it was not a continuous program, the College formed different groups based on specific work areas and activities to be done; it implemented co-curricular activities in which the most committed teachers engaged their students in different activities. However, four respondents raised the concern that most of the activities were situational and had no continuity. In this regard, summer (Kiremt) program tree planting and its conservation is only exception; it is performed in a sustainable manner.

III. Practices of social, economic and physical environmental issues

The third basic question was related to sustainability practices in the College in terms of social, economic, and biophysical environmental issues. The results of the survey questions and interviews are presented below.

Table 4: *Practices of social, economic and biophysical environmental issues in the College*

Practices	Mean	Std. Dev.
Planting of trees	4.27	.64
Effective resource/environmental conservation	3.73	.64
Cleaning of wastes in and around the campus regularly	3.10	.76
Placing recyclable wastes in the right recycle bins	3.27	.78
Reusing of recyclable resources effectively	2.73	.78
Reducing of resource consumption (water, electrical energy, machineries, etc)	3.13	.86
Generating income activities in the campus	2.57	.94
Supporting the poor in and out of the College	2.47	.57
Performing joint activities with community outside the campus	3.13	.82
Preparing environmental sustainability issue seminars, workshops and short trainings	2.23	.73
Working on co-curricular activities	3.70	1.26

The level of environmental issues implementation at the College is depicted in Table 4. After determining whether the environmental education about sustainability taught in the class had an impact on how the respondents applied the concept, the study looked into whether programmed tree planting, efficient utilization of resource and caring of environmental conservation, and involvement in co-curricular activities were frequently practiced in the College, with respective mean scores of 4.27, 3.73, and 3.70. However, as indicated by their respective means of 2.23, 2.47, 2.57, and 2.73, the preparation of environmental sustainability issue seminars, workshops, and brief trainings, assistance to the unprivileged on and off campus, income generating activities on campus, and efficient resource recycling were activities that were rarely carried out in the College.

Concerning exemplary environmental activities forwarded to interviewees, 6 respondents replied that many environmental activities were formally done in the college but the activities were highly tilted toward the implementation of biophysical environmental practices. More specifically, all the interviewees reported that the green corner, commonly known as the Negash Project, set up by the initiation of teacher Negash, is an exemplary environmental activity and has many and diverse indigenous plants. The corner is now serving as an area of recreation and beauty (aesthetic value). In it, many teachers and students implement various teaching-learning activities, and it is becoming a source of primary data for studies. The result could be supported by the idea that professionals are more than capable of focusing on improving students' knowledge of and experience with sustainability problems and issues while incorporating environmental related concepts (McKeown-Ice & Dendinger, 2009).

The key informants further noted that the College is rich in varied, attractive, and conducive learning environments pertaining to environmental sustainability education by planting trees for longer years. According to the respondents, the staff was actively participating in the program to achieve the College's plan and the "green legacy" of the nation, where small green areas were able to be created to create a favorable learning environment for the learners. In addition, the respondents described that based on the college's program, the staff, especially the supportive one, was participating in cleaning and facilitating the environment for learning. Garbage cans were distributed to collect paper, and solid waste materials collection stations were prepared. But this was not done in a regular and sustainable way. In addition, some informants particularly indicated that the college was supporting the nearby schools by providing teaching materials so that good relationships could be created with the surrounding environment.

IV. Factors hindering the implementation of environmental and sustainability education

The fourth basic question was regarding factors hindering the implementation of environmental and sustainability education activities in the College.

Table 5: *Factors that hinder effective implementation of environmental sustainability activities*

Factors	Mean	Std. Dev.
Pedagogical implementation problem	3.10	.76
Lack of commitment and motivation	3.67	.84
Lack of knowledge about the issue	3.00	.87
Lack of skill of implementation	3.07	.98
Lack of interest	3.27	.94
Lack of supportive (positive) attitude of the college leadership	2.53	.73
Because of focusing on teaching theoretical aspect only	4.63	.56
Overlooking crucial aspects that lead to developing critical thinking, expressing emotions and experiences	4.53	.57
Sustainability issue is embedded within such a wide variety of subjects that it tends to lose its substance	3.97	.89
Sustainability issue is not part of my course content that it has no concern	2.57	1.04

As could be seen from Table 5, a mean of 4.63 and a standard deviation of 0.56 indicate that environmental sustainability issue was not effectively implemented because teachers primarily focus on teaching the theoretical (knowledge) aspects; and overlooked crucial aspects that lead to developing critical thinking, expressing emotions, and experiences of teachers, as indicated by a mean of 4.53 and a standard deviation of 0.56. The results also show that other factors, including the fact that "the sustainability issue is embedded within such a wide variety of

subjects that it tends to lose its substance, lack of commitment, and motivation of teachers, and lack of interest” were all significant influences on implementation, as indicated by their respective means of 3.97, 3.27, and 3.27. Shortly, it can be observed from the result that the focusing of teachers on teaching the scientific aspects (cognitive aspect), and teachers overlooking crucial aspects are the major factors that hinder effective implementation of environmental sustainability activities in the College.

Besides the survey, the results of the interview show that different factors hindered the effective implementation of environmental activities. First, 6 respondents stated that one of the major hindering factors was a lack of understanding of the issue among the staff. Additionally, the key informants identified that a lack of commitment among many staff mattered to the implementation of environmental sustainability activities for not being well practiced and sustained. Besides, they forwarded that many teachers mainly focus on teaching knowledge at the expense of practical engagement part which is a crucial aspect in developing such competencies as critical thinking, problem-solving, and experience sharing. Moreover, one respondent specifically raised that the administrative body itself has no good understanding of the issue and has no supportive attitude towards environmental activities.

Also, two more questions describing the regional effects of environmental issues were raised to the interviewees. For these questions, every respondent explained that environmental issues have numerous local as well as global effects, including climate changes, which can have a negative impact on our culture and educational system as well as negatively affect our physical, economic, and social well-being. This could lead, the informants noted, to the extinction of the human race as well as other natural species and natural systems of biodiversity. In particular, one respondent stated that "the entire life system of the earth will be affected" while describing the effects of environmental problems.

The other question forwarded for the interviewees is concerned with the administrative solutions for these environmental problems and impacts. The responses could be categorized into three: awareness creation, responsibility case solution and collaborative work.

With respect to awareness creation, almost all of the respondents underlined the need for creating awareness about the objective and importance of environmental and sustainability education for the college staff and students. They suggested to the college's administration that continuous seminars and short-term training on environmental issues be organized. In addition, while one of the respondents noted that "Reconstruction and revision of the curriculum is essential in order to enshrine the content of environmental and sustainability education in all subjects as a core issue", another respondent noted "teachers should play a great role in enhancing the understanding of students about continual education on environmental issues."

As a solution, 4 respondents recommended that there should be law enforcement to implement environmental issue activities as a whole in Ethiopia and particularly in educational institutions. Therefore, there should be a shift from classroom knowledge-centered objectives to a holistic approach. One respondent particularly added that "Since the issue is very critical, it should be

every citizen's responsibility to read and understand environmental issues and make them practical, and this is the only way we will be able to live." This could be supported by the idea that some professionals may not see themselves as responsible for teaching applied or action-based sustainability. This, however, is in direct contrast to the practice-based project learning approaches to sustainability taken by interdisciplinary sustainability programs (Wiek et al., 2011).

Three other respondents expressed their ideas as to why the administrative body of the College should give prime concern to this issue and plan, organize, coordinate, and support environmental issue related activities and become exemplary for this action. Moreover, two respondents particularly raised the importance of commitment in relation to environmental issues and related activities in the College saying, "Commitment creates a difference." Even in our College, a highly committed single teacher has done a lot in the physical environment. "As a result, if every citizen is committed, not only in the physical environmental aspect but also in the integrative physical, social, and economic environmental aspects, a lot can be done."

Regarding collaborative work, 2 key informants raised their ideas as to why collaboration among stakeholders is very necessary to sustain the environment. This can be done through community-based projects and youth mobilization in awareness creation on environmental cleaning, wise resource utilization, and supporting educational institutions to encourage their environmental issue clubs. This could be seen within the view of Wiek *et al.* (2011) that suggests improving performance on the sustainability issues, professionals can embrace sustainability education by devising more interdisciplinary approaches to action-oriented learning.

Result Obtained from Observation

In this Study, the environmental observation that followed the staff interview covered the feasibility of various activities in the College and resulted in the identification of the following activities.

(i). *Availing garbage bins at different places:* Garbage bins were distributed to be used for collecting papers and other simple, worn-out solid materials. But the bins were very few in number and not proportional to the width of the campus. In addition, the staff's habit of using these materials (their practicality) was very low.

(ii). *Planting and conserving of plants:* During observation, the researcher realized that the College has been planting trees for such a long time and as shown in the pictures below is highly green. Every year, trees are planted in summer (Kiremt). For this reason, the College campus could even be taken as an ecological model for the surrounding community.



Picture 1. Status of Summer 2017 (Kiremt 2009E.C) planted trees (source: document & observation)

(iii). *Environmental cleaning*: The on-campus and off-campus cleaning levels were observed based on interviewee responses. While the on-campus participation and cleaning level were very good, the out-of-campus cleaning level was very low. In spite of its high potential, no activity was done on it.

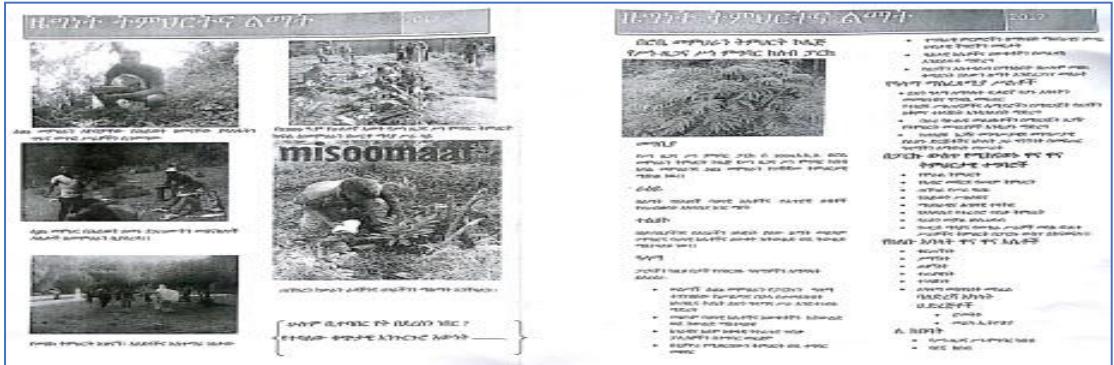


Picture 2. Winter 2019 on-campus environmental cleaning activity by some staff members (source: document)

(iv). *Conducive environment for teaching-learning process*: Students could easily use open spaces, tree shades, and small green areas to study and perform different related activities, to stay on campus at their leisure, and to run socialization and interactive programs, despite the fact that there was limited online access (internet service) facility on campus.

(v). *Co-curricular activities*: The researcher realized that four co-curricular activity clubs had stopped participating in their regular activities as of COVID-19. Out of five existing co-curricular activities (during data collection), only teacher Negash's Nature Responsibility and Conserving Club, also known as the "Negash Project" was active; the club was regularly working on plantation, conservation of plants and disseminating valuable messages for different bodies even by involving voluntary teachers and supportive staff. The club's site has a variety of indigenous trees and is a well-kept, aesthetically pleasing, and well organized project thus could be taken as a model for the surrounding community. For this reality, the surrounding community joins the project and even locally uses the indigenous plants for health purpose, and

also experts and officials from different institutions observe the project for experience sharing purpose.



Picture 3. Nature Responsibility and Conservation Club Project in 2012 (source: document)



Picture 4. Nature Responsibility and Conservation Club Project in 2020 (Observation)

(vi). *Integrating environmental and sustainability education into classroom teaching:* There were no formal and unique programs designed for all classes that included environmental and sustainability education and related activities. However, through observation, the researcher could realize that a small number of teachers incorporated environmental and sustainability education into their contents, in different teaching methodologies, and in their regular practical assessments and written examinations. Seven teachers, however, showed no special concern for this global burning issue when it came to integrating environmental issue.

Discussion

The results obtained through various data collection methods show that there was substantial difference in the College staff’s awareness of environmental and sustainability education. A good description of the problem was given by nearly one-sixth of the respondents. The respondents related it to using resources in a way that benefits future generations, educating people about how to use the environment, fostering a positive relationship between human living systems and the earth, and instructing students on how to use and conserve their environment. Many professionals and various fields including geography further link the human-

environmental issues to study environmental problems that are consistent with Robbins's (2012) observation. This made clear that teaching sustainability ultimately requires an understanding of the connections between natural and human systems, and geographers have a well-established tradition of examining these connections from an interdisciplinary perspective. However, other than describing the idea of environmental and sustainability in relation to the biophysical environment, no one mentioned the issue relating to social, cultural, ethical, or economic dimensions, as could be generalized from the opinions of practically all respondents. That is in agreement with Green and Somerville's (2015) contention that although teachers in educational institutions described their understanding of environmental and sustainability education in a variety of ways, the majority of the teachers did not identify the economic, community, or creative aspects as part of environmental and sustainability education could be used to support this. Additionally, sustainability, according to Reason (2007), requires radical knowledge and paradigm shifts, as well as individual and social reform. Environmental education has historically received little emphasis in teacher education programs and that little progress has been made in this area. Thus, a wide variety of pedagogical approaches, ranging from participatory approaches and team-based learning to action research and project-based learning, need to be applied. These help in changing the culture of teaching and learning, and changing the attitudes of many and build a supportive environment to open up space for critical debate (European Environment Agency [EEA], 2019).

Additionally, the results show that preparing seminars and short-term training, fostering multilateral collaboration among organizations, local communities, scientific communities, and NGOs, teaching through experimental activities, promoting 21st century skills, and field-based teaching methods are scientifically preferable and applicable methods for teaching environmental issues. However, the majority of teachers in the college does not use and implement these methods in the teaching process. The course materials were also reoriented towards environmental sustainability issues by various lecturers, who applied this through a variety of teaching methods. A few lecturers also taught by incorporating additional contents into the already existing course materials to help students better comprehend environmental concerns. This could result from the different ways that teachers understood and viewed the problem which affected their teaching strategies in the college. In line with teachers' awareness or perceptions of sustainability, Fraser et al. (2015) claim that education and its delivery methods differ from teacher to teacher, but teachers always aim to equip students to live and work in ways that preserve the environmental and cultural integrity of the areas they call home. Hence, teachers must be knowledgeable about educational institutions, environmental patterns, and the long-term impacts of human behavior on those patterns in order to do this.

Moreover, the results show that 93% of the respondents stated that programmed tree planting and physical environmental resource conservation were activities that were implemented in the College. This point can be supported by Bogner's (2010) argument that direct exposure to nature is known to increase people's environmental awareness and promote attitudes related to it. On the other side, all of the respondents did not elaborate further on the practices of social and

economic aspects of environmental activities in the College. Similarly, Mwenda (2017) found that while many people had a basic understanding of the physical environment and its conservation, their perceptions of other environmental issues and the extent to which they were being addressed varied, having an impact on both their daily lives and the environment as a whole. Loria (2015) also suggests that parents, teachers, and students must all actively participate in order for change to be implemented as effectively as possible.

This Study has also identified that a lack of knowledge about the pertinent environmental issues, methodological, and motivation were the main barriers to the proper implementation of environmental and sustainability education in the College. This can be supported by Tal and Abramovich's (2013) finding that some of the challenges in teaching environmental issues may be due to the pedagogical staff, some of whom lack motivation and zeal due to their ignorance of or incompetence in this field.

Conclusions and Policy Implications

The present Study aims at assessing the implementation of environmental and sustainability education among Robe College of Teacher Education staff. The findings have revealed that almost all of the respondents have positive attitudes toward the issue, 19 respondents have limited understanding of several issues related to environmental sustainability. Only 8 teacher educators acknowledged the incorporation of various teaching methods and strategies into their lesson plans. The economic issue related activities were practiced very little compared to the social and biophysical ones. It was found out that this happened because of lack of good understanding, commitments, and responsibilities variation among the College staff. On the other hand, as it focuses on assessing the implementation of environmental and sustainability education, this Study has some limitations. The practical aspect that curriculums were not analyzed in detail. It did not involve students as they were not in the College during data collection. Also, it is geographically limited to Robe College of Teacher Education due to financial and time constraints. Thus, its finding may not be generalized to other Colleges. However, the Study highlights the need for future shift of emphasis and practices in the College that attention should be given to learning than teaching, methods than theories, integrative environmental learning approach, and environmental concerns and actions. Therefore, for the future the College (Oromia Education Bureau, too) should give considerable emphasis to this issue. It should plan, organize, coordinate, and support environmental issue related activities through continuous seminars and short-term trainings. The teacher education curriculum needs to be reoriented. Also, other legal enforcements should be implemented for effective environmental and sustainability education.

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