

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

THE STATUS OF ENVIRONMENTAL EDUCATION IN SELECTED
SECOND CYCLE PRIMARY SCHOOLS OF ARSI ZONE

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Abstract

The purpose of this study was to assess the integration of EE in to Geography and Biology Curriculum Guides and Student's Textbooks and the factors hindering the proper implementation of EE in selected Second Cycle Primary Schools of Arsi Zone. In doing so, an attempt was made to analyze the curricula materials for integration of EE objectives, contents and teaching methods through content analysis. Besides, teachers' and students' knowledge and attitude regarding environmental concerns were examined by using descriptive survey. The subjects included were 300 students and 32 teachers from 10 primary schools of the zone. Moreover, focus group discussion was conducted in a school on causes, nature and possible solutions of the major environmental problems. Interviews were also held with regional education bureau curriculum experts and zonal natural resource protection experts. The quantitative data were analyzed using frequencies and percentages. The result of the study showed that EE objectives, contents and teaching methods were not adequately integrated. Besides, lack of refresher trainings and curricula materials were found to be the main factors hindering the proper implementation of EE in the respective primary schools. The study revealed that teachers and students have positive attitudes towards conservation of resources. Nonetheless, their practical activities of environmental protection in the schools were found to be low. Based on these findings, it was recommended that offering refresher trainings and motivating the subject teachers for environmental protection and integrating EE in to different subjects, typically Geography and Biology is vital to develop students' environmental knowledge, skill, attitude and participation.

Acronyms

EE-Environmental Education

EEP-Environmental Education Program

EES-Environmental Education Series

EEU- Environmental Education Unit

EPA-Environmental Protection Authority

IEEP- International EE Program

IUCN-International Union for the Conservation of Natural Resources

MOE-Ministry of Education

OEB-Oromia Education Bureau

PTA-Parent Teachers Association

SIDA-Swedish International Development Authority

TGE-Transitional Government of Ethiopia

UNEP-United Nation Environmental Program

UNESCAP-United Nations Economic and Social Commission for Asia and the Pacific

UNESCO-United Nation Education, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

We, human beings, always depend on the environment for survival. Without air, water and soil none of us could exist. However, with the improvement of the means of production, men's exploitation of the environment grew and resulted in many problems. The environment in which we live has become a threat to the very survival of human being and other living things because of the human action (Dunlop and Jackson; 1991:2). Owing to the importance of EE in improving peoples' life, Australian Government Department of the Environment and Water Resources (1999) states:

It is widely agreed that education is the most effective means that the society possess for confronting the challenges of the future. Indeed education will shape the world of tomorrow. It is critical for promoting sustainable development and improving the capacity of people to address environmental and development issues. It is also vital for achieving environment and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision making (Common Wealth of Australia, 1999).

EE is a holistic approach to learning in order to achieve an ecologically and socially sustainable future. Its primary purpose is to enhance an individual knowledge, attitudes, skills, values and motivation to improve the quality of the environment (Institute for Global Environment Strategies, 2004).

It is obvious in most cases that the notion of EE is widely acceptable and recommendable by authorities or policy makers. It has been observed; however, under various circumstances that EE remains to be rhetoric rather than being the reality. Though such a limitation may hold true through all over the world, it has received a special attention in the developing nations. For instance, attention has been given to the fact that one of the major constraints to the implementation of EE in developing countries is the lack of adequately trained personnel (Elias, 2004:50).

Human being and environment are in a continuous interaction. The interaction that may bring change begins from childhood and continues throughout life. In order to do so, EE engages students' minds and hands often in the real world investigations that are inquiry-based,

interdisciplinary and supportive of standard-based curriculum (Institute for Global Environment Strategies, 2004). Few educators contest the importance of teaching young people to the decision makers, but they may wonder why schools should offer EE. One important reason to teach about the environment right from the level of kindergarten is that school can create a scope and sequence (Rasmussen, 2000).

Research practices of curricular materials of some environmental facts and information are conveyed to the students in the schools. The findings further disclose that no opportunities or learning experiences are provided that would enable students to engage in real environmental problem solving. Furthermore, the curriculum has always been designed by educational authorities in the top-down approach neglecting the local realities in the community (Rasmussen, 2000).

In Ethiopia too, Yohannes (1992) cited in Desalegn (1998) in his study of the activities of the 1985 Project Centers in Wello and North Shewa, found lack of integrated curriculum and trained human power that were the major constraints observed in the project. As to Yohannes Content of EE were incorporated in the curriculum with varying degree from subject to subject with more elements in Agriculture, Home Economics, Geography and Biology. But they lack adequacy in addressing the issues of environment, development and the learners' problem solving approach.

1.2 The Physical Background of the Study Area

Arsi Zone is found in the central part of the Oromia Regional State. The astronomical location of the zone lies between 6° 45'N to 8° 58'N and 38° 32' E to 40° 50'E. It shares borderlines with Regional State of Nations, Nationalities and Peoples of Southern Ethiopia and East Shewa, Bale and West Hararghe Administrative Zones. Asella is the capital town of the zone. It is located at 175 kilometres from Addis Ababa-Adama-Bale-Robe main road. The zone, having the total area of 23,881Km², it is accounting for about 7 percent of the total area of the Regional State of Oromia. The present surface rock distribution, the land configuration and other features of the zone are the result of the past geological history and tectonic movements in the upper mantle lithospheres portion of the Horn of Africa, which are tectonically part of the Afro Arabian land mass. Geological formation of an area has very important economic value, the availability of different metallic and non- metallic industrial minerals are associated with type of geological

formation an area has. Arsi zone is divided in to five agro-climatic zones mainly due to variation in altitude. This great variation of temperature provides wide opportunities for the production of crops range from warm to cool thermal zone (Oromia Planning and Development, 2006).

Arsi Administrative Zone is an area of great physiographic diversity. There are a great altitudinal differences between the highest and the lowest places. The lowest place of the zone is 500 meters, which is found in the Awash Rift Valley, in the Wabe Gorge of Robe and Shirka, Eastern low land of Amigna, Seru and Gololcha Districts. On the other hand, Mountain Peak of Kaka with a height of 4,245 meters is the highest place in the zone. Arsi is naturally endowed with many rivers and streams. It has high network or density of permanent rivers and streams. Chilalo-Gelema Mountain Ranges are the major water sources for the major permanent rivers of the zone. The major soil types in the Arsi Zone are: Chromic and Pellic vertisol has water holding characteristics and heaviness for ploughing during rainy seasons due to high clay content. Livisol is good for agriculture with base saturation and weather able minerals and dominant on the high land parts of the zone. Cambisol dominantly occur on the steep slopes and are often shallow or have many rock outcrops and developed on gentler slopes, however, have good base saturation and fertility and can highly be important for agriculture (Oromia Planning and Development, 2006).

1.3 Statement of the Problem

In Ethiopia, deforestation, soil erosion, environmental related diseases or health problems and rapid population growth have been identified as threats to a sustainable environment. One way to confront this problem is to apply the strategy of education specifically EE (Shumete et al, 2006: 345). EE has long been seen by many teachers as an additional subject to be added in an over crowded schedule; instead of giving it as an independent and main subject. However, the parents and adults support the idea that children should learn about the environment as part of a basic course of study (Archie, 2001).

Despite the need for offering EE be it as part of a subject or an independent subject in its own, most teachers do not consistently include EE in the curricula they teach. To be truly effective, a comprehensive and cohesive EE program must be implemented across all grade levels. However,

this is not happening consistently in such programs due to lack of inclusion in state level educational priorities (Archie, 2001).

The existence of EE in primary schools is important. This is due to the fact that, at this age the characters and the habits of the future citizens are shaped. Today, education emphasizes more on active learning and problem solving, in which students raise various problems, express their opinions and propose solutions. It's therefore very important to create projects that gear towards teaching those themes about the process of ecology and evolution rather than emphasizing the memorization of many isolated facts (Athens, 2002).

✂ Information transmission plays a vital role in EE. Hence, an effective means of communication is indispensable for increasing people's awareness of environmental issues. In countries like Ethiopia where the largest proportion of population resides in rural areas and inaccessible to current information, delivering environmental information is through oral communication, dramas, theatres and practical demonstrations (Patel, 1980; UNEP, 1988; Karembu, 1996; Desalegn, 1998).

✓ It is worth mentioning the influences that lack of resources and facilities have a negative impact on the implementation of EE. It is common experience in the third world that the schools are overcrowded beyond their capacities. As a result, there is shortage of textbooks for students and free movement for both the teacher and the students in classroom is almost impossible. It is not difficult to imagine the implications that such a shortage of resources and facilities have on the implementation of EE. The nature of EE requires independent and critical thinking of both the teachers and the students. It seeks active involvement and participation (Elias, 2004: 52). *by joining*

EE aims to develop sensitivity to environmental care and enable people to regulate their behaviour and act responsibly. Based on the premise that environmental awareness is low throughout Ethiopia, there is a need for an EE program to change this situation. Various studies, in one or another way, indicate that EE is poorly integrated and less emphasized in curriculum guides and subjects that incorporate environmental issues in current Ethiopian situation. And, it has also been learnt that Ethiopian Educational Policy has gaps in addressing environmental issues in the demanded level (*see* Sitotaw, 1996; Abishu, 2002; Abinet, 2006; Aklilu, 2006; Asmare, 2007; Damtew, 2007).

As to the study area, though the zone was rich in terms of its environmental resources in the past, currently the ecosystem is being changed at an alarming speed. And, the natural environment is being degraded due to various human actions such as deforestation, erosion, mal-farming, etc. In halting such situations, a lot is expected from schools in shaping future generation in addition to other activities that various stakeholders like communities, governmental and non-governmental organizations could play. Owing to this, EE being offered in schools of the zone is expected to contribute in alleviating environmental degradation of the area. Moreover, the professional experience and knowledge of the area, has initiated the researcher to select the topic and the zone as its study area, respectively.

Therefore, this study attempts to assess the major practices and problems of the EE in Second Cycle Primary Schools of Arsi Zone and look for the possible suggestions.

1.4 Objective of the Study

The general objective of the study is to assess the status of EE in the Second Cycle Primary Schools of Arsi Zone and analyze associated factors that retard or enhance its proper implementation in the teaching learning process. Specifically, the research attempts:

- To assess the extent to which the respective curricular materials address environmental issues.
- To examine how teachers' and students' knowledge and attitudes influence the implementation of EE.
- To identify the major methods/techniques teachers use in the teaching learning process of EE.
- To find out the major factors those retards or enhance the proper implementation of EE.
- To identify the responsiveness of EE to the local issue.

1.5 Research Questions

The following were basic research questions which guided the study:

1. To what extent EE objectives, contents and teaching methods were integrated in to grade 7 and 8 Geography and Biology Curricular Guides?
2. What factors do hinder or enhance the implementation and practices of environmental education in the respective subjects?
 - 2.1 To what extent do teachers' and students' knowledge and attitudes influence the implementation of EE in the respective schools under the study?
 - 2.2 What teaching methods and strategies do teachers use in the teaching-learning process of EE in their respective subjects?
3. To what extent is EE responsive to local issues?

1.6 Significance of the Study

Firstly, this study could be helpful in giving insight in to the problems hampering effective practices of EE in the studied schools. On the other hand, the study also informs decision makers at various levels of educational administration who are responsible for implementing the policy, to create conducive working environment for better practices of EE. In addition, the findings of this research contribute its part to the existing body of knowledge as the issue under discussion is becoming a global concern. Lastly, this piece of work will serve as the spring board for other researchers.

1.7 Delimitation of the Study

It is helpful to examine the status of EE at, regional and national level. This might result in more reliable and valid information concerning the study. However; the boundary of this study was delimited both in scope and depth. Hence, it was confined to the assessment of integration of EE in to grade 7 and 8 Geography and Biology in the teaching learning process of the selected Second Cycle Primary Schools of Arsi Zone.

The problems with the environment are wide and deep in their very nature. It could be associated with cultural, economic and natural factors. However, it was not possible to deal with all the issues within the time available. Therefore, to manage this study, the researcher focused only on the status of EE in the context of teaching learning process in respective school system. Hence, socio-cultural and other out of school factors were not dealt with in this research.

1.8 Limitation of the Study

In the first place, though this study is concerned with the second cycle primary schools, due to time shortage and financial constraints it only deals with grade 7 and 8.

In addition, the study did not extend its investigation to other subjects given in the respective cycle under the study, though EE is considered as the cross-curricula issue that the schools should deal with it in all the subjects for our activities could not escape the influence of the environment.

Definition of Operational Terms

Environment-is a place that comprises natural or biophysical and socio-cultural systems in which man and other organisms live and interact.

Environmental Education-is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his bio-physical surroundings

Integration-is the process of including EE objectives, contents and teaching methods in to different subjects that are interrelated when developing curriculum guides of student's text books.

Resources- are elements or combinations of elements of nature that have functional value to man either found naturally or as modified by man. Examples, animals, plants, soil, water.

Content analysis-is a multi-purpose research method developed specifically for investigating a broad spectrum of problems in which the contents of communication serves as a basis of inference.

Attitude - Positive and negative feelings concerning students' expression toward conservation of resources.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. The Concept of EE

The term environment is not a new concept. In fact, environmental awareness is an old phenomenon. Similarly, the use and misuse of the immediate surroundings and the consequent degradation of the quality of the environment created considerable concern for the wellbeing of lives on the planet. In fact, the agents for causes of the problems can be fewer part of the world; whereas, the effect has become a global concern affecting all those who contributed even little to the causes (Otiende, J.E et al., 1997:1).

Despite the existence of some kind of awareness about environment and associated concepts like EE, various scholars and institutions state its basic meaning by defining it differently. Among others, The International Union for Conservation of Nature and Natural Resources Commission on Education (1970) defines EE as:

“the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. It also entails practice in decision making and self- formulation of a code of behaviour about issues concerning environmental quality” (IUCN, 1970:40).

This definition tries to put EE as a process that takes longer time to bear effect and covers issues from conceptual and theoretical realm to behaviour that can be manifested in practice.

On the other hand, scholars like Sytnik et. al., (1985) and Rao and Reddy (2005) explain EE as a way of implementing the goals of environmental protection. And, it is not a separate branch of science or a special subject of study rather it should be carried out according to the principles of life-long education and run through the whole curriculum (Sytnik et. al., 1985; Rao and Reddy, 2005). This definition focuses more on the ultimate purpose of EE and the way it can be presented.

The other more comprehensive explanation is given by UNESCO-UNEP at Tbilisi Conference 1977. In this case, EE is put as a life-long process that considers environment a whole (natural, built and social) with an interdisciplinary approach that provokes critical thinking and problem solving to discover symptoms and real cause of environmental problems by internalizing diverse learning situations (UNESCO-UNEP, 1977). This definition is widely adopted by scholars and institution interested in EE with slight modification to their interests (See Palmer and Neal, 1994; Rao and Reddy, 2005).

These authorities qualify the explanation for EE by further rectifying it. For them, EE is education through, about and for the environment. It means that EE is both a style and subject matter as it serves as a teaching aid and also approach to teach in addition to having the content to be taught. These authors widely argue that EE enables people both to know their environment and associated resources along with ways to tackle problems that face the environment itself (Palmer and Neal, 1994; Rao and Reddy, 2005).

Though it is not essentially different, the definition adopted in EE in Ethiopian context is also worth mentioning. In this regard, EE is defined as a theme that deals with the issues of human being in relation to the environment, its utilization and conservation. Moreover, it is also indicated that EE prepares individuals to live in harmony with the environment by taking care of it (MOE, 1994).

As a whole, it can be said that EE is a process by which people/ learners gain knowledge, attitude and skills about their environment in what so ever approach presented by using the environmental as resource and utilize their skills and knowledge to conserve and live in harmony with it.

2.2 Historical Development of EE

Various literatures indicate that EE initiatives date back to the ancient time when people began thinking that environment affects their life both in constructive and destructive ways. However, in relative terms EE practices were commenced in 19th century, of course in England. Even, EE of those days was given through other subjects like botany, ecology and Geography instead of EE *per se* (Rao and Reddy, 2005).

EE got focus and began to be essential part of the education in 1965 by broadening its scope beyond Biology and ecology. And, this paved the way and brought EE to international attention in the subsequent decades. Hence, a new interest in environment and awareness for its well-being began to develop gradually during the 1970's because of both the global concern for the environment and the deterioration of the environmental situation locally. Worldwide growing concern regarding the need to do something about the conservation and improvement of the environment for human kind promoted the United Nations to convene an international conference on Human Environment in Stockholm in June 1972 (Holdgate et al., 1982; Rao and Reddy, 2005). The conference emphasized the need for EE (UN, 1972). The international EE program (IEEP) was set up in 1975 in response to the recommendations of the conference. IEEP organized the first international workshop on EE in October 1975 that put the cornerstone for launching EE at all levels, beginning from primary (Jacobson, 1985; MOE, 1994; Rao and Reddy, 2005).

In general, the conference recommended the development of EE as one of the most powerful instruments in all-out attack of the world's environmental crisis and thus provided an impetus for promoting interest in EE during the 1970's, at national and international levels. The seventies, therefore, may be referred to as the decade of EE (UNESCO-UNEP, 1985; MOE, 1994).

2.3 Rationale for EE

Nature, role and scope of EE lacked explicit clarification until the Tbilisi Conference was held in 1977. This conference has pointed out that to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment, as the goal of EE. The same conference further identified three core concepts for successful EE. These were concreteness, conceptualization and problem solving. Concreteness here was meant to imply that EE should deal with real issues that currently affect the lives of educators and learners in their own environments. Whereas, conceptualization referred to the need to concentrate on meaningful concepts that assist learners to understand the significance of the holistic approach and internalize such concepts to their lives. On the other hand, problem solving was to connote the idea that EE needs to emphasize on the identification, analysis, investigation and generation of possible solutions to pressing environmental problems and issues (UNESCO-UNEP, 1985).

It is when people push the issue of the environment aside and gives the priority to the timely economic demands that they stop to be friendly with the environment. As a result economic advantages become more important than environmental concerns (Axen, 1999). The demand could be for sustenance as in the case of the majority poor in developing countries or for luxury in developed ones. This ascertains the belief of most environmentalists who take poverty and development as the most enemies of environment. The poor in developing countries exploit the reality available resources using the unwise and traditional way. This brings about the depletion of resources to a stage where reversal to the original state would be beyond the ability of these poor. It is in this way that the environment especially (the flora and fauna) in the developing nations have been degraded even more seriously than those in developed ones (Gedeon, 2003).

The planet provides us with limited resources that would be over after going a short distance up and down in the dimensions. Besides this, any harmful treatment of them at a point on the planet can affect the other irrespective of its distance and thus requires a careful handling. The statement by Eckholm (1992) is all about this: "with this tiny realm the seaborne wastes of one continent become the marine pollution of distant beaches. Toxic fumes from an industrial complex fall as acid rain hundreds of miles away, poisoning lakes and streams. A few greedy nations can over fish the sea wealth and deprive all mankind of valuable food stocks. The desperate search for farmland and fuel wood in many parts of the third world leads to the destruction of forests then soil erosion floods and droughts" (Eckholm, 1992).

All what have been discussed so far are only the immediate causes of poverty. The real cause for all the problems is lack of environmental literacy-literacy that goes beyond awareness to affect people's attitude and commitment (UNESCO-UNEP, 1988). As long as people, regardless of their economic status, are well aware of the long effect of harmful environmental skills and develop the values that help them become pro-active, there would be no way their economic demand drives them to leave environmental concerns aside. Thus, the root cause for all the aforementioned environmental problems is lack of education in which sustainable solution for the problem lays.

2.4 The Role of EE in Alleviating Environmental problems

While expressing the state and the cause of the environmental problems, Demel (2003) has stressed on education as a solution to the problem.

"Thousands of chemicals unknown to the environment before are being powered to the air, water, and is no more habitable and all these have created a fear of doomsday for humans. Though the situation is getting worse, it is still possible that the application of an understanding of the functioning of nature and its limitation may rescue human beings" (Demel, 2003:32).

Describing how worst the state of the environment is, the scholar suggests education as a solution to the problem-creating awareness and commitment how the environment with all its constitutes works as well as the limitations in doing so. The knowledge is not a simple conceptualization but an understanding that should enable citizens develops the attitude and values to enforce them take actions. Indeed education is so powerful to bring about a concerted change; in this respect, in developing values in people to be concerned more for the wellbeing of the environment than for their economic demands.

The complex and multi-faceted nature of environmental problems inevitably demand suitably organized educational system to affect the behaviour of stakeholders who are acting on the environment. Offering EE at all levels of the system can affect all bodies with no natural and social boundaries so that they should be responsible to the conservation of the environment in which they live in. Filho (1993) portrays this fact as follows:

"Education to prepare people, young and old, to assume a more responsive and responsible attitude towards the environment, to equip policy makers and planners with, the knowledge to make informed decisions, and to provide managers and professionals with the skills to implement sound environmental strategies, can clearly make a significant contribution towards redressing the failures and neglect of the past" (Filho, 1993:1)

In addition to this, the relationship between man and his environment is a function of education status and the perceived magnitude of the existing environmental problems. Thus, understanding of the effect of these factors and developing sensitivity to the environment is possible but through education (Agbola, 1988:23).

In a similar way, EE sensitizes human beings to understand the causes and effects of the problems brought about by their actions. Hence, it makes people to be aware of the problems they are dimly aware and guides them to reduce the damages by coming up with practical solutions. This further enables the conservation of environmental resources, fulfillment of continued satisfaction of human needs and realization of sustainable development (IUCN, 1980; Palmer and Neal, 1994).

One can easily understand from the discussion that EE will pave the way for understanding environmental problems and also indicates the measures to be taken to curb them. By so doing, EE contributes to environmental development and poverty reduction.

2.5 Goals and Objectives of EE

Educators strongly agree and widely write that before designing, implementing and evaluating curricular materials and EE programmes, proper comprehension and understanding of the goals and objectives are quite important. This is mainly due to the fact that they are foundation to build the curricular materials or program guides on (Rao and Reddy, 2005).

The general goals of EE, which was born of an awareness of the increasingly rapid growth of environmental problems, was identified by the intergovernmental conference on EE, held under the auspices of UNESCO at Tbilisi (USSR) in 1977 (UNESCO-UNEP, 1985). This conference showed that EE should strive to sharpen the awareness and sense of responsibility of citizens with regard to their environment and its emerging problems. Citizens should possess the knowledge, attitudes, motivation, commitment and tools needed to work individually and collectively in order to solve current problems and prevent the emergence of new ones.

As per the resolutions of the conference, the major goals of EE are: to foster the concern and awareness about environment and its interdependent components, provide every person to acquire knowledge, attitude, commitment and skill to protect and improve his/her environment and create new pattern of behaviour by all people towards the environment (UNESCO, 1977; Palmer and Neal, 1994; Rao and Reddy, 2005).

According to UNESCO-UNEP (1994), the Tbilisi recommendations provided a substantial footing for decision making in EE. They communicate criteria for developing EE programs, goals for EE, categories of EE objectives, and guiding principles. The details of goals and objectives of EE are found in (UNESCO-UNEP, 1994; Palmer and Neal, 1994).

Accordingly, one can grasp that the general goal of EE is to develop active and well informed individuals who are aware of their environment. It will develop in all individuals and understanding of the interaction and interdependence of the physical, biological, social, economic and cultural aspects of the environment and the improvement of the environment.

As to the objectives of EE, obviously they are the sub-components of goals broken in to smaller pieces for the reason of simplicity and easy attainment in terms of time. Hence, the objectives of environmental education encompass the cognitive, affective and psychomotor domains with regard to the knowledge, attitude, skill and practice of environmental issues. For instance, awareness and knowledge indicates the gain of variety of experiences, and acquire an awareness of and sensitivity to the total environment and its allied problems. Whereas, attitude expresses acquired set of values and feelings of the environment and motivation to actively engage in conserving and protecting the environment. Similarly, skills are acquired technical capability for identifying and solving environmental problems. And, participation indicates an opportunity to actively and responsibly involve at all levels in working towards resolution of environmental problems (MOE, 1994; Rao and Reddy, 2005).

2.6 The Nature and Principles of EE Programs

2.6.1 The Nature of EE Programs

A meaningful EE programme must not only foster understanding and positive attitudes but should also include practical knowledge of immediate problems, concern for morals and aesthetics and a feeling of responsibility when the ecosystem is allowed to deteriorate. It is also necessary to consider the fact that EE should not only be institution based, but should also include the rest of the community through non-formal contacts (Otiende et al., 1997).

Essentially the problem is how to treat complex environmental issues which are not only broadly based but are also related to parallel subjects. When specific problems are resolved, others tend to

arise in an endless succession. The question is what should constitute relevant EE at every stage of formal and non-formal education? This question arises because of the range of possible topics for an EE program is virtually inexhaustible. Therefore, decisions have to be made to rank possible topics for consideration in terms of their relative importance in relation to other topics and availability of research based resources. Generally, it is essential to decide what the nature of EE is to be and there after deciding whether to integrate the subject with, or separate it from, others in the curriculum. Concrete action in terms of course content, institutional structures and working relationships with the wider community must be achieved. Final decisions remain a matter for each country to make after considering specific needs, aims and priorities (Otiende et. al., 1997).

Based up on the Tbilisi Report Recommendations 2 (1978), various authors tried to summarize the nature of EE. Hence, they state EE is a lifelong process, interdisciplinary/ holistic in its nature and application, relates people and nature, and view environment from all perspectives (social, economic, political, technological, ethical and spiritual). Furthermore, they express the need for critical thinking and active participation in solving problems by having the needed awareness and knowledge and utilizing efficient technologies with due concern to the future in an ethical and responsible way (Palmer and Neal, 1994; Rao and Reddy, 2005).

2.6.2 Principles of EE

EE is viewed as an educational process that should merge into formal education systems. It should however, be regarded as a separate entity. In any case, EE should pursue the basic principles of programming learning from simple to complex, definite to indefinite, concrete to abstract, empirical to rational, make own investigation to draw conclusions to enhance self-development, fits to the comprehension capacity of the child and make the learning problem based for better understanding of situations and solve it (Rao and Reddy, 2005).

Another principle is based on the holistic philosophy. Certain aspects should be studied within the context of interactions. The total environment should be considered from a balanced, integrated perspective. Curriculum structures should focus on an integrated and interdisciplinary approach. The understanding of general and subject specific environmental concepts and the development of thinking, communication and action skills should be promoted. In order to

counteract negativism and promote positive action, skills of analytical and critical thinking should be integrated with synthesis and creative thinking in environmental problem solving exercises. Opportunities should be provided for learners to become empowered by assisting in the planning of some of their own learning experiences, in making decisions and accepting the consequences of their actions. EE examines issues of local and global significance. It also makes use of a variety of local and global significance. It also makes use of a variety of teaching and learning strategies and resources. EE is therefore learner-centered, coherent and progressive, and includes a component of direct experience. It is inclusive, exemplary and community orientated (Blignaut, 2003).

2.7 Approaches and Methods in EE

There are various approaches/ ways of addressing environmental issues in the curriculum. These are interdisciplinary, multi-disciplinary, problem solving and community based approaches (UNESCO-UNEP, 1988; Filho, 1993; MOE, 1992; Ombech, 1997). In interdisciplinary approach different disciplines and subjects are presented as interlinked based up on their relationships. In this case, each subject or lesson that makes part of the link is believed to contribute to the realization of the grand objectives of EE. The approach needs teachers who have specialized training (UNESCO-UNEP IEEP 14, 1985; Ombech, 1997).

On the other hand, in multidisciplinary approach is the result of fused curriculum design for EE. Hence, Disciplines and subjects use environment as a resource for their teaching. Such approach needs teachers who have general knowledge and some specialized training (Filho, 1993; Ombech, 1997). The problem solving approach aims at finding solution to specific problems of the environment. Hence, it focuses more on the problem than the learners. It owes minimal attention to the participants in equipping them with academic knowledge except the one used for providing solution for the problem. Supporting this approach, Rao and Reddy (2005) write that EE should use the problem solving approach by using the teacher as a resource consultant instead of knowledge dispenser. Hence, there should be class discussions that facilitate the give and take of information, concluding and determining the next course of action (Rao and Reddy, 2005).

Unlike the above discussion, community based approach is mostly used in non-formal and adult education systems. The approach focuses on actions by the entire community (including school) to solve their environmental problems as per their context (Ombech, 1997).

The choice of using a particular approach depends on the ease of implementation, teachers' competencies, curriculum load, etc. treating the issues in a separate subject could let students and teachers give more emphasis than the case otherwise. Cartese (1992), for example, strongly supports this approach for he believes the system is more helpful to develop critical thinking, problem solving and decision making skills towards achieving sustainability.

Professionals like Ali (1990) do not advise to use the multi-disciplinary approach for the issues in this approach are usually treated as secondary themes. The problem they raise is in relation to teachers' competence. If teachers are not trained how to teach on environmental issues they would take them as secondary issues even though they are aware of the problems. Besides this cross curricular approach does not force the system to provide the necessary learning resources as there would be no a separate resource allocated to EE (Filho, 1993).

There are scholars who prefer the multi-disciplinary approach. They mainly raise its methodological advantages as a justification. The diverse nature of the environmental problems and of the environment itself, the understanding, attitudes and skills that we want to develop in EE cannot be attended by teaching in a single subject. Besides addressing certain issues pertaining to each subject area, every discipline could use the EE as means for creating contexts for every subject matter issue. The following quotation by Flint (1999) emphasizes this methodological importance of the multi-disciplinary approach:

"Cross-disciplinary education enlarges the students' awareness of issues and methods beyond their own disciplinary inquiry, enabling them to explore the interrelations of these issues and methods, and encouraging students to regard their own studies in a broader social and ecological perspective" (Flint 1999:161).

From Flint's explanation, cross disciplinary education as the name implies comprises more than a specific subject and hence it gives learners a chance to know more about their environment and other associated issues.

On the other hand, EE should be developed locally and cannot be imported from outside. By saying so they advise curriculum developers to treat environment education from three perspectives-educations for, about and in the environment. With education about the environment we can address the cognitive aspect necessary for a particularly understanding of the relationships between components of the environment. With education for the environment, the curriculum addresses attitudinal aspects and this in turn could include two tiers-awareness and commitment. Education in the environment is all about using the environment as an inevitable context for addressing issues of the environment it is using the environment. In the case of education for the environment, attaining the second tier, commitment, is more difficult as it requires a personal life style which is consciously disciplined to take decisions and perform actions in favour of the environment (Eyre, 1989; Filho et al., 1992; Palmer and Neal, 1994; MOE, 1994).

Since EE is a practical subject, decisions must be made on what programmes should be taught and how. It is vital that EE should inculcate knowledge, skills and attitudes that will help to improve the quality of the environment (Otiende et al., 1997: 28). In realizing this, instructors should take care of the fact that the methods they use are correspondent to primary school curriculum and experience of students (MOE, 1994). Hence, the methods to be used in teaching EE need to be built up on these premises.

A comprehensive methodology must include a variety of overlapping pedagogical approaches to the subject. Hence, various methods can be used in teaching EE. However, the most common ones that are frequently used include: field trip, discussion, role playing, value clarification, inquiry, future wheel, games and puzzles methods (MOE-EEU, 1994; Otiende, 1997; Rao and Reddy, 2005). Brief explanation is given to these methods in the following paragraphs.

Field trip is a means of observing and experiencing the real life environment. It helps to build environmental awareness and interest that enables students to gain first hand information and experience of the phenomena in its natural environment. In addition, field trip method students can learn by relaxing themselves and it also bridges the gap between the school (theoretical world and the community). The trip makes unclear issues in books, laboratories and classroom discussions more clear and unforgettable. In order to make field trips effective, teachers should prepare their students well and guide them properly in the field to let them learn the intended lesson. This can be facilitated by developing visit checklist and report writing after trip for

classroom discussion. If not, field trips will end up in frittering scarce classroom time and become recreational visits only (MOE-EEU, 1994, Rao and Reddy, 2005).

The other common method is discussion. Discussion method involves verbal communication of individuals that perceive one another as participants. In this method, joint exploration of a problem and facts take place. The method is so wide that it includes discussion and brainstorming among students themselves, presentation by teachers/ resource person with feedback and participation of students, debates, forum discussions and panel discussions. In discussion methods controversial issues are raised with an intention to reach at the proposed goal through hot discussion. To make discussion method effective, presenting coherent ideas, speaking based up on evidences and listening to each other with due respect of individual opinions are quite important. Hence, discussion leaders should take in to consideration the fact that discussions are meant for reaching on the intended goals and be limited in time (MOE-EEU, 1994).

The inquiry method is another EE method where the learner openly plays an active role in the educative process. In this discovery oriented method, the educator largely guides the learner to define a problem; formulate a hypothesis; collect and analyze data, and then report findings; test the original hypothesis on the basis of the findings, formulate conclusions, and finally, attempt to solve the problem. In essence, the inquiry-discovery method offers the learners an opportunity to deal scientifically with environmental issues (Otiende, 1997).

The role playing method, in its part, is another chief way to bring attitudinal change in the students' about the environmental issues as portrayed in the role played. The method is unrehearsed dramatization in which students assume identity of a person and act as they perceive their behaviour in some set of circumstance. Unlike drama, role playing does not need scripts and much preparation as it is a spontaneous acting of the situation. This method enables students to derive lessons for real life situation from the character presented in the role playing and facilitates learning in artistic way by enjoying. This method develops the self expression skill and personality development of students (MOE-EEU, 1994).

The value clarification method is a method in which particular consideration is given to an understanding of the cultural connotations of EE. This is especially pertinent in matters related to population growth and control. This topic can often give rise to heated discussions. Therefore,

considering population growth and control, due care should be taken to learn and understand the traditional and, or accepted cultural values in order to treat vital topics in a manner acceptable to the target group. The value clarification methods utilizes the process of valuing that includes choosing the value to be presented, prizing/ feeling happy with the selected value and acting it to bring the intended result. While using this method, the teacher should assist the students in selecting appropriate topic and gather relevant information (MOE-EEU, 1994; Otiende, 1997).

The future's wheel method is a technique in which students are encouraged to analyze the consequence of a given environment related problem at various scales. The analysis goes from general to specific until students observe/ realize the problem at their own personal life. It enables them to develop cause effect relation of environmental issues/problems to clearly see where the solutions to be made to curb the problem (MOE-EEU, 1994).

Games and puzzles as EE teaching methods are used to teach environmental facts in the form of songs, games and puzzles. Particularly for lower grade students environmental issues can be presented to students to raise their awareness and understanding of the environmental problems in the form of playing. The method enables students to develop their artistic and analytical skills in addition to revealing the intended environmental problem. However, the games and puzzles need to be according to the local context and understanding level of the children (MOE-EEU, 1994).

As already indicated there are various methods to teach EE. But, neither all nor any single method can be recommended and be used to teach the subject at all levels. Hence, selecting the appropriate method is still an important issue in transcribing the curriculum to the intended learning outcomes. Here various factors contribute to determine the appropriate method to be used. Among others, factors related to the teacher like personal experience, interest, commitment, know how in using and etc are the major ones. Equally important, factors related to the maturity and understanding level and interest of the student matters. Again issues related to resource like school facilities, time, teaching aids etc and nature of the content contribute in the selection of the method to be used. As a whole, quite professional and matured decision should be made in selecting and using methods in teaching EE. Any way, the method to be selected should be the one that enables students to properly deal with the realities of environmental conflicts all around them by dealing with practical issues both in the classroom and at field. And, it should also

ensure the achievement of the learning objectives and bring the intended behavioural change in using and protecting the environment (MOE-EEU, 1994, Otiende, 1997; Rao and Reddy, 2005).

2.8 Awareness, Attitude and Practices in EE

The goal of EE is to develop a world population that is aware of, and concerned about the environment and its associated problems, and which has the knowledge, skills and attitudes, motivation and commitment to work individually and collectively toward solutions for current problems and the prevention of the new ones (UNESCO-UNEP.E.E.S. 18, 1985).

This being the case, people's awareness of environmental problems varies from country to country, from region to region within a country, and even from individual to individual. In 1986, a survey conducted in member states of European Community showed that, community citizens on the whole are not particularly conscious of pollution in their own local area (UNEP, 1988). But, Owens and Owens (1991), referring to the 1988 Gallup opinion Polls, indicated that the awareness of environmental problems which was formerly restricted to small section of the population in Britain, has been diffused among the public to the extent of perceiving environmental problems second only to a super-powers conflict as the greatest threat to human race.

Although similar opinion polls are not available from developing countries, it seems that most of them, with their increasing debt burdens and economic growth, sometimes at the expense of environmental conservation. There are a number of factors that influence one's awareness of environmental issues. According to UNESCO-UNEP E.E.S. 8 (1983), the awareness of environmental problems, in Africa, is by far more felt amongst intellectuals, particularly scientists, professors and to a lesser extent, university students than sectors engaged in agricultural and industrial production. Hence, accessibility to educational opportunities seems to strengthen one's awareness of environmental issues.

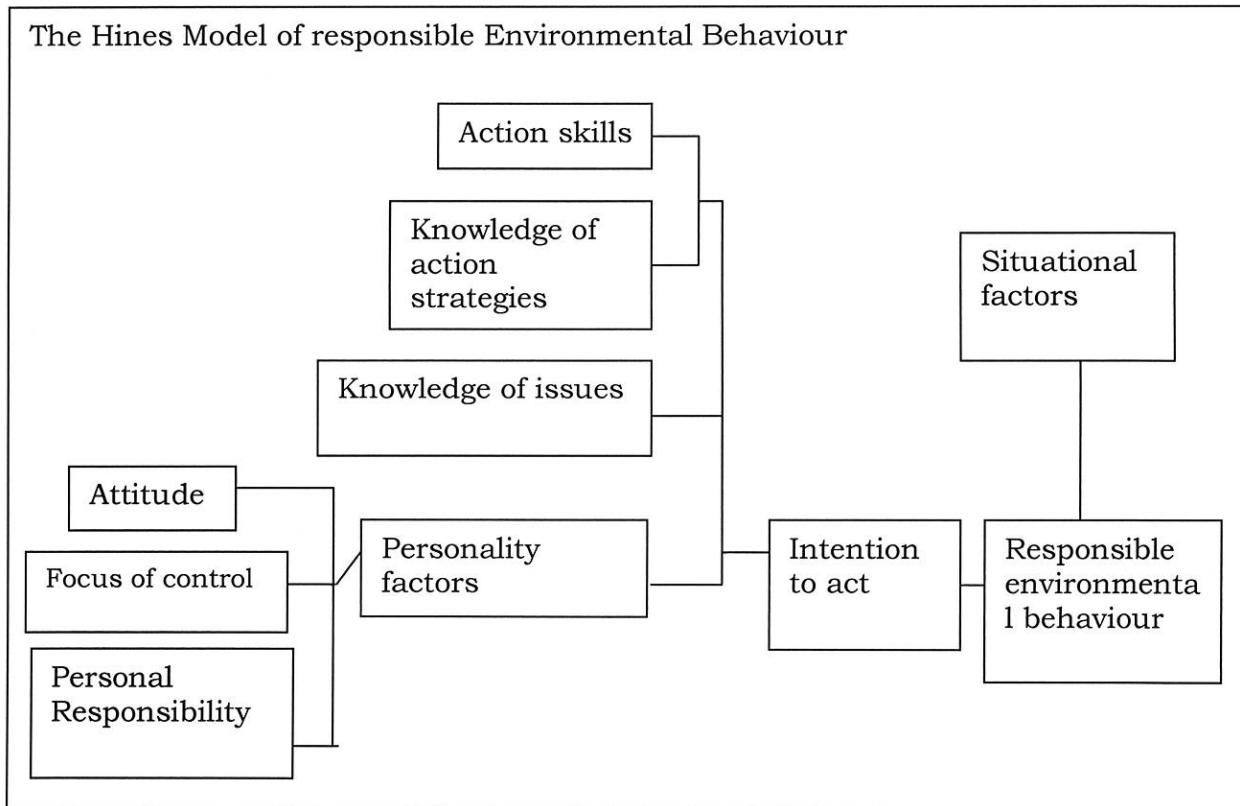
There is a widely held position that environmental knowledge leads to favourable attitude toward the environment (Fortner, 1978; Fortner and Teates, 1980; Moore, 1981). According to George's research cited (in Knapp: 1973), participation in nature clubs, nature camps and other outdoor activities have a significant positive effect upon conservation attitudes. Moreover, the research

work of Gross and Pizzini (1979), in which 5th and 6th graders were involved in exploration of wilderness community of the woodland of Iowa, produced a positive attitudinal change in the students. Jernigan and Wiersch (1978) carried out a study on children who resided in sub-urban of a large city. The children were exposed to cognitive awareness and affective unit outdoors as well as in the classroom. The result was that the affective unit outdoors produced a significant change in students' attitude toward the environment.

On the other hand, some research findings in environmental behaviour do not bear out the position that awareness of environmental issues leads to favourable attitude toward the environment. As shown by Pettus (1976) and Kinsey (1976), research related to conservation and other broad areas of environmental concerns indicates that being better informed about environmental conditions does not necessarily mean people will be more favourable toward environment or environmental controls.

Hines et al., (1986/87), after analyzing the research literature of 128 studies in EE, prepared a model from which they made the following inferences:

- i) An individual who expresses an intention to take action will be more likely to engage in action than an individual who expresses no such intention.
- ii) Before an individual can intentionally act on a particular environmental problem that individual must be aware of the existence of the issue. Thus, knowledge of the issue appears to be a prerequisite to action.
- iii) He has to have skills for appropriate application of his knowledge.
- iv) The individual must possess the desire to act which is affected by a host of personality factors locus of control that is individual's belief in being reinforced for ascertain behaviour, attitude toward environment and toward taking action and personal responsibility toward the environment.
- v) Situational factors such as economic constraints, social pressures and opportunities to choose different actions may serve to counter act or strengthen the variables in the model.



Source: Hines et. al., (1986/87)

Hines et. al., (1986/87) research revealed that:

- i) Environmental sensitivity has a dramatic relationship with behaviour
- ii) Knowledge of ecology does not, in itself, produce environmental behaviour
- iii) Attitude toward pollution, technology, economics found to be significantly related with behaviour in some researches
- iv) Perceived skills are one of the best predictors of environmental behaviour.

Hence, environmental behaviour or practice is influenced by a number of variables. However, the variables may be, the ultimate goal of EE is solving environmental problems. In view of this, it was stated in Environmental Success Index of America (1992:129) that “a responsible actions is the ultimate benefit of sound education”. A number of actions can be taken to solve environmental problems. Baines (1991/92) recommends the taking of actions starting from a simpler and smaller steps like turning off the tap while brushing our teeth, reducing the level of water in our both and turning off lights when they are not needed to the more complex ones.

2.9 Factors Influencing the Implementation of EE

1. Curriculum

Curriculum is the core of education, no less so of EE. It is not enough to tell pupils or students about ecology or make them aware of environmental concerns. An effective curriculum takes them beyond these levels to that of interacting with the environment themselves and assessing its impact (Neal and Palmer, 1990:40; Connect, UNESCO-UNEP News Letter, (1989). Underlying the initiation of EE curriculum must be the interest of both teachers and students supported by administrative bodies and the community (Allman et.al., 1982).

Though EE as a distinct entity is of a recent origin, its elements have been included in different subjects like nature studies, field studies, Biology and Geography. But, the contents were concerned only with two dimensions related to the environment, namely, learning from the environmental and learning about the environment, was missing (UNESCO-UNEP E.E.S.18, 1985). As recommended in UNESCO-UNEP E.E.S. 17 (1985) EE curriculum has to encompass the following:

In all EE activities, observation of the real environment, inquiry of knowledge related to the topic and the real needs and problems of the community, search for solutions, decisions making and commitment on the part of the students, the teachers and the community would guarantee more effectiveness of the curriculum of EE (UNESCO-UNEP E.E.S. 17, 1985:28).

It is a well recognized pedagogical principle that participation in concrete action directed at a given goal greatly increases learning. That was why Allman et al, (1982), Filho (1993), Meadows (1989), UNEP (1988) recommended the active participation of students in learning by doing or problem solving approach.

2. Material Resources

Whatever direction the programs and methodology for EE may take, the matter of educational resources is of critical importance towards the realization of the ultimate goal of this subject. Neither the availability and integration of EE programs nor the use of a comprehensive methodology, will ensure success unless both human and material resources are available to both teachers and students. Such resources should include textbooks, charts, table, illustrations and

specimens together with resource persons well informed about the local problems (Otiende, J.E. et. al., 1997:30).

Ideally, educational resources for EE must not only be readily available and locally prepared but they must also clearly illustrate the purposes of the activities planned. Materials should be of good quality and produced in sufficient quantity; in addition, instructional aids must be appropriate and meet the needs of the group. Teaching aids that are frequently used must be handled carefully and the information needs to be up to date (Otiende, J.E. et. al., 1997; Rao and Reddy, 2005).

Teaching materials and aids do not necessarily cost a lot and the most appropriate may also be the cheapest. Local priorities must be considered before any financial commitment is made. Yet effective EE can hardly be dispensed without some public expenditure on the production of instructional aids designed to make the local population not only aware of environmental factors and problems, but also be involved in decision making and problem solving (Otiende, J.E. et. al., 1997; Rao and Reddy, 2005).

3. Human Resources

Effective EE will certainly rely on available human resources. In fact it is the calibre of the teaching personnel that may be the decisive factor in creating a lasting impact. Such personnel must be trained and fully conversant with the aims of the subject. Ideally, they will be able to make full use of the available instructional aid and develop their own instructional aid utilizing local resources. Clearly, the newness of EE in the curriculum means that the subject cannot yet rely on specialists. Much, therefore, needs to be done to reappraise teacher education programs to include EE in their curricula. Again this will depend on the country's educational priorities as well as the availability of financial resources (Otiende, J.E. et. al., 1997).

4. Mass Media

Information transmission plays a vital role in EE. Hence, an effective means of communication is indispensable for increasing students (people's) awareness of environmental issues (UNEP, 1988; Karembu, 1996; Patel, 1980).

The media most frequently used to obtain environmental information depends on one's educational and socio-economic levels. A study carried out in U.S.A. in 1986/87 showed that

news paper and television were the major sources of environmental information. Yet, there is good evidence that the power of mass media to influence attitudes in rural areas of developing countries is very limited. In such areas, traditional interpersonal forms of communication appear to be by far more effective (UNEP; 1988:39). Because of their relevance to the cultural, social and physical set-ups, traditional media systems such as popular theatres folklore and dramas contribute a lot to the dissemination of environmental information (IUCN: 1991). In this case, there is a need for two-way flow of information that enables people to contribute as well as receive ideas and information. The International Conference of Thessaloniki, Greek in 1997, recommended the need to establish effective communication strategies as integral part of any major scientific inquiry or program so as to disseminate their findings to the public (UNESCAP, 1997).

2.10 EE in Ethiopia

Although the introduction of EE to Africa dates back to 1961, it started in Ethiopia late in 1985 in a form of a project - EE Project (MOE; 1992). It is believed that the project was a further improvement of the Soil Conservation Project Initiative which had been run by Ministry of Agriculture in collaboration particularly, with SIDA, the main objective being to teach farmers, on the then environmental problems and take protective measures (Aklilu; 2006).

Though the program, EE Program (EEP), was run using schools as centers of the project, the issues addressed were not included into the formal curriculum. Only primary school teacher trainees in the project areas (*Awasa, Harar, Debre Birhan and Dessie*), Students in 24 primary and 15 secondary schools, the community around project areas, 21 community skills Training Centers and 3 Basic Education Development Centers were beneficiaries of the project. It could have brought a remarkable change at a national level if the curriculum had been oriented with the issues of the environment (Aklilu; 2006, Gebeyehu, 1992).

The education system before 1994 was largely based on foreign curriculum. Thus, its usefulness to the objective situation was debatable (MOE; 1994). One could imagine how addressing environmental issue could be difficult in a situation where the curriculum was not geared to the local reality. Nowadays, EE has become one of the burning issues of the time. The recurrent drought, the variability and unreliability of rainfall and the destructive floods are causing damage

to human life and property. As a result, environmental issues have begun to appear on the agenda of the conferences and the media.

As to the concern given to EE by the “New Education and Training Policy of Ethiopia”, Tekste Negash (1996) notes that one of the new inputs and strengths of the policy would be inspired by the need for the environmental protection.

As mentioned earlier, there is a rapid degradation of natural resources in Ethiopia. Harrison (1990) and Asseged (1996) indicate that seven out of ten Ethiopians live on the mountainous highlands from which an estimated 3.5 billion tons of soil are washed away each year. In more details, estimates made by the National Conservation Strategy Secretariat (1994) shows that out of 54 million hectares of land constituting the highlands: 26% is seriously degraded, 24% is moderately degraded, while an over 4% of the land, soil depth is so reduced that the land is no more able to support cultivation.

In view of this, Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation (March 1996) formulated the following EE and awareness policy:

- A) To promote Teaching of EE on multidisciplinary basis through integrating it into school curricula.
- B) To target the public, particularly those involved in public and private sector activities that have significant environmental impacts for EE and awareness program.
- C) To recognize the role mass media play and to effectively use them in creating and promoting environmental awareness in view of physical problems of access and communication in Ethiopia.
- D) To provide in-service training in such subjects as environmental monitoring, geographical information system, pollution monitoring and control, and hazardous waste management.

To initiate, encourage and support the involvement of local community and religious leaders in programs to promote environmental awareness.

According Oromia Planning and Development (2006) hundred years ago most parts of the Arsi Zone were covered with dense and indigenous forest. However, due to an increase of demands for cropland, woods forests almost have been lost. Currently, only Munessa-Shashamane,

Arbagugu and Chilalo-Galema State Forest and the eastern peripheral lowlands of Amingna, Seru and Gololcha and the low land of Ziway Dugda are some pockets of the zone that remain with very few limited natural forest coverage. In the absence of human being interference, Arsi Zone has a potential to grow the following five types of vegetation.

- **The Afro alpine and Sub Afro alpine Vegetation-** This type of vegetation covers 4 percent of the total area of the zone and is found on Chilalo-Gelema and Kaka Mountain Massifs.
- **The Coniferous Forest-** This type of vegetation is referred as temperate forest and found in cool to warm areas of the zone. It covers 69% of the zone.
- **The Broad leafed Forest-** it is found in the most humid parts of the zone, particularly in western part of Kofele and southern part of Munessa district. This accounts for about 3% of the total area of the zone.
- **Woodland Savannah-** It is found in parts of Munessa and Lemu-Bilbilo, eastern parts of Gololcha, Amingna and Seru district. It makes up to 6% of the total area of the zone.
- **The Grassland-** This vegetation accounts for about 18% of the zone. It covers the whole parts of Zuway Dugda, western parts of Dodota-Sire, northern parts of Hetosa, Tiyo and Merti, eastern lower part of Seru and Amingna districts.

The diverse climate and topographic phenomenon have provided a wide range of natural environments, which form favourable habitat for a formation of a wide variety of fauna and flora in Oromia Region in general, and Arsi Zone in particular. However, due to uncontrolled hunting and destruction of their natural habitat as a result of rapid population growth and related human activities, there is rapid decrease of wild life in size, species and distribution. At present, some of wild life that remains in the zone is mountain Nyala, Leopard and bush back (endemic to the country), lion, warthog and hippopotamus. These wild animals are restricted to Chilalo-Gelema mountain range forest and Delfaker, Kaka Mountain, Munessa-Shashamane State Forest, Arbagugu State Forest and the eastern low land of Amingna, Gololcha and Seru Districts and around and in Lake Ziway and Langano where population interferences are low (Oromia Planning and Development, 2006).

Concerning the present state of EE in schools, Sitotaw (1996) states that responsible bodies have been represented at regions' education bureaus since 1992. In order to strengthen the theoretical knowledge offered in the classroom, EE clubs have been organized in senior secondary schools, teacher training institutes, and in some junior secondary schools.

Desalegn (1998) dealt with the assessment of the extent to which senior secondary school students, (Grade 11 students in particular), disseminate EE to the surrounding community. And, he concluded that students are expected to play a significant role for they are relatively more accessible to EE through the subject they learn and the EE clubs in which they participate. In relation to this issue, Abishu (2002) studied -The position of EE in the 2nd cycle primary curriculum in Oromia Region. And, he concluded that the environmental issues were poorly integrated in to the curriculum. Moreover, the categories of objectives of EE such as knowledge, attitude, skill and participation were not proportionally integrated in to the curriculum.

Besides, Damtew (2007) assessed the integration of EE into selected secondary school subjects (Biology and Geography) towards sustainable development which was a content analysis against the guide lines of National Educational Policy. He concluded that EE objectives (knowledge, skills, and attitudes), contents, teaching methods and evaluation techniques were not adequately integrated. In his study he also indicated that the students lacked appropriate view towards utilizing and protecting their environment.

In general, the researcher was interested to deal with the practices and problems of the EE in Second Cycle Primary Schools (grade 7 and 8) with the assumption that the issue of EE requires the concern of different stakeholders like teachers, students and the local community. Furthermore, the students should involve in various environmental conservation initiatives from their child hood so that they can develop better awareness that would help them for the future knowledge and experiences. Despite this, the studies on the same issue in the primary school levels were scanty. Moreover, the studies previously conducted concerning the EE did not examine the above mentioned stakeholders at a time.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

The primary objective of this study was to assess whether EE was integrated in to grade seven and eight curriculum guides and students' text books. Besides, it attempted to analyze associated factors that may retard its proper implementation in the actual teaching-learning process. To serve this purpose, content analysis method and descriptive survey design were employed. The curricula materials were assessed using content analysis, and implementation of EE using descriptive survey.

Survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population (Creswell, 1994:153-154). With the aim of making the information collected more reliable, a combination of quantitative and qualitative methods of data collection has been used. With the inclusion of multiple methods of data and multiple forms of analysis, the complexity of these designs calls for more explicit procedures (Creswell, 1994: 208). As the purpose of this study was to assess the integration of EE in selected primary school subjects, the mixed approach was chosen for triangulation of findings and elaborations of results.

3.2. Sources of Data

In this study both primary and secondary sources were used to get adequate information about the status of EE in second cycle primary schools of Arsi Zone.

- a. **Primary Sources:** in order to get first hand information concerning the status of EE students, teachers, PTA members, directors, and zone natural resource protection experts and regional curriculum experts were used as relevant sources.
- b. **Secondary Sources:** to examine the degree of integration and relevance of environmental issues in grade seven and eight, Geography and Biology Syllabuses were analyzed. Besides, Schools' EE documents and reports were also analyzed.

3.3. Sampling Procedure, Sample Size and Sampling Techniques

Arsi is one of the zones of Oromia comprising 25 *woredas*. The sample populations of the study included five *woredas* representing 20% of the total *woredas* in the zone. These *woredas* were selected based on the general consideration of the two agro-climatic zones i.e. high land and semi-low land (*Arsi Zone Rural and Agricultural Development Department, 2000*).

Based on consideration of proportion of the two divisions, *Tiyo, Robe* and *Munessa* were randomly selected from the highland category, whereas, *Dodota* and *Zuway Dugda* were randomly selected from the semi-lowland category. Out of 74 second cycle primary schools in the 5 sample *woredas*, 10 schools were randomly selected by multi-stage sampling technique.

As far as the respondents of the study were concerned 32 subject teachers (20 Geography and 12 Biology), a Focus Group Discussion members consisting of (1 school director, 2 respective subject teachers, 2 PTA members) 2, regional education curriculum experts and 2 zonal natural resource protection experts were selected. On the other hand, sample student respondents were selected randomly for the study. Hence, 300 (30.3%) were selected from the total of 990 students in 10 sample schools of the zone. The sample students were divided in to grade 7 and 8 depending up on their proportion as 165 and 135 respectively, so that they could be better representative in their respective class.

The sampling techniques adopted to select teacher respondents, directors; zone natural resource protection experts and regional education bureau curriculum experts and PTA members were purposive as the issue under discussion directly concerns them.

3.4. Data Gathering Instruments and Procedures

3.4.1. Data Gathering Instruments

As qualitative and quantitative approaches were suggested in the methods of the study, multiple methods of data collection instruments were employed. Accordingly, questionnaire, content analysis, interview, and Focus Group Discussion (FGD) was used

to collect relevant information. (Sample of each of these instruments is annexed at the end for reference).

1. Questionnaire

Regarding this study, questionnaire was held with teachers and students to assess their knowledge, and attitude towards implementation and practice of EE. The contents of the questionnaire distributed to teachers mainly dealt with teachers' training on EE, their difficulties in teaching EE and the availability of grade seven and eight curricula materials for the implementation of EE (*refer Appendix B1*). Questionnaires filled by students focused on utilization and conservation of natural resources (*See Appendix C1*). To gather relevant information of the study, about 305 and 35 questionnaires were distributed to students and teachers respectively. And, 300 and 32 questionnaires were filled and returned by the former and the latter respectively.

2. Interview

With regard to this, semi-structured interview was held with regional education bureau curriculum experts to investigate the integration of environmental issues in the respective subjects and grades. The interview mainly focused on objectives, contents and teaching methods of EE and attempts made to integrate these elements in to respective subjects (*See Appendix E*). Besides, Rural and Agricultural Development Natural Resource Protection Experts of Arsi Zone were interviewed to assess the main environmental problems in the zone and efforts made to work with primary schools to alleviate environmental problems (*see Appendix F*).

3. Content Analysis

Content analysis is a multipurpose research method developed specifically for investigating a broad spectrum of problems (Cohen and Manion, 1994:55). According to Berelson in Amare (1998:3), content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication. Objectivity means prevention from the influence of the opinion of the researcher or coder

on the data collected. Quantitative means simply the recording of numerical values or the frequencies with which various defined types of content occur. Manifest content refers to the apparent content; that is, the content that must be coded rather than as the content analyst feels (Amare, 1998:4). As to him, systematic means: when categories are set up, all relevant content is analyzed; and a set of procedure is applied in the same way to all content being analyzed.

According to Abinet (2006:309) the categories of EE includes the following:

- a. **Awareness:** help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems
- b. **Knowledge:** gain variety of experiences in and acquire a basic understanding of the environment and its associated problems.
- c. **Attitudes:** acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.
- d. **Skills:** acquire skills for identifying and solving environmental problems.
- e. **Participation:** provide social groups and individuals with an opportunity to be actively and responsibly involved at all levels in working towards resolution of environmental problems.

For the sake of convenience, the above listed categories were slightly modified as awareness gradually develops to knowledge, it was included in to knowledge and categories were reduced to four that is, knowledge, attitude, skill and participation. Then, the units of analysis were objectives, contents and teaching methods stated in the curriculum guides that were categorized on the bases of the above scheme. These categories were coded and tallied accordingly. With the help of the above content analysis scheme to assess the degree of integration of the objectives, contents and teaching methods in to grade 7 and 8 Geography and Biology Curriculum Guides and Students' Text Books content analysis was done.

4. Focus Group Discussion (FGD)

A Focus Group Discussion was conducted in one school. In the school, members of the discussion were 2 teachers (of Geography and Biology), 2 PTA members, and the director. The main issues discussed were: the major causes of environmental problems, the role of education and stake-holders in alleviating the environmental problems and how the school should work with the community in alleviating environmental problems in their locality (*See Appendix D1*).

3.4.2 Pilot Test

Pilot test was conducted to check the workability of questionnaires prepared for the study that was, to test whether the items could enable to gather necessary information appropriately thought to be acquired. Accordingly, a draft questionnaire was administered to 10 teachers (5 Geography and 5 Biology) outside sample schools in the same zone. After having told them the objectives of this pilot test, they were informed how to fill, evaluate, and give feed-back on the relevance of content, length, types of questions and lay out of questionnaires. Some questions were also modified to improve their clarity and others provided with necessary alternatives for they were incomplete. Furthermore, the questionnaire was given to experienced English teacher and he commented on improving the instruction, conceptual integration and grammatical aspects.

3.4.3 Procedures of Data Collection

Review of related literature was made in advance to get information from what has been done in relation to the problem; thereby the basic questions of the study were formulated. Later, data gathering instruments were prepared. Content analysis scheme was also designed by referring reviews of related literature. Questionnaire for students and teachers were prepared and administered with necessary explanation on their objectives.

In addition to these, content analysis was made to examine the extent of integration and relevance of environmental issues in the curriculum guides of the subjects under study.

3.5 Data Analysis

In order to analyze the data generated using various instruments both methods of data analysis: quantitative and qualitative were utilized. As to the quantitative approach, the output of this analysis was tabulated in various arrangements and explanations have been given on the summarized outputs. The outputs are given in tables of frequencies and percentages.

On the other hand, qualitative data generated from content analysis, interviews, focus group discussions and field observation were written in explanation form by citing sources or instruments used.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

As indicated in earlier chapters, the objective of this study is to assess the status integration of EE objectives, contents and teaching methods in the second cycle primary schools of the study area, Arsi zone. To this effect, the integration of environmental issues in to objectives, contents and teaching methods of Geography and Biology at the indicated grade levels. Moreover, teachers' and students' knowledge and attitudes towards EE were assessed. Hence, this chapter presents various first hand data collected and analyzed about the extent of the integration of environmental issues in curricular materials, knowledge and attitudes of teachers' and students' towards the issue under the study.

The analyzed data presented in this chapter were gathered through content analysis from curricula materials, open and close-ended questionnaire presented to teachers and students, semi-structured interview held with experts from regional education bureau and zonal rural development and agricultural department natural resource protection experts, a focus group discussion conducted with school principals, respective subject teachers and PTA members.

First, backgrounds of respondents were discussed followed by Geography and Biology Curricula Materials analysis for objectives, contents and teaching methods of EE. Then, data obtained through questionnaire from the schools' EE implementation and practices would follow. Furthermore, the results obtained through the above instruments were substantiated with the information gathered from interview and focus group discussion. In last parts of this chapter, factors hindering or enhancing the implementation and practices of EE in schools were presented and discussed.

Table 1: Personal Characteristics of Teacher Respondents

S/No	Item	Teacher Respondents	
		Frequency	Percent
1	Sex:		
	Male	24	75.0
	Female	8	25.0
	Total	32	100
2	Age:		
	20-25 years	3	9.4
	26-30 years	3	9.4
	31-35 years	4	12.5
	Above 35 years	22	68.8
	Total	32	100
3	Level of Education:		
	Diploma	26	81.3
	Certificate	6	18.8
	Total	32	100
4	Subject teaching:		
	Geography	20	62.5
	Biology	12	37.5
	Total	32	100
5	Service years:		
	1-4 years	6	18.75
	5-10 years	9	28.12
	Above 10 years	17	53.13
	Total	32	100
6	Grade Teaching:		
	Grade 7	18	56.3
	Grade 8	14	43.7
	Total	32	100

As can be seen in table 1, 17(53.1 %) of the respondent teachers have above 10 years of service in the teaching profession. The table also shows that 18.8% of teachers served from 1-4 years whereas, 28.1% about 5-10 years. As indicated in the table, the majority of teacher respondents are males. Hence, it is evidenced from the table that the percentage of males and females teachers are 75% and 25% respectively. As far as their level of education was concerned, about 81.3% of teachers are diploma holders whereas; about 18.8% had completed their certificate program.

In line with this, as stated in the 1994 Education and Training Policy, for a teacher to teach in the second cycle primary school, s/he should have a minimum qualification of college diploma (TGE, 1994).

Therefore, the qualification of most of the teachers in the sample schools seems to comply with the requirement of the New Education and Training Policy. Moreover, the fact that the majority of the respondent teachers have the required qualification and teaching experience contributes to the reliability and dependability of the conclusion to be made out of this study.

As to the subject of teaching, the greater proportions of respondents were Geography teachers. That is, the teachers teaching Geography comprise about 62.5% whereas, the teachers teaching Biology were about 37.5%.

4.1 Analysis of School Curricula for Objectives, Contents and Teaching Methods of EE

The specific objectives of Ethiopian Education and Training Policy is to provide education that can produce citizens who possess national and international outlook on the environment, protect natural resources and historical heritages of the country (TGE, 1994). The most explicit needs within the EE in the formal school system lie within curriculum development, integration of environmental issues in to the national examination system, teacher training programs, and material development and production (Abinet, 2006).

Taking the above ideas into consideration, the integration of EE objectives, contents and teaching methods into Grade 7 and 8 Geography and Biology Curricula Materials were examined. This helps to see whether contents were included with appropriate methods to achieve the expected objectives.

4.1.1 School Curricula for Analysis of Objectives of EE

Table 2: Analysis of Geography and Biology Curricula Materials for Objectives EE

S/No	Category of EE Objective		Geography		Biology	
			Grade 7	Grade 8	Grade 7	Grade 8
1	Knowledge	No	16	15	13	18
		%	27.1	33.3	9.4	16.2
2	Skills	No	-	-	4	-
		%	-	-	2.9	-
3	Attitude	No	-	-	-	-
		%	-	-	-	-
4	Participation	No	-	-	-	-
		%	-	-	-	-
5	Undecided	No	-	-	-	2
		%	-	-	-	1.8
	Total Objectives in the Syllabus	No	59	45	139	111
		%	100.0	100.0	100.0	100.0

Note: — refers to the absence of categories of objectives.

As could be observed from table 2, in grade 7 Geography Syllabus, out of 59 objectives developed in the syllabus, there were only 17(28.8%) of objectives which falls under the category of knowledge (see Box 1 in appendices). Whereas, the other categories of EE objective, such as skills, attitudes and participation were missing. These objectives were translated into English as indicated in (Box 1 in Appendices).

As shown in the table, EE objectives stated in the Geography Syllabus were found to be few. Moreover, the categories of EE objectives were not proportionally dealt with.

As can be seen from table 2, similarly, grade 8 Geography Syllabus was also examined to include EE objectives. It was found that, about 15(33%) of objectives were found to be under the category of knowledge out of 45 objectives stated in the syllabus. Like grade 7 Geography Syllabus, there were no objectives indicating the categories of skill, attitude and participation.

As can be seen from (Box 1 in appendices), objectives, almost all of them contribute to the cognitive developments of the students. That is, they are knowledge based and do not address the other categories of learning such as attitude and affection. As to (Rao and

Reddy, 2005; MOE, 1994), however, the objectives of EE should encompass the cognitive, affective and psychomotor domains with regard to the knowledge, attitude, skill and practice of environmental issues.

Likewise, the following paragraph seems to support the above idea: According to EPA in Daniel (2005), one of the causes for deep rooted environmental problems in Ethiopia has been the lack of environmental awareness especially at the level of decision makers. The declining curriculum spaces to geographical topics, which are the core component of EE from school text books and syllabus.

As it is depicted in the table 2 above, for grade 7 Biology Syllabus, out of 139 objectives listed in the syllabus only about 17 (12.2%) of them were EE Objectives (see Box 2 in appendices).

When these objectives are observed in terms of categories of EE, about 13 (9.4%) of them address knowledge category whereas, about 4 (2.9%) deal with skills. The objectives addressing skill are: prepare a quadrant to study the distribution of organism in a habitat, use aquarium and terrarium for keeping organisms in the laboratory, use various scientific ways of collecting organisms from their habitat and use scientific techniques of preserving plant and animal specimens.

Besides, for purpose of crosscheck, textbook of grade 7 Biology, was assessed. Here under the title- "*Ga'ee Baayolojiin Hawaasa Keessatti Qabu*". In English 'The Social Role of Biology' "*Naannoo*" or environment is shortly mentioned as one of the roles and the significance of Biology in environmental issues that could be translated in to English as follows:

1. Besides explaining a peaceful relation between man and environment, it encourages having new (scientific) idea and outlook.
2. Tells as to how we utilize the naturally endowed resources in our environment.
3. To protect our environment from pollution, care and protection are expected from people.

Similarly, Grade 8 Biology Syllabus Objectives were analyzed for similar EE objectives categories (knowledge, skill, attitude and participation). Out of 111 objectives stated in the syllabus, about 22 (19.8%) of objectives show the knowledge category of EE (see Box 2 in Appendices). Whereas, the other categories of EE particularly skill, attitude and participation were missing. For the sake of comparison, Grade 8 Biology text book was assessed and the contents described to realize these objectives were observed. From this, it is possible to see that EE objectives included in the syllabus are very few in number. Moreover, most of the objectives of EE stated in the syllabus do not proportionally represent the categories of EE objectives. In general, the objectives were not clearly and systematically stated in the syllabus. .

4.1.2 Analysis of School Curricula for Contents of EE

Table 3: Analysis of Geography and Biology Curricula Materials for EE Related Contents

S/No	Type of EE Content	Proportion	Geography		Biology	
			Grade Seven	Grade Eight	Grade seven	Grade Eight
1	EE related Contents	No	6	5	9	7
		%	22.2%	21.7%	6.5	11.3
2	EE unrelated Contents	No	21	18	130	53
		%	77.8%	78.3%	93.5	88.7
3	Undecided	No	-	-	-	-
		%				-

Note: __ refers to absence of the respective content.

One of the principles of EE is based on the holistic philosophy. Certain aspects should be studied within the context of interactions. The total environment should be considered from a balanced, integrated perspective (Blignaut, 2003).

As observed from table 3, Grade 7 and 8 Geography Syllabuses were analyzed for EE contents. From 27 contents listed in Grade 7 Geography Syllabus, only about 6 (22.2%) of them related to EE contents, whereas, the largest proportion that is, about 21 (77.8%) were not addressing environmental issues (see Box 3 in Appendices). Besides, to see their matching, the student's text book was assessed. From the five chapters covered with

in the text books, only a single chapter was allocated to the contents of environmental issues.

With in similar context, Geography Syllabus of grade 8 was analyzed to examine EE related contents. As it is revealed in the table 3, out of 23 contents listed in the syllabus, only about 5 (21.7%) were found to be related to EE. Whereas, the highest proportion, about 18 (78.3%) of the contents were observed to be unrelated. For the sake of comparison, grade 8 textbook was also assessed. It was seen that from the four chapters covered in it, only one chapter deals with the content of EE (see Box 3 under Appendices).

From EE contents of grade 7 and 8 Geography Syllabus, it can be observed that: The topics related to environmental issues are few. Besides, the contents in the two consecutive grades were assessed. And the environmental topics seem shallow that does not integrate the important components of EE that is, education about the environment, education through the environment and education for the environment. As seen in the categories of EE objectives, almost all of the contents fall under the categories of knowledge. Therefore, the contents address the theoretical aspects of the subject rather than the skill and attitude.

The above idea seems to have similarity with the following research findings: In Ethiopia, the attempt to integrate EE into the formal school curricula is a recent phenomenon, which started as a pilot program between 1989 and 1993. In this program, Geography, Biology and Home Economics were identified as a carrier subjects in which EE was injected. In view of the importance of environmental management for sustainable exploitation of natural resources, environmental issue have to be integral part of the teaching and learning process. However, it is noted that full integration and institutionalization of EE contents has not yet been made for all grade levels and in all schools all over the country. In general, EE was limited to the impartation of factual knowledge about the environment, the content was not based on real life problems; problem-solving approach was not evident; and an interdisciplinary approach to environmental problems was lacking (Abinet, 2006).

Table 3 also indicates the analysis of Grade 7 Biology Syllabus for the environmental related contents. It is obtained that out of 139 contents listed in the syllabus only about 9 (6.5%) are contents related to EE.

Apart from Geography, Grade 8 Biology Syllabus was also assessed for its relation with EE. The result shows that out of 62 contents listed with in the syllabus, only 7 (11.3%) of them were found to be related to EE (see Box 4 in Appendices).

4.1 Analysis of School Curricula for Teaching Methods of EE

Table 4: Analysis of EE Teaching Methods of Geography and Biology Curricula Materials

S/No	Type of EE Teaching Method	Proportion	Geography		Biology	
			Grade 7	Grade 8	Grade 7	Grade 8
1	Student's Centered	No	10	11	4	3
		%	83.3	84.6	33.3	60.0
2	Teacher's Centered	No	2	NTM	7	2
		%	16.7		58.3	40.0
3	Undecided	No	NTM	2	1	NTM
		%		15.4	8.4	

Note: NTM :- refers to No Teaching Method.

With the assumption that student' centered method would contribute to better teaching of EE, teaching methods of grade 7 and 8 Geography Syllabuses were analyzed. As it is evidenced in table 4, in grade 7 Geography Syllabus, 10 (83.3%) and about 2 (16.7%) of teaching methods were seen to be Student's Centered and Teacher centered respectively (see Box 5 in Appendices).

The teaching methods in Grade 8 Geography Syllabus were also assessed and about 11 (84.6%) of them were found to be Students Centered. But, about 2 (15.4%) of the teaching methods were observed to be undecided since they have mixed the characteristics of both teacher's and student's centred (see Box 5 in Appendices).

Generally, the EE objectives integrated in to the respective course encourages student's centred teaching methods. Regarding this, Rao and Reddy (2005) have the following to say: i.e. EE should use the problem solving approach by using the teacher as a resource consultant instead of knowledge dispenser. EE makes use of a variety of teaching and learning strategies and resources. EE is therefore, learner-centered, coherent and progressive, and includes a component of direct experience. It is inclusive, exemplary and community orientated ((Blignaut, 2003).

As can be observed from the table 4, Grade 7 Biology Syllabus was examined for teaching methods. The result indicated that there were about 12 contents related to EE from all teaching methods stated in the syllabus. In these methods, both student and teacher's centered methods accounts for about 4 (33.3%) and 7 (58.3%) respectively. Whereas, 1 (8.4%) of the methods could not be decided to belong to either of the teaching methods. In Grade 8 Biology Syllabus, 3(60%) of the methods are Student's Centered. Whereas, 2 (40%) of them are Teacher Centered (*see Box: 6 in Appendices*). To sum up, the teaching methods of EE in grade 7 and 8 Biology relatively encourage the teaching of environmental issues based on the students' centered approach. This might be the progress of active learning approach encouraged by the New Education Policy.

According to OEB Geography expert, EE Objective was defined as , developing knowledge and understanding of environmental forces that contributes to the deterioration of natural resources. Regarding the EE in grade 7 and 8 Biology Syllabus and text book, he forwarded that EE objective, contents and teaching methods were integrated. Similarly, he agreed with the importance of integration EE Objectives categories such as, knowledge, skill, attitude and participation. Finally, he recommended that since 'environment is the whole set of all life supporting system which include physical, biological and socio-cultural aspects of the society and EE is essential for sustainable development of the society', it is very important to integrate the concepts of EE in to Geography and all other related subjects.

As to OEB Biology expert, "there is EE curriculum at the primary and Secondary Schools. But, the EE contents are included in elementary education curriculum in an

integrated form. According to him, the rationale for revision of New Education Policy is to make the subject more students centered, to catch up with the progress of modern science and technology, and include contents of countries progress in the curriculum.” Moreover, the expert also added that the Biology Curriculum contains EE objectives, contents and teaching methods in general and the categories of EE objectives in particular.

4.2 Teachers’ Attitude towards EE

Intergovernmental Conference (1977) on EE showed that EE should strive to sharpen the awareness and sense of responsibility of citizens with regard to their environment and its emerging problems. Citizens should possess the knowledge, attitude, motivation, commitment and tools needed to work individually and collectively in order to solve current problems and prevent the emergence of new ones (Fekadu, 2005).

Table 5: Teachers’ Attitude towards Significance of EE

S/No	Item	Proportion	Attitude Scale					
			SA	A	UD	D	SD	Total
1	The goal of EE should not be to conquer the natural world but to live in harmony with it.	No.	22	3	2	5	-	32
		%	68.8	9.4	6.3	15.6	-	100
2	EE should not only be institution based, but should also include the rest of the community through non-formal contacts.	No.	-	23	-	5	4	32
		%	-	71.9	-	15.6	12.5	100
3	EE has little importance since environmental problems are very familiar.	No.	1	5	7	4	15	32
		%	3.1	15.6	21.9	12.5	46.9	100
4	EE does not improve our practice of decision making and self- formulation of behaviour about issues concerning environmental quality	No.	13	5	1	11	2	32
		%	40.6	15.6	10	34.4	6.3	100
5	EE must prepare not only adults but also children for the future.	No.	21	4	1	5	1	32
		%	65.6	12.5	3.1	15.6	3.1	100
6	I believe that EE is a cure for our environmental problems of ecosystem	No	21	2	-	9	-	32
		%	65.6	6.3	3.1	12.5	12.5	100

Note: SA = Strongly Agree A = Agree D = Disagree SD =Strongly Disagree UD= Undecided

Hence, the attitude of teacher respondents was assessed inline with the above expressions. As revealed in the table 5, regarding the view: the goal of EE should not be to conquer the natural world but to live in harmony with it. Owing to this, about 25 (78.1%) of the respondents reacted positively. Whereas, about 7 (21.9%) of the respondents could not show their stand.

For the 2nd item - EE should not only be institution based, but should also include the rest of the community through non-formal contacts. About 23 (71.9%) of the respondents replied positively but about 9 (28.1%) of the respondents failed to decide their position. In case of the 3rd item- EE has little importance since environmental problems are very familiar. Only about 6 (18.8%) of the respondents answered positively whereas, about 19 (59.4%) of the respondents responded negatively. On the other hand, 7 (21.9%) of the respondents have failed to decide their position.

As far as the 4th item was concerned : EE does not improve our practice of decision making and self- formulation of behaviour about issues concerning environmental quality, 18 (56.3%) of the respondents replied positively, 13 (40.6%) of the respondents replied negatively. About 12 (37.5%) of the respondents were failed to specify their stand.

As to the 5th item: EE must prepare not only adults but also children for the future. About 25 (78.1%) of the respondents responded positively whereas about 6 (18.8%) of the respondents replied negatively. And, 1 (3.1%) of the respondents could not decide his position.

For the 6th item: I believe that EE is a cure for our environmental problems. About 23 (71.9%) and about 9 (28.1%) of the respondents responded positively and negatively respectively.

Regarding the last item, EE must not only develop understanding and positive attitudes but it also includes resolving problems of ecosystem. About 23 (71.9%) and about 8 (25%) of the respondents responded positively and negatively respectively. Whereas, 1 (3.1%) of the respondents could not specify his/her decision.

In general, regarding the significance of EE, most teacher respondents responded positively whereas, some of them replied negatively. On the other hand, there were few respondents who failed to decide their position.

Therefore, the majority of the teachers responded positively to most of the attitude questions. This might be due to their effort and curiosity to relate their subjects to environmental issues. The negative responses and failing to decide position by some teachers concerning the questions implies the negative impact on the implementation of EE in the respective subjects under the study. Besides, teacher respondents in the section of knowledge assessment questions also reported that most of them did not participate in orientation or training and seminar or workshop concerning the implementation of EE. In fact, the student researcher visited the environmental initiatives in the school compounds of sample schools and over all progress was found to be low.

Though the implementation of EE in schools seems to be affected by different factors like material and human resources the finding shown by Pettus (1976) and Kinsey (1976), research related to conservation and other broad areas of environmental concerns indicates that being better informed about environmental conditions does not necessarily mean people will be more favourable toward environment or environmental controls.

Table 6: Teachers' Attitude towards Teaching Methods of EE

S/No	Item	Proportion	Attitude Scales					
			SA	A	UD	D	SD	Total
1	I believe that a teacher should be the source of knowledge in the classroom.	No	4	2	7	7	12	32
		%	12.5	6.3	21.9	21.9	37.5	100
2	Teaching students in the immediate environment is time consuming.	No	14	13	3	-	2	32
		%	43.8	40.6	9.4	-	6.3	100
3	I don't think that students should be recipient of knowledge from their teacher.	No	6	6	6	4	10	32
		%	18.8	18.8	18.8	12.5	31.3	100
4	I enjoy using a variety of teaching method in a given period.	No	-	2	6	6	18	32
		%	-	6.3	18.8	18.8	56.3	100
5	I believe that teaching my students facts in their text books enables them to solve their environmental problems.	No	-	2	2	13	15	32
		%	-	6.3	6.3	40.6	46.9	100
6	The method of teaching EE at local level must incorporate indigenous knowledge besides scientific approaches.	No	-	-	-	2	30	32
		%	-	-	-	6.3	93.8	100

The items listed in table 6, were associated with the teaching methods of EE. For the 1st item - a teacher should be the source of knowledge in the class room. About 6 (18.8%) and 19 (59.4%) of the respondents responded positively and negatively respectively. And about 7 (21.9%) of the respondents could not forward their decision.

Regarding the 2nd item- Teaching students in the immediate environment is time consuming. About 27 (84.4%) and 2 (6.3%) of the respondents responded positively and negatively respectively. Whereas, about 3 (9.4%) of the respondents failed to decide their position.

As to 3rd item: students should be recipient to knowledge from their teacher. About 12 (37.5%) and 14 (43.8%) of the respondents responded positively and negatively respectively. But, about 6 (18.8%) of the respondents didn't decide their stand.

As far as the 4th item was concerned: using a variety of teaching methods in a given period, only about 2 (6.3%) of the respondents responded positively whereas the majority that is, about 24 (75%) of the respondents responded negatively. Besides, there were about 6 (18.8%) of the respondents who failed to forward their specific decision.

In case of the 5th item: Teaching my students facts in their text books enables them to solve their environmental problems- Only about 2 (6.3%) of them responded positively. Whereas, the majority that is, about 28 (87.5%) of them replied negatively. Besides, these were also about 2 (6.3%) of the respondents who could not forwarded their decision.

For the 6th item-The method of teaching EE at local level must incorporate indigenous knowledge besides scientific approaches. None of them responded to this item positively. On the other hand almost all of the respondents i.e. 32 (100.0%) responded negatively.

Generally, for 1st, 3rd, 5th items most of the teacher respondents responded positively. Whereas, for 2nd, 4th and 6th items the respondents gave negatively reaction. On the other hand, there were also respondents who failed to forward their position regarding the 1st, 2nd, 3rd, 4th, 5th items.

Therefore, the positive responses by the respondents may be attributed to their commitment and experience to have exposure to different kinds of teaching methods used

in the teaching learning process of EE. Whereas, for those respondents who replied negatively, the most probable reason was that they did not get enough training or orientation regarding the teaching methods of EE.

The negative responses and some reservation to show specific decision regarding the teaching methods may comply with Stevenson's work cited in Elias (2004). He writes that one of the contradictions between EE and schooling is the one that persists between curriculum and pedagogical issues. The goals and principles and guidelines of EE suggest a particular orientation of curriculum and pedagogical practices in which students engaged individually or in groups in problem solving and action based activities. Inevitably, such a focus calls for interdisciplinary and flexible inquiry. In contrast however, school curricula tend to be discipline based and emphasize abstract theoretical problems. The curriculum can be described as the mastery of fragmented facts concepts and generalizations organized loosely with in fields of study. The predominant pedagogical process involves the teacher as dispenser of factual knowledge (Elias, 2004:48-49).

The major goal of EE is to prepare the world's citizens effectively to be capable and willing to implement behaviours which improve and/or maintain environmental health and quality. Our understanding of the factors which support environmentally positive behaviours has grown considerably since 1970's. Those understandings influence attitudes which lead to the creation of desired behaviour. To this end, EE plays an important role in providing information about the environment (Fekadu; 2005:44).

Table 7: Attitude of Teachers towards EE

S/No	Item	Proportion	Attitude scale					
			SA	A	UD	D	SD	Total
1	In my view, EE enables teachers to make their teaching relevant to the lives of their students and the society	No	2	29	-	1	-	32
		%	6.3	92.6	-	3.1	-	100
2	If schools are expected to address societal problems, EE should be the key component of the teaching- learning process.	No	2	23	3	3	1	32
		%	6.25	71.88	9.37	9.38	3.12	100
3	Environmental problems cannot be solved through teaching of EE.	No	13	7	4	6	2	32
		%	40.6	21.9	12.50	18.7	6.3	100
4	I do not believe that young students should be taught how to identify problems, prioritize and solve them.	No	9	11	8	2	2	32
		%	28.1	34.4	25.0	6.3	6.3	100
5	In my opinion, students should be taught to score good grades, not how to solve problems.	No	4	5	3	3	17	32
		%	12.5	15.6	9.4	9.4	53.1	100

As it is revealed in 1st item table 7, concerning the contribution of EE to teachers to make their teaching relevant to the lives of their students and the society, about 31(96.9%) of the teachers answered positively whereas, only 1(3.1%) of the respondents answered negatively.

For the 3rd item: Environmental problems cannot be solved through teaching of EE, about 8(25.1%) and 20(62.5%) of the respondents replied positively and negatively respectively. But, about 4 (12.5%) of the respondents could not show their position.

As far as the 4th item was concerned: I do not believe that young students, should be taught how to identify problems, prioritize and solve them; accordingly, about 20 (62.5%) and 4 (12.6%) of the respondents gave their response positively and negatively

Table 8: Students' Attitude towards Causes of Environmental Problems.

S/No	Item	Proportion	Attitude Scales				
			SA	A	UD	D	SD
1	I think that poverty and drought have occurred in our country because we are poor in our resource management.	No	122	80	50	28	20
		%	40.7	26.7	16.7	9.3	6.7
2	I believe that environmental illiteracy is the main cause of environmental problems in Arsi and Ethiopia.	No	106	88	40	26	40
		%	35.3	29.3	13.3	8.7	13.3

As indicated in table 8, for the 1st item: poverty and drought have occurred in our country because we are poor in our resource management: about 202(67.3% and 48(16%) of the respondents responded positively and negatively respectively. Whereas, about 50(16.7%) of the respondents could not specify their stand.

Regarding the 2nd item: environmental illiteracy is the main cause of environmental problems in Arsi and Ethiopia. About 194 (64.7%) and 66 (22%) of the respondents replied positively and negatively. Whereas, about 40 (13.3%) of the respondents failed to forward their position.

To sum up, most of the student respondents showed positive responses towards the causes of the environmental problems. And some of them forwarded negative responses. Whereas, a few of them could not decide their position. As observed in the content analysis section, though, in both Geography and Biology the environmental issues were poorly integrated, compared with the other objectives of EE the knowledge aspect was relatively better addressed.

Table 9: Students' Attitude towards Resource Utilization

S.N	Item	Proportion	Attitude Scales					Total
			SA	A	UD	D	SD	
1	In my view, we should not worry about non-renewable resources.	No	80	36	60	56	66	
		%	26.7	12.0	20.0	18.7	22.0	
2	To me, we have to consume resources not by forgetting the coming generation.	No	224	36	14	8	16	
		%	74.7	12.0	4.7	2.7	5.3	
3	In my view, people are severely exploiting their environment	No	74	114	38	24	46	
		%	24.7	38.0	12.7	8.0	15.3	
4	In my view, farmers can set fire on forests when they need additional farm land.	No	50	26	50	70	102	
		%	16.7	8.7	16.7	23.3	34.0	
5	I believe that anybody doesn't have the right to use plants or animals as s/he likes.	No	94	84	50	34	36	
		%	31.3	28.0	16.7	11.3	12.0	

As revealed in Table 9, regarding the 1st item: We should not worry about non-renewable resources. About 116 (38.7%) and 122 (40.7%) of the respondents answered positively and negatively respectively. Whereas, about 60 (20.0%) of the respondents were failed to specify their decision.

For the 2nd item: We have to consume resources not by forgetting the coming generation. About 260 (86.7%) and 24 (8%) of the respondents replied positively and negatively respectively. But, about 14 (4.7%) of the respondents were failed to forward their stand.

As to 3rd item: People are severely exploiting their environment. About 188 (62.7%) and 70 (23.3%) of the respondents replied positively and negatively respectively. Whereas, about 38 (12.7%) of the respondents could not show their position.

As far as the 4th item was concerned- farmer can set fire on forests when they need additional farm land: About 76 (25.3%) and 172 (57.3%) of the respondents forwarded their opinion positively and negatively. Regarding this item, about 50 (16.7%) of the respondents could not show their position.

As to the 5th item: any body does not have the right to use plants or animals as he or she likes: about 178 (59.3%) and 70 (23.3%) of the respondents forwarded positively and

negatively respectively. Whereas, about 50 (16.7%) of the respondents could not specify their stand.

Generally, most of the student respondents forwarded positive response towards utilization of natural resources, whereas, the others responded negatively. On the other hand, a few respondents could not show their position.

Table : 10 Students' Attitude towards Responsibility of Resource Conservation

S/N0	Item	Proportion	Attitude scales				
			SA	A	UD	D	SD
1	In my view, everybody is responsible to conserve his or her environment.	No	194	58	12	16	14
		%	64.7	19.3	4.0	5.3	4.7
2	I feel our government is responsible organ for environmental problems and their solutions.	No	93	78	70	26	18
		%	32.7	26.0	23.3	8.7	6.0
3	I feel that, students should play the dominant role in protecting our environment in developing countries like Ethiopia	No	190	62	24	18	6
		%	63.3	20.7	8.0	6.0	2.0
4	I feel that we, students might not play key roles in conserving our environment because we are not matured.	No	28	44	60	48	120
		%	9.3	14.7	20.0	16.0	40.0

As Brtant *et. al.*, stated in Daniel (2005, 133-134) young people's environmental attitudes are particularly important because they are ultimately affected by environmental problems arising from present day actions. As future scientists, policy makers, consumers and voters, today's youth will be responsible for "fixing" the environment, and they will be the ones who must be persuaded to adopt and pay the costs of future environmental policies. Therefore, effective EE for school age students is crucial.

There is a widely held position that environmental knowledge leads to favourable attitude toward the environment (Fortner, 1978; Fortner and Teates, 1980; Moore, 1981). According to George's research cited (in Knapp: 1973), participation in nature clubs, nature camps and other outdoor activities have a significant positive effect upon conservation attitudes.

As displayed in the table 10, for the 1st item: everybody is responsible to conserve his/her environment: about 152 (50.7%) and 30 (10%) of the respondents replied positively and negatively respectively. Whereas, about 12 (4.0%) of the respondents could not decide their position.

As to the 2nd item: the government is responsible organ for environmental problems and their solutions. About 176 (58.7%) and 44 (14.7%) of the respondents displayed favourable and unfavourable behaviour respectively. However, about 12 (4.0%) of the respondents failed to forward their decision.

Regarding the 3rd item: students should play the dominant role in protecting our environment in developing countries like Ethiopia. About 252 (84%) and 24 (8%) of the respondents forwarded favourable and unfavourable behaviour, respectively. There were also about 24 (8.0%) of the respondents who failed to determine their stand.

For the 4th item: we students might not play key roles in conserving our environment because we are not matured. About 72 (24%) and 168 (56%) of the respondents reflected favourable and unfavourable behaviour respectively. Besides, there were about 60 (20.0%) of respondents who failed to show their position.

In general, the great majority of the students had good attitude; whereas, some had negative attitude and a few could not determine their stand regarding the responsibility of resource conservation and management.

Table 11: Students' Attitude towards Resource Conservation and Management

S.N	Item	Proportion	Attitude scales				
			SA	A	UD	D	SD
1	In my view, we should use wood fuel rather than biogas and solar energy to conserve our natural resources.	No	50	56	74	70	46
		%	16.7	18.7	24.7	23.3	15.3
2	I believe that conservation of the living and non-living elements of our environment is crucial for our development.	No	182	74	16	16	12
		%	60.7	24.7	5.3	5.3	4.0
3	Nature itself makes our ecological system balance, therefore, no need to conserve it.	No	18	26	72	60	124
		%	6.0	8.7	24.0	20.0	41.3

Here, as revealed in table 11, regarding the 1st item: we should not use wood fuel rather than biogas and solar energy to conserve our natural resources. Out of the 300 student respondents, about 106 (35.3%) and 116 (38.7%) of the student respondents forwarded favourable and unfavourable behaviours, respectively. On the other hand, about 74 (24.7%) of the student respondents did not determine their stand.

As to the 2nd item: Conservation of the living and non-living elements of our environment is crucial for our development. Regarding this item, about 256 (85.3%) and 28 (9.3%) of the student respondents displayed favourable and unfavourable behaviour, respectively. Besides, there were 16 (5.3%) of the student respondents who could not specify their stand concerning this item.

For the 3rd item: Nature itself makes our ecological system balance therefore, no need to conserve it. About 44 (14.7%) and 184 (61.3%) of the respondents displayed favourable and unfavourable behaviour respectively. There were also about 72 (24%) of the student respondents who failed to decide their position.

In general, most student respondents showed good attitudes towards resource conservation and management. This might be their personal experiences or their knowledge from informal sources such as mass media. Whereas, some of them displayed negative attitude. Apart from these, there were few student respondents who could not specify their stand. This seemed that students have confusion about utilization and protection of resources. Studies conducted in Ethiopia to investigate the level of students' understanding of and attitude towards key environmental issues clearly also indicated that there is a remarkable deficiency in the knowledge and attitude about natural resource management and environmental protection. There is an evident need to provide a basic and aim oriented education on issues pertaining to the use and management of natural resources in schools and teachers training institutions (Aklilu, 2004:53-54).

Focus Group Discussion in Dodota Woreda Argiti-Dannaba School

Generally, the effort of the school community as a result of behavioural change could have been observed in and around the school concerning utilization and protection of natural resources. On assessment of this the, Focus Group Discussion made showed that

there are environmental problems particularly deforestation, soil erosion ,scarcity of rain ,etc. For this, they raised lack of awareness, the nature of climate, land topography and others as the major causes.

For question, who are the stakeholders to alleviate these environmental problems? The group members forwarded that the hierarchies of administrations from *kebele* up to the region collaborating with the communities and rural development and agricultural departments. Furthermore, they suggested that there should be a body or organization associated with the community to consider about environmental concerns as its major business. Trainings and awareness creation workshops, strategies to disseminate what students learnt in the school to the community, trip or field education can minimize the aforementioned environmental problems.

4.4 Factors Affecting the Implementation of EE

As explained in the review of related literature part, there are different factors that can affect the proper implementation of EE in schools. Among these, teachers' professional development through on job training, refresher workshops, exposure seminars and etc can be cited.

In identifying factors that affect the implementation of EE, the situation of training and awareness creation workshops for teacher has been analyzed. As can be seen in the training section , the majority of teachers did not take training or orientation on how to integrate EE into their subject areas. Hence, 71.9% of teachers did not take training or orientation.

Table 12: Participation of Teachers in Various Trainings to implement EE

Participation	Subject	Teachers' response					
		Yes		No		Total	
		No	%	No	%	No	%
Training or Orientation	Geography	6	30.0	14	70.0	20	100
	Biology	3	25.0	9	75.0	12	100
Seminar or Workshop	Geography	4	18.8	16	81.3	20	100
	Biology	4	33.3	8	66.7	12	100

It is also observed in table 12 that most of the teachers do not have taken seminar or workshop as far as implementation of grade 7 and 8 Geography Syllabuses are concerned. This is evidenced from the table that about 81.3% of teachers did not take seminar or workshop concerning the implementation of Geography Syllabus.

From these results, it can be inferred that there is lack of attention to impart necessary training or orientation on how to integrate EE into the respective subjects under the study.

Furthermore, as teachers were also lacking seminar or workshop on the implementation of EE in their subject areas, it seems difficult to expect from the teachers to apply appropriate teaching methods in the teaching-learning process. Besides, it might be also difficult for the teachers to relate the EE contents with the real life situation of the students and the community to alleviate the local environmental problems.

This seems to conform to the following findings: teachers are usually called up on to handle EE topics in which they lack prerequisite training. This means, in the first place, teachers lack the expertise to actively engage students in environmental issues. They have misconceptions about the nature and the scope of EE. This means that they cannot draw the clear picture of EE within the subject they teach (Elias, 2004:50-51).

Table 13: Teachers' Difficulties in Teaching EE

Did you face difficulties in teaching EE?				Total	
Yes		No			
No	%	No	%	No	%
19	59.4	13	40.6	32	100

During the survey, the majority of teachers (59.4 %), 19 in number, have faced difficulties in teaching EE contents in their subject areas. As can be seen in table 6, most of teachers did not take training or workshop regarding the implementation of EE. Therefore, without necessary training and orientation it is difficult to expect better implementation from teachers hence, most of the teachers could face difficulties in the teaching learning process of EE. In general, without necessary training and orientation the knowledge, skill and attitude of teachers would expect to be poor.

Table 14: Type of Teacher's Difficulty in Teaching EE

S/No	What kind of difficulty did you face in teaching EE?	F	%
1	Teaching outside classroom	15	32.6
2	Relating contents to local issues	16	34.8
3	Using different teaching methods	15	32.6
	Total	46	100

N.B The total may not indicate the number of teachers responded to the question as some responded more than one answer at a time.

Table 14 depicts the difficulties teachers face in teaching EE in their subject areas. Generally, relating contents to local issues was found to be the leading difficulty which accounted 16 (34.8%) of respondents. Whereas, teaching outside class room and using different teaching methods follow with the same frequency that is, 15 (32.6%) of the respondents.

In addition to close ended questions regarding difficulties of teaching EE, teachers' response to open ended- item in the questionnaire revealed, negative attitude of students towards the subject, shortage of time due to broadness of the portion were the major difficulties faced by teachers. Therefore, these various difficulties facing teachers in

teaching EE would be expected to influence the teachers to use appropriate teaching methods to facilitate the teaching learning process and attain the expected goals of EE. It is also possible to infer from this, that the students may lack interactivity in the process of teaching learning and it would be difficult for them to relate theory and practice.

Table 15: Scarcity of Curricular Materials of Geography and Biology

Geography						Biology					
Yes		No		Total		Yes		No		Total	
F	%	F	%	F	%	F	%	F	%	F	%
28	87.5	4	12.5	32	100	19	59.4	13	40.6	32	100

Note. 1. F- Represents a frequency.

2. The total may not show the number of teachers responded to the question because they gave more than one answer at a time.

Whatever direction the programs and methodology for EE may take, the matter of educational resources is of critical importance towards the realization of the ultimate goal of the subject (Otiende, 1997:30).

According to table 8 , the majority of teachers replied that there was scarcity of curricular materials of both Geography and Biology in teaching learning process. As far as Geography was concerned, about 28 (87.5%) of teachers responded the scarcity.

As to Biology, as it is disclosed in the table, still the majority of the teachers that is, 19 (59.4%) replied that there was scarcity of curricular materials in their teaching learning process.

Table 16: Teachers' Responses on Scarce Curriculum Materials

S/No	Curricular Materials	Frequency	Percentage
1	Syllabus	20	45.5
2	Teacher's guide	18	40.9
3	Students textbook	6	13.6
	Total	44	100

Note: The total may not show the number of teachers responded to the question because they gave more than one answer at a time.

As indicated in the table 16, most of the respondent teachers reported that, syllabus, teacher's guide and student's text books were scarce. With insufficient availability of these curricular materials, either integration or implementation of EE objectives, contents and teaching methods seems difficult. Regarding Geography, in the open-ended questions the teachers responded that particularly there were shortages of reference books, Teacher's guide for Radio Lesson and teaching aids in the teaching-learning process of EE. As far as Biology was concerned, there was also scarcity as teachers indicated in their response. That was, the absence of laboratory, laboratory equipment, such as microscope and teaching aids like maps and posters, etc.

Therefore, without the above mentioned curricula materials implementation of EE would be difficult. In addition to this, lack of teaching aids/teaching materials may create the gap between the theoretical aspect of teaching EE and the real life aspects of the students particularly their knowledge and skill of resolving their environmental problems. This situation seems to comply with the following idea. That is, attainment of significant behaviours, like critical thinking and active involvement of EE may not be successful under high pressure where schools suffer from the shortage of necessary resources and facilities (Elias, 2004:51-52).

Based on the idea of the above literature since the nature of EE requires active involvement and participation of teachers and students without the necessary facilities aforementioned, the creativity of both groups in the implementation of EE could not be progressed.

Table 17: Teachers' Responses on Reasons for Scarcity of Curricula Materials

S/No	Reasons	Frequency	Percentage
1	Shortage of supply	20	52.6
2	Lack of follow up by school administrators	9	23.7
3	Unknown reason	9	23.7
	Total	38	100

Note: the total may not show the number of teachers responded to the question because they gave more than one answer for one question

As shown in table 17, the majority of the teachers revealed that, the major reason for the scarcity of the curricular materials was shortage of supply. The other reason negatively affecting the availability of the respective curricular materials was found to be lack of follow up by school administrators. On the other hand, there were some teachers who could not know the reason for the scarcity of the curricula materials.

The Arsi Zone Rural and Agricultural Development Department Natural Resource Expert was also interviewed on how to work with primary schools to alleviate environmental problems. And the expert had believed that the zone is characterized by environmental problems such as, deforestation and soil erosion. However, he said that effort made in the primary schools was negligible. He explained that their department made an effort by disseminating EE knowledge and supporting the Nature Club rather in secondary schools. For instance, through projects their department sponsors educational tour, providing seedlings and materials to secondary schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the major results of the study and draws conclusions on the basis of the results. At the end, recommendations that were thought to be helpful to address the problems were forwarded.

5.1. Summary

The main objective of this study was to assess the integration of EE into Geography and Biology Curriculum Guides and Students' Text Books so did into the implementation of EE in Selected primary Schools of Arsi Zone. On the top of this, the result of the study revealed the following findings:

1. The result of content analysis made on grade 7 and 8 Geography and Biology Curricula Materials showed that EE objectives (knowledge, skills, attitudes and participation) were not adequately integrated in to the curricula guides student's text books of both subjects though knowledge objectives had given a little emphasis.
2. As to integration of contents and teaching methods in to the respective subjects, only a single unit in each subject and grade level relatively incorporated environmental issues.
3. As far as the factors hindering the implementation of EE were concerned, most of the teachers who are implementing the policy objectives and the curricula materials, did not get training on how to integrate EE into their subject areas. There was also lack of curricula materials such as, syllabus, teachers and even students text books that negatively affected the process of teaching learning. Teachers were also faced difficulties in teaching EE particularly relating its contents to the local issues since there were no opportunities for them in the curriculum guides.

4. The attitude of teachers towards implementation of EE was assessed with the help of attitude scale and the subsequent results were obtained. A great majority of the teachers reflected positive attitudes towards the goal, significance and teaching of EE in primary schools. However, there were some teachers who showed negative attitudes regarding the above mentioned points as they might have less exposure to knowledge and experiences of EE.
5. Similarly, students' attitude was assessed using attitude scale and the following results were obtained. Most of the students displayed positive attitudes towards the causes of degradation, utilization, conservation and management of natural resources. Whereas, some of them reflected unfavourable behaviours. Apart from this, a few of them could not determine their stand.

5.2. Conclusion

EE is a broad concept that should be imparted to all levels of students and should be lifelong activity. For EE to bring about the desired behaviour, its objectives, contents and teaching methods ought to be duly integrated in to the respective curricula materials with all its components, such as knowledge, attitude, skill and participation.

Though teachers teaching Geography and/or Biology have the required level of educational qualification, for successful implementation of EE, necessary orientations and training are needed to enrich their knowledge and improve their out look towards EE; since it has the dynamic nature depending on the local ,regional and international situations .Similarly, despite the students' and teacher's showing positive attitude towards EE , it is not suffice to realize the objectives of EE for it needs dedications and commitments to implement EE.

5.3. Recommendations

Based on the findings of the study, the student researcher suggested the following recommendations.

- The regional education bureau should focus on the integration of environmental issues into the respective subjects in different levels of education.
- While integrating Environment Education, the respective experts ought to consider the relative proportions of EE objectives such as knowledge, attitude, skill and participation.
- The teaching methods suggested in the curriculum materials in which EE is integrated should consider out door and field trip education as the best avenue to contact with the environment.
- Both governmental and non-governmental institutions should plan and conduct relevant training and workshop focusing on the dynamic aspects of environmental issues to acquaint teachers with important knowledge and skills.
- The teachers should be trained in such a way that they can conceptually integrate environmental issues to their subject areas to ease the implementation of EE in schools.
- In the teaching-learning process, to implement EE successfully necessary curricular materials such as syllabus, teachers guide, flow charts, text books etc. should be fulfilled by the respective organization producing the materials.
- As far as EE is concerned, it is not only the positive attitude which is expected from teachers; but, the lesson s/he imparts to the students should consider the local environmental issues like soil erosion , deforestation, mal-farming, pollution, etc.
- As the nature and aim of EE changes with regional and global situations, the teachers' knowledge and experience should be up dated by the help of different information sources like training, internet, TV, magazines, radio, etc.

- Besides the scientific approaches, there are also cultural and social values of society that the curriculum designers and teachers should consider in the implementation of EE as rich experiences may be gained from them.
- Students at younger stages of learning need to be exposed to the experiences of EE, as they have keen attention to the environment which is a potential to develop their knowledge related to environmental concerns. Moreover, shaping younger generation towards the needed behaviour is easier.
- The process of teaching- learning of EE should not be dominated by the factual knowledge rather should focus on practical activities contributing to alleviation of the local environmental problems, such as deforestation, soil erosion, pollution, etc.
- Teaching methods should focus on acquainting students how to solve environmental problems using systematic knowledge and skill independently and collectively.

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Appendices

Box 1: Social Studies Objectives Addressing Environmental Issues

Grade 7

At the end of the lesson students should be able to:

1. Tell the formation of atmospheric air comparing with the air released from the earth and concentrated for long period of time
2. List the contents of atmospheric air
3. Compare and tell the size of the earth with other planets
4. List elements from which the crust of earth is made
5. Explain the meaning of earth
6. List the bodies/portions of the earth
7. Explain the water bodies
8. Explain elements from which the soil is made
9. Differentiate and tell soils with their elements, profile, color and fertility
10. List the uses of soils
11. Explain how people can be benefited from water bodies.
12. Explain the influence of climate on life of people
13. Explain how people can improve their life with the change of climate
14. List the natural causes of desertification.
15. Mention the ways by which plants can be deforested and wasted
16. List the natural factors influencing plants
17. Explain the mechanisms to minimize deforestation and wastage of plants

Grade 8

1. Explain the scientific approach of shape of the earth and the elements found in the surface of earth.
2. List the three layers of the earth.
3. Mention the internal and external forces of the earth.
4. Explain the features created on the surface of the earth as a result of internal and external forces
5. Mention the three types of rocks
6. Explain the three uses of rocks
7. Tell the relation between the soil and plants
8. Tell the relation between plants and animals
9. Explain the life cycle relation of plants, animals and soil
10. List the water bodies on the surface of the earth by the help of maps.
11. Explain the meaning of underground water and its utilization
12. Mention the causes of air pollution
13. Explain the causes of desertification and hunger
14. Explain the distribution of plants by the help of map
15. Mention the ways of protecting plants

Box: 2 Biology Objectives Addressing Environmental Issues

Grade 7

At the end of the subtopics students should be able to:

1. Define the term habitat
2. Give examples of habitats
3. Prepare and use a quadrant to study the distribution of organisms in a habitat.
4. Define aquarium and terrarium
5. Use aquarium and terrarium for keeping organisms in the laboratory
6. Use various scientific ways of collecting organisms from their habitats
7. Use scientific techniques of preserving plant and animal specimens
8. Define population
9. Give some examples of population
10. Define community
11. Give examples of community
12. Define food chain and food web
13. Illustrate food chain and food web with practical examples
14. Establish a food chain from a given habitat
15. Draw and explain a pyramid of number
16. Explain the benefits of protecting natural habitats
17. Reflect on the values they developed

Grade 8

1. Define ecosystem
2. Give examples of ecosystems
3. Study an ecosystem
4. Define habitat and niche
5. Give examples of habitat and niche
6. Compare habitat and niche
7. Explain the different types of biological association
8. Give example of the different types of biological association
9. Compare mutualism, commensalisms, and parasitism
10. Distinguish among decomposers and scavengers
11. Discuss how the soil is formed
12. List the types of soils
13. Tell causes of soil erosion
14. Explain methods of soil conservation
15. Discuss importance of water for life
16. Explain water cycle
17. Give examples of plant adaptations to conserve water
18. Give examples of animal adaptations to conserve water
19. Explain methods of water conservation
20. Define pollution
21. Explain the causes, effects and prevention of air pollution
22. Explain causes, effects and prevention of water pollution

Box 3: Social Studies Syllabus EE Contents

Grade 7

1. The formation of Atmospheric air
2. Earth
3. Soil
4. Water bodies and man
5. Climate and man
6. Deforestation and wastage of plants

Grade 8

1. Earth
2. The relationship of soil plants and animals
3. Water bodies
4. Air pollution
5. Plants

Box 4: Biology EE Related Contents

Grade 7

1. Habitats
2. Different types of habitats
3. Studying a habitat
4. Using a quadrat
5. Aquarium and terrarium
6. Methods of collecting organisms
7. Methods of preservation of collected specimen
8. Population and community
9. Food relationships
10. Group project:
11. How should rural development programs protect habits? What will be the programs benefits by doing so?
12. Analysis of values

Grade 8

1. Learnt in this unit
2. Our environment
3. The ecosystem
4. Habitat and niche
5. Biological Association
6. Physical factors of the environment
7. Some environmental problems
8. Pollution

Box 5: Social Studies Syllabus EE Teaching Methods

Grade 7

Teacher's Centered

1. Explaining to the students the relation between formation of atmospheric air and planets.
2. By the help of examples, explaining to the students that the lower atmosphere in addition to density, due to internal and external changes of the earth is filled by dust, chemicals, gases and evaporation.

Student's Centered

1. Starting class by asking students how they differentiate the soils in their locality.
2. Letting the students discuss and explain how rocks are broken and changes to soil and other materials are mixed with the soil.
3. Guiding the students to discuss the colour and difference of soils by taking samples.
4. Letting the students discuss and report the importance of soil. by taking different kinds of examples
5. Starting lesson by asking students the uses of water in their area
6. Letting the students discuss and explain how people use big oceans, seas, lakes and rivers.
7. Starting lesson by asking students to explain the meaning of climate.
8. Letting the students discuss and report the effects of climate on human being and the mechanisms used by man to resist its effects.
9. Guiding the students to list the factors deforesting the plants and ways of protection.
10. Letting discuss and then explain the natural factors deforesting plants like, desertification, volcanic eruption and clearing by man.

Grade 8

Student's Centered

1. Letting the students discuss and then explain the shape of the earth which is made up of the three layers.
2. Letting the students discuss and then explain the internal and external forces of the earth and the bodies creating these forces.
3. Helping the students visit the field and differentiate the internal and external forces.
4. Letting the students discuss and then list and explain the three types of rocks.
5. Starting the lesson, by asking students about soil and plants.
6. Guiding to discuss and report uses of soil for plants, and animals.
7. Letting the students discuss and the explain how then under ground water can be obtained
8. Letting the students discuss and then explain the causes of air pollution like car, airplane, factories, charcoal.
9. Letting the students discuss and then explain the causes of desertification and hunger.
10. Asking the students to list/mention what they had learnt about plants in their previous classes.
11. Letting the students discuss and then explain the types of vegetation distribution and conservation in the world climatic zones.

Undecided

1. Starting from students report and explaining the relation of plants and animals.
2. Listing the water bodies on the earth surface and letting the students to show on map from the bigger to the smaller.

Box 6: Biology Syllabus EE teaching Methods

Grade 7

Teacher's Centered

1. Demonstrate what a quadrant is and how it is used in studying a habitat by taking your students to a select habitat.
2. Explain how aquaria and terrarium are prepared how organisms are kept in them and how food and protection is given to the organisms.
3. Demonstrate the various methods of collecting organisms.
4. Demonstrate the methods of preservation of collected plant and animal specimens.
5. Plan an excursion to teach about population and community. Students should observe various communities and the organisms in each community. Observations should be discussed and summarized in the classroom.
6. Present the lesson by discussing the important concepts of food relationship among organisms. Illustrate your discussion with examples that are true to the students' locality.
7. Show students that, for example, value of Industriousness is developed in an active involvement in group projects and in the field practical activities. Since some habitats are protected by law, the issue of habitat protection could also help in the development of the value of rule of law.

Student's Centered

1. Give your students a group project to study the distribution of organisms in selected habitats using quadrants.
2. Plan an excursion so that students practice the methods and they collect organisms using those methods.
3. Students should perform practical activity of constructing a food chain by studying the community of some selected habitats.
4. Students could do the project work through library research; interviews; visits; small group discussions; etc...

Undecided

1. Present the theoretical aspect of this lesson in the classroom by giving as many examples as possible and then plan an excursion to visit the habitats discussed.

Grade 8

Student's Centered

1. This content is best taught by arranging an excursion in which students are asked to observe ecosystems, habitats and niches with the help of their teacher and report on their observation back in the classroom.
2. Have students make a chart in their notebook that lists the different types of biological associations with examples for each.
3. "Physical factors of the environment" also requires prior planning of excursions to observe some causes of soil and water erosion and methods of conservation of soil and water.

Teacher's Centered

1. Discuss the structural adaptation of animals and plants in relation to scarcity of water.
2. When you discuss pollution, among the other issue causes mention the role of industries that cause the threat of contamination and thermal pollution

APPENDIX A1

**Addis Ababa University
School of Graduate Studies
College of Education
Department of Curriculum and Teachers'
Professional Development Studies**

General Direction for Coders:

The main objective of this study is to assess the Status of Environmental Education in grade 7 and 8 Social Studies and Biology syllabuses in Second Cycle Primary Schools of Arsi zone.

The information you provide is highly valuable for the findings of the study. Therefore, the success of the study highly depends on your genuine and honest response. I assure you that your information is confidential and never be exposed or transferred to any other body by any means. The obtained information serves only academic purpose. Hence, you are kindly requested to answer all the items after reading thoroughly. Please, do not write your name.

Thank you for Your Cooperation!

I. Personal Information

1. Woreda _____
2. School _____
3. Sex _____
4. Age _____
5. Qualification _____
6. Subject teaching _____
7. Grade teaching _____
8. Service Years _____

II. Coding Sheet

General Information

Subject: Social Studies & Biology Syllabuses

Grade: Seven and Eight

Unit of Analysis: Objectives developed in the syllabus

Direction of Coding

This coding sheet is prepared to assess the integration of Environmental Education Objectives into social studies syllabus revised in 2003/4. Read each objective in both grade seven and eight Social Studies Syllabus and put the total number of Environmental Education Objectives under each category in the table below.

2.1. Coding Sheet based on Objectives

Type of Environmental Education Objective		Social Science		Biology	
		Grade 7	Grade 8	Grade 7	Grade 8
Knowledge	No				
	%				
Skills	No				
	%				
Attitudes	No				
	%				
Participation	No				
	%				
Undecided					
Total Objectives in the Syllabus	No				
	%				

2.2 Coding Sheet based on Contents

Type of Environmental Education Content	Proportion	Social Studies		Biology	
		Grade Seven	Grade Eight	Grade Seven	Grade Eight
Environmental Education related Contents	No				
	%				
Environmental Education unrelated Contents	No				
	%				
Undecided	No				
	%				

2.3 Coding sheet based on teaching Methods

Type of Environmental Education Teaching Method	Proportion	Social Studies		Biology	
		Grade 7	Grade 8	Grade 7	Grade 8
Student's Centered	No				
	%				
Teacher's Centered	No				
	%				
Undecided	No				
	%				

APPENDIX B1

Addis Ababa University
School of Graduate Studies
College of Education
Department of Curriculum and Teachers'
Professional Development Studies

General Directions: The main objective of this study is to assess the Status of Environmental Education in grade 7 and 8 Social Studies and Biology Syllabuses in Second Cycle Primary Schools of Arsi Zone. The information you provide is highly valuable for the findings of the study. Therefore, the success of the study is highly depends on your genuine and honest response. I assure you that your information is confidential and never be exposed or transferred to any other body by any means. The information obtained serves only academic purpose. Hence, you are kindly requested to answer all the items after reading thoroughly. Do not write your name.

Thank you for your Cooperation!

I. Questionnaire Filled by Teachers

Objective: the main objective of this questionnaire is to assess teachers' knowledge, teaching methods and attitudes concerning Environmental Education in the teaching learning process of grade 7 and 8 Social Studies and Biology.

I. Personal Information

1. Woreda _____
2. School _____
3. Sex _____
4. Age _____
5. Qualification _____
6. Subject teaching _____
7. Grade teaching _____
8. Service Years _____

2.1 Knowledge Questions

Direction: Answer the Following Questions Accordingly.

N.B.1 For multiple questions answered by circling you can give more than one answer.

2. Answer only questions related to your subject area.

1. Do you have some training or orientation how to integrate Environmental Education in to your subject area?
A/ Yes B/ No
2. Did you take Seminar or workshop to implement grade 7 or 8 Social Studies revised in 2003/4?
A. Yes B. No
3. Did you take Seminar or workshop to implement grade 7 or 8 Biology Studies revised in 2003/4? A. yes B. No
4. If your answer for question number 2 or 3 is 'Yes' specify the organization or institution who gave you the seminar or workshop.
5. Have you ever faced difficulties in teaching Environmental Education content in your subject area?
A. Yes B. No

6. If your answer for question number 5 above is 'Yes' which of the following difficulties did you face? Circle your answer/s.
- Teaching out side the classroom
 - Relating contents to local issues
 - Using different teaching methods
 - Scarcity of teaching aids
- If others specify _____
7. Is there scarcity of curricular materials in the teaching-learning process of Social studies? A. Yes B. No
8. Is there scarcity of curricular materials in the teaching-learning process of Biology? A. Yes B. No
9. If your answer for question number 7 or 8 is yes, which of the following curricular materials are scarce?
- Syllabus
 - Teacher's Guide
 - Student's Text Book
- If other specify _____
10. IF your response for question Number 7 or 8 is 'yes' which of the following could be the reason/s?
- Insufficient supply by educational office
 - Lack of follow up by administrators
 - For unknown reason
- If other specify _____
11. Do you have additional comment or recommendation about the integration of Environmental Education in Social Studies or Biology in second cycle primary school? Please forward.

1.2. Questions Designed to Assess Teachers' Attitudes toward Environmental Education and Teaching Methods

Direction: put tick mark (✓) under one of the alternatives **Strongly Agree, (5), Agree (4), Undecided (3), Disagree (2), or Strongly Disagree (1)** accordingly.

No.	Items	5	4	3	2	1
1	In my view, Environmental Education enables teachers to make their teaching relevant to the lives of their students and the society					
2	The goal of Environmental Education should be not to conquer the natural world, but to live in the harmony with it.					
3	Environmental Education has little importance since environmental problems are very familiar.					
4	Environmental Education should not only be institution based, but should also include the rest of the community through non-formal contacts.					
5	Environmental Education does not improve our practice of decision making and self formulation of a code of behaviour about issues concerning environmental quality.					
6	Environmental Education must prepare not only adults but also children for the future					
7	If schools are expected to address societal problems, Environmental Education should be the key component of the teaching learning process					
8	I believe that Environmental Education is a cure for our environmental problems					
9	I do not think that environmental problems can be solved through teaching Environmental Education.					

10	Environmental Education must not only develop understanding and positive attitudes but must also include practical knowledge to resolve problems of ecosystem.					
11	I believe that a teacher should be the source of knowledge in the class room.					
12	Teaching my students in the immediate environment is time consuming.					
13	I do not think that students should be recipients of knowledge from their teacher.					
14	I do not believe that students, being they are too young, should be taught how to identify problems, prioritize and solve them.					
15	In my opinion, students should be taught to score good grade, not how to solve problems.					
16	I enjoy using a variety of teaching methods in a given period.					
17	I believe that teaching my students facts in their text books enable them to solve their environmental problems.					
18	The method of teaching Environmental Education at local level must incorporate indigenous knowledge besides scientific approaches.					

APPENDIX C1

I. Questionnaire Filled by Students.

2.1. Questions to Assess Students' Attitudes toward Utilization and Conservation of their Environment.

Direction II: Put tick mark (✓) under **Strongly Agree (SA)**, **Agree (A)**, **Undecided (U)**, **Disagree (D)**, **Strongly Disagree (SD)**, accordingly to your attitude.

No.	Items	SA	A	U	D	SD
	A. Utilization					
1	In my view, we should not worry about non-renewable resources					
2	To me, we have to consume resources not by forgetting the coming generation					
3	In my view, we should use wood fuel rather than biogas and solar to conserve our natural resources					
4	I feel that poverty and drought have occurred in our country because we are poor in our resource management					
5	I believe that conservation of the living and non-living elements of our environment is crucial for our development					
6	In my view, people are severely exploiting their environment					
B. Conservation						
7	Nature itself makes our ecological system balance, no need of conserving it					
8	In my view, every body is responsible to conserve his or her environment					
9	I believe that environmental illiteracy is the main cause of environmental problems in Arsi and in Ethiopia					
10	In my view, farmers can set fire on forests when they need additional farm land					
11	I feel our government is the responsible organ for our environmental problems and their solutions					
12	I feel that we, students should play the dominant role in protecting our environment in developing countries like Ethiopia					
13	I believe that any body does not have the right to use plants or animals as he or she likes					
14	I feel that we, students might not play key roles in conserving our environment because we are not matured					

Thank you Very Much!

APPENDIX D1

Addis Ababa University

School of Graduate Studies

College of Education

Department of Curriculum and Teachers'

Professional Development Studies

Focus Group Discussion with Teachers (Biology and Social studies) director and parent Teacher Association (PTA) members.

I. Background Information

Woreda _____

School _____

Date _____

1. Are there any environmental problems in your locality?
 - A. Yes
 - B. No
2. If your answer for question number 1 is “yes” what are the major environmental problems?
 - 2.1 What are the root causes of those environmental problems?
3. Who are the stakeholders those should deal with resolving of environmental problems?
 - 3.1. What do you think are their roles?
4. What should be the role of education in resolving environmental problems?
5. How do you think the school should work with the community to alleviate the environmental problems?

Thank you for your cooperation!

APPENDIX E

**Addis Ababa University
School of Graduate Studies
College of Education**

**Department of Curriculum and Teachers Professional
Development Studies**

Interview Guides to Oromia Education Bureau Social Studies and Biology Curriculum Experts.

1. How do you explain Environmental Education:
 - A. Objectives?
 - B. Contents?
 - C. Teaching methods?
2. What do you think is the rationale to revise social studies syllabus of grade 7 and 8 in 2003/4? Please indicate briefly.
3. Was there any attempt to integrate the following in to social studies syllabus?
 - A. Environmental Education objectives? List them
 - B. Environmental Education contents? List them
 - C. Environmental Education teaching methods? List them
4. Do you have any orientation or teaching regarding the integration of environmental education in to Social Studies Syllabus? By whom?
5. Do you have any comment or recommendation on how to integrate Environmental Education into Social Studies Syllabus? Please forward.

Thank you very much!

APPENDIX F

Addis Ababa University

School of Graduate Studies

College of Education

Department of Curriculum and Teachers'

Professional Development Studies

I. Interview Guides for Arsi Zone Rural and Agricultural Development Department Natural Resource Expert.

1. Are there any environmental problems in Arsi zone? A. Yes B. No
 - 1.1 If your answer for question number 1 is 'Yes' what are the major Environmental problems?
 - 1.2 Are there efforts made by your department to overcome these environmental problems? A. Yes B. No
 - 1.3 If your answer for question number 2 is 'Yes' what are these efforts?
2. Are there attempts to work with primary schools to alleviate environmental problems in your zone?
 - A. Yes B. No
 - 1.1 If your answer for question number 2 is 'Yes' what are these attempts? Circle your answers.
 - A. Facilitating curriculum development
 - B. Disseminating Environmental Education knowledge and experiences
 - C. Supporting Environmental Education Nature clubIf other specify _____
3. Are there any mechanisms in which your department assist primary schools in their implementation of Environmental Education?
 - A. Yes B. No
 - a. If some mention

Appendix A2

Yunivaristii Finfinnee
Qo'annoo Digrii Lammaffaa
Kolleejjii Barnootaa
Muummee Sirna Barnootaa fi Qo'annoo
Guddina Ogummaa Barsiisotaa

Qajeelfama Waliigalaa Koodarootaaf

kaayyoon ijoon qo'annoo kanaa sadarkaa Barnoonni Naannoo /Environmental Education/ Barnoota Hawaasaa fi Baayolajii kutaa 7 fi 8 (manniin barnoota sadarkaa 1ffaa marsaa 2ffaa) Godina Arsii keessatti qabu xiinxalluuf ta'a.

Odeeffannoon ati qo'annoo kana ilaalchiftee kennitu argannoo (findings) qo'annoo kanaatiif haalaan barbaachisaadha. Kanaafuu, milkaa'inni qo'annoo kanaa fedha guutuu fi amantummaan deebii kennuu kee irratti hundaa'a. gama kiyyaan anis odeeffannoon ati kennitu dhoksaa fi eenyuufiyyuu haalaa fi bifa kamiiniyyuu kan dabarfamee hin kennamne ta'uu isaa waadaa siif seena. Qo'annoon kun kaayyoo barnootaa qofaaf oola. Haaluma kana hubachuun, filanoowwan gabateewwan armaan gadii keessatti kennaman gosa hundaayyuu qalbiin dubbisuudhaan haaluma qajeelfamaatiin deebii akka kennitan kabajaan isin gaafadha. Maqaa keessan hinbarressinaa!

Deeggarsa keessaniif Galatoomaa!

I. Odeeffannoo Dhuunfaa

1. Aanaa _____
2. Mana Barnootaa _____
3. Saala _____
4. Umrii _____
5. Sadarkaa Barnootaa _____
6. Gosa Barnootaa barsiistu _____
7. Kutaa Barsiistu _____
8. Tajaajila hojii _____

II. Shiitii Koodiingii

Odeeffannoo Waliigalaa

Gosa barnootaa:- Silabasii Barnoota Hawaasaa

Kutaa: Torbaa fi Saddeet

Hanga Xiixallaa: Kaayyolee Silabasicha keessa jiran

Qajeelfama Koodiingii:- Koodiingi Shiittiin kun wal-simiinsa kaayyoleen Barnoota Naannoo Silabasii Barnoota Hawaasaa fi Baayolajii bara 2003/4 keessa deebi'ame keessatti qabu qo'ata. Kaayyolee Barnoota Hawaasaa kutaa 7 fi 8 dubbisuudhaan baay'iina kaayyolee Barnoota Naannoo qoqqoodama isaa irratti hundaa'uudhaan gabatee kanaa gadii keessa kaa'i.

2.1 Shiitii Koodingii Kaayyoo irratti Hundaa'e

Kaayyolee Barnoota Naannoo (Objectives of Environmental Education)	Baay'ina kutaalee hammatamanii		Yaada
	sadarkaa kutaa		
	Torba	saddeet	
Beekumsa			
Ogummaa			
Ilaalcha			
Hirmaannaa			
Baay'ina kaayyolee silabasicha keessatti qophaa'ee			

III. Shiitii Koodingii B

Odeeffannoo Waliigalaa

Gosa Barnootaa: Silabasii Barnoota Hawaasaa

Kutaa : torbaa fi saddeet

Hanga Xiixallaa: qabiyyeewwan Silabasicha keessa jiran

Qajeelfama Koodingii: Kooding Shiitiin kun wal-simiinsa qabiyyeewwan Barnoota Naannoo Silabasii Barnoota Hawaasaa fi Baayolajii kan bara 2003/4 keessa deebi'ame keessa jiru qo'ata. Qabiyyeewwan Barnoota Hawaasaa fi Baayolajii kutaa 7 fi 8 dubbisuudhaan baay'ina qabiyyee Barnoota Naannoo fi kan Barnoota Naannoo hin ta'inii gabatee kanaa gadii keessatti guuti.

2.2. Shiitii Koodingii Qabiyyee irratti Hundaa'e

Gosoota Qabiyyeewwanii	Baay'ina Qabiyyee		Yaada
	Sadarkaa Kutaa		
	torba	Saddeet	
Qabiyyeewwan Barnoota Naannootiin hariiroo qaban			
Qabiyyeewwan biro			
Ida'ama Qabiyyeewwan Silabasicha keessa jiranii			

IV. Shiitii Koodingii C

Odeeffannoo Waliigalaa

Gosa Barnootaa:- Silabasii Barnoota Hawaasaa fi Baayolajii kutaa - torbaa fi saddeet

Hanga Xiinxallaa: Maloota baruu - barsiisuu Silabasicha keessa jiran.

Qajeelfama Koodingii:- Kooding Shiitiin kun wal-simiinsa maloonni baruu-barsiisuu Barnoota Naannoo Silabasii Barnoota Hawaasaa fi Baayolajii bara 2003/4 keessa deebi'ame of keessaa qabu qo'ata.

Maloota baruu-barsiisuu Barnoota Hawaasaa fi Baayolajii kuta 7 fi 8 dubbisuudhaan baay'ina maloota baruu barsiisuu Barnoota Naannoo qoqqoodama isaa irratti hundaa'uun gabatee kanaa gadii keessatti guuti.

2.3. Shiittii Koodiingii Mala Baruu-Barsiisuu irratti Hundaa'e

Gosoota Mala Baruu Barsiisuu Barnoota Naannoo	Baay'ina Mala Baruu-Barsiisuu		Yaada
	Sadarkaa kutaa		
	torba	saddeet	
Mala baruu-barsiisuu barataa jiddu galeeffate			
Mala baruu barsiisuu barsiisaa jiddu galeeffate			
Ida'ama maloota baruu-barsiisuu Barnoota Naannoo			
Baay'ina maloota baruu-barsiisuu Silabasicha keessa jiranii			

Appendix B2

Yunivaristii Finfinnee
Qo'annoo Digrii Lammaffaa
Kolleejjii Barnootaa
Muummee Sirna Barnootaa fi Qo'annoo
Guddina Ogummaa Barsiisotaa

Qajeelfama Waliigalaa: Kaayyoon waliigalaa qo'annoo kanaa Sadarkaa Barnoonni Naannoo (Environmental Education) Barnoota Hawaasaa fi Baayoloojii kutaa 7 fi 8 Manniin Barnootaa (Sadarkaa 1^{ffaa} Marsaa 2^{ffaa}) Godina Arsii Keessatti qabu hubachuuf kan yaadameedha.

Odeeffannoon qo'annoo kana ilaalchisee ati kennitu argannoo /findings/ qo'annoo kanaatiif haalaan murteessaadha. Kanaafuu, milkaa'inni qo'annoo kanaa deebii ati fedhii guutuu fi amantummaan kennitu irratti hundaa'a. Anis gama kiyyaan odeeffannoon kee dhoksaa fi haalaa fi bifa kamiinuu qaama kamittuu dabarfamee kan hin kennamne ta'uu isaa waadaa siif seena. Qo'annoo kun kaayyoo barnootaa qofaaf oola. Yaada kana hubachuudhaan gosoota gaafilee hundaa qalbiin dubbisuun deebii sirriidha jettee yaaddu akka kennitu kabajaan deeggarsa si gaafadha. Maqaa kee hin katabin.

Deeggarsa keessaniif Galatoomaa!

I. Bar-gaafii Barsiistotaaf

- 1.1. Kaayyoo:- Kaayyoon hangafni bar-gaafii kanaa haala beekumsaa, mala-baruu-barsiisuu fi ilaalcha barsiisonni wayitii barnoota Hawaasaa fi Baayoloojii kutaa 7 fi 8 barsiisan barnoota naannoo ilaalchisee qaban xiinxalluuf ta'a.

1.2. Odeeffannoo Dhuunfaa

1. Aanaa _____
2. Mana Barnootaa _____
3. Saala _____
4. Umrii _____
5. Sadarkaa Barumsaa _____
6. Gosa barnoota barsiisuu/tuu _____
7. Kutaa barsiisu/tu _____
8. Tajaajila hojii _____

1.3. Bar-gaafii Beekumsaa fi Mala Baruu-Barsiisuu Ilaallatu.

Qajeelfama:-Gaafilee armaan gadii haaluma gaafichaa irratti hundaa'uudhaan deebisi.

Yaadachiisa:- 1. Gaafilee filannoo kan irra maruun/geengessuun/

deebi'uuf, deebii tokkoo ol kennuu ni dandeetta.

2. Gaafilee barnoota ati barsiiftu waliin wal-qabatan qofa deebisi!

- | | | | | | | |
|--|---------|------|----------|------------|---------|------|
| 1. Barnoota | Naannoo | gosa | barnoota | barsiiftuu | waliin | wal- |
| simsiisuu/integration/ilaalchisee leenjiin fudhatte jiraa? | | | | A. Eeyye | B. Miti | |

2. Silabasii Barnoota Hawaasaa kutaa 7 yookiin 8 bara 2004 A.L.A keessa deebi'ame (revised) hojiitti jijjiiruu /implementation/ ilaalchisee seminaarri yookiin warkishooppiin fudhatte jiraa? A. Eeyye B. Miti
3. Silabasii Baayoloojii kutaa 7 yookiin 8 bara 2004 A.L.A keessa deebi'ame hojiitti jijjiiruu ilaalchisee seminaarri yookiin warkishooppiin fudhatte jiraa?
A. Eeyye B. Miti
4. Gaafii lakkoofsa 2'f yookiin 3'f deebiin kee 'eeyye' yoo ta'e qaama yookiin dhaabbata leenjii siif kenne maqaa barreessi. _____
5. Qabiyyee Barnoota Naannoo barsiisuu ilaalchisee rakkoon si mudate jiraa?
A. Eeyye B. Miti
6. Gaafii lakkoofsa 5'f deebiin kee 'eeyye' yoo ta'e kan armaan gadii keessaa rakkoo kamtu si mudate?
A. Dareen alatti barsiisuu
B. Qabiyyee dhimmoota naannootiin wal-qabsiisuu
C. Maloota Baruu-Barsiisuu adda addaa fayyadamuu
D. Hanqina meeshaa gargaarsa barnootaa
Kan biroo yoo jiraate barreessi _____
7. Barnoota Hawaasaa barsiisuu ilaalchisee hanqinni meeshaalee barnootaa /curricular materials/ si mudate jiraa? A. Eeyye B. Miti
8. Barnoota Baayoloojii barsiisuu ilaalchisee hanqinni meeshaalee barnootaa /curricular materials/ si mudate jiraa? A. Eeyye B. Miti
9. Gaafii lakkoofsa 7'f yookiin 8'f deebiin kee 'eeyye' yoo ta'e kan armaan gadii keessaa hanqinna kamitu jira?
A. Silabasii B. Qajeelcha barsiisaa C. Kitaaba barataa
Kan biroo yoo jiraate barreessi _____
10. Gaafii lakkoofsa 7'f yookiin 8 'f deebii kee 'eeyye' yoo ta'e kan armaan gadii keessaa sababni hanqina meeshaalee barnootaa kam sitti fakkaata? Deebii kee irra maruun deebisi.
A. Hanqina dhiheessuu waajjira barnootaa
B. Hanqina hordoffii bulchiinsaa
C. Sababa hin beekamnee dha
Sababni biroo yoo jiraate barreessi _____
11. Haalli Barnoonni Naannoo /Environmental Education/ barnoota hawaasaa yookiin Baayoloojii waliin walsimnee /integration/ kennamuun ilaalchisee yaadaa fi fala ni ta'a jettee kan yaaddu yoo jiraate barreessi.

1.4 Gaafilee bekumsaa ilaalcha barsiisaan /tuun /Barnoota Naannoo/ Environmental Education/ fi Mala Baruu-Barsiisuu/Teaching Methods/ Barnoota Naannoo ilaalchisee qabu/du.

Qajeelfama I. Filannoowwan kanaa gaditti tarreeffaman sirritti erga dubbifteen booda filannoowwan Sirritti Waliigala (5), Walii-gala (4), Hinmurteessu (3), Walii-hingalu(2), yookiin Sirritti Walii-hingalu(1) jechuun kennaman jalatti mallattoo “✓” godhuun deebisi.

Lakk	Tarreewwan	5	4	3	2	1
	A. Ilaalcha Barnoota Naannoo irratti					
1	Barnoonni Naannoo barsiisonni adeemsa barsiisuu jireenya barattootaa fi hawaasaa waliin akka wal-qabsiisan taasisa.					
2	Galmi Barnoota Naannoo dhalli namaa naannoo uumamaa akka wareeru osoo hin taane, naannoo waliin walii-galee akka jiraatuu dha.					
3	Rakkooleen naannoo kan yeroo hunda mul’atan/kan barataman waan ta’aniif Barnoonni Naannoo faayidaa gad-aanaa qaba					
4	Barnoonni Naannoo kan dhaabbilee irratti hundeeffame osoo hin taane haala idilee-alaatiinis hawaasa hirmaachisuun geggeeffama.					
5	Barnoonni Naannoo qulqulina naannoo ilaalchisee amalli keenya akka fooyya’u nu gargaara malee adeemsa murtii kennuu irratti gumaacha hin qabu.					
6	Barnoonni Naannoo dargaggeessa qofa osoo hin taane ijoollees jireenya fuulduraatiif qopheessuuf gargaara.					
7	Manniin barnootaa rakkoolee hawaasaa akka hiikan yoo barbaadame, Barnoonni Naannoo adeemsa baruu barsiisuu keessatti gahee ol’aanaa qabaata.					
8	Akka an amanutti, Barnoonni Naannoo rakkoolee naannoo keenyaatiif fala kan kennuu dha.					
9	Rakkooleen naannoo adeemsa Barnoota Naannootiin hiikamuu ni danda’an jedhee hin yaadu.					
10	Barnoonni Naannoo hubannoo fi ilaalcha gaarii kan cimsu qofa osoo hin taane ogummaa beekumsaa qabatamaa rakkoo naannoo keenyaa hiiknuun nu gonfachiisa.					
	B. Ilaalcha Mala Baruu-Barsiisuu Barnoota Naannoo Irratti					
11	Akka an amanuutti, barsiisaan daree keessatti madda beekumsaa ta’uu qaba.					
12	Barattoota naannoo isaanitti dhihoo jiru daawwachisaa barsiisuun wayitii gubuu dha.					
13	Barattoonni beekumsa barsiisaarraa akkuma jirutti fudhachuu qaban jedhee hin yaadu.					
14	Barattoonni xixiqqoo ta’anii akkaataa rakkoolee ittiin adda itti baafatan, tartiibeffatanii fi hiikkatan barachuu qaban jedhee hin yaadu.					
15	Akka yaada kiyaatti, kan barachuu qaban, akkaataa itti qabxii gaarii galmeessisan malee akkaataa rakkoo itti hiikkatanii miti.					
16	Maloota Baruu-barsiisuu adda addaa wayitii barannoo tokko keessatti fayyadamuun natti tola.					
17	Akka an amanutti, barattoota koo dhugaawwan kitaaba isaanii keesa jiru barsiisuun rakkoolee naannoo isaanii akka hiikkatan isaan taasisa.					
18	Malli Barnoota Naannoo ittiin barsiifnuun adeemsa saayinsaawaa qofa osoo hin taane beekumsa jireenyaa illee hammachuu qaba.					

Appendix C2

**Yunivaristii Finfinnee
Qo'annoo Digrii Lammaffaa
Kolleejjii Barnootaa
Muummee Sirna Barnootaa fi Qo'annoo
Guddina Ogummaa Barsiisotaa**

I. Madaallii Ilaalcha Barattootaa

Qajeelfama:- Himoonni armaan gadii yaadaati fayyadamaa qabeenya uumamaa fi kunuunsa naannoo keetiif gootu agarsiisa.

Yaadota kanaa gadii irratti walii-galuu fi waliigaluu dhabuu kankee hubannoofi muxannoo Barnoota Naannoo irratti ati qabdu mulisa. Himoota kanaa gadii erga dubbiffeen booda filannoowwan kennaman jalatti Sirritti Waliigala (Swa), Waliigala (Wa), Hinmurteessine (H), Waliingalu (Wu) yookiin Sirritti Waliingalu (Swu), Jechuun Mallattoo (✓) kaa'uu dhaan ilaalcha kee ibsi.

Lakk	Tarreewwan	Swa	Wa	H	Wu	Swu
	A. Fayyadama					
1	Akka an yaadutti, waa'ee qabeenya uumamaa kan iddoo hin buunee yaadda'uu hinqabnu.					
2	Akka yaada kiyyaatti, wayitii qabeenya atti fayyadamnu dhaloota dhufu dagachuu hin qabnu.					
3	Akka ilaalcha kiyyaatti, qabeenya uumamaa kunuunsuuf baayoo-gaasii fi humna aduu caalaa boba'atti fayyadamuu qabna.					
4	Sababni hiyyummaa fi bonni biyya keenya keessatti mul'ataniif akkaataa qabannaa qabeenya keenyaa dadhabaa waan ta'eef jedhee yaada.					
5	Kunuunsi nuti lubbu-qabeeyyii fi lubbu-dhabeeyyii naannoo keenyaatiif goonu guddina keenyaaf gahee ol'aana qaba jedhee yaada.					
6	Akka ilaalcha kiyyaatti, dhalli namaa naannoo isaa haala hammaataan mancaasaa jira jedhee yaada.					
	B. Kunuunsa					
7	Uumamni mataa isaatiin madaala naannoo waan eeguuf kunuunsi isaa baraachisaa miti.					
8	Akka ilaalcha kiyyaatti, namni kamiyyuu naannoo isaa kunuunsuuf itti gaafatamummaa qaba					
9	Waa'ee naannoo hubannoo dhabuun rakkoolee Godina Arsii fi Itoophiyaa keessatti uumamaniif sababa guuddaadha jedhee amana					
10	Akka ilaalcha kiyyaatti, qoteebulaan lafa qonnaa kan dabalataa waytii dhabe bosonatti ibidda qabsiisuun lafa qonnaa bal'ifachuu qaba jedhee amana.					
11	Akka an yaadutti, mootummaan rakkoolee naannootii fi fala isaaniitiif ittigaafatamaadha.					
12	Nuti barattoonni biyyota guddataa Jiran kan akka Itoophiyaa keessatti naannoo keenya kunuunsuuf gahee ol'nanaa qabna jedhee yaada.					
13	Akka an amanutti, namni kamiyyuu biqiltootaa fi bineensotatti akka fedhetti fayyadamuu mirga hin qabu.					
14	Barattoonni sababa bilchina hin qabneef, kunuunsa naannoo keessatti gahee ol'aanaa gumaachuu hin danda'an					

Deeggarsa Keessaniif Galatoomaa!

Appendix D2

**Yunivaristii Finfinnee
Qo'annoo Digrii Lammaffaa
Kolleejjii Barnootaa
Muummee Sirna Barnootaa fi Qo'annoo
Guddina Ogummaa Barsiisotaa**

- I. Marii Garee Filatamoo barsiisota/Barnoota Hawaasaa fi Baayoloojii/ dura bu'aa mana barumsaa fi miseensota Gamtaa Matii fi Barsiisota waliin godhame:**

3.1. Odeeffannoo Waliigalaa

Aanaa _____

Mana Barumsaa _____

Guyyaa _____

- i. Rakkooleen naannoo naannoo keessanitti argaman jiruu?
 - A. Eeyye
 - B. Miti
- ii. Gaafii lakkoofsa 1'f deebiin kee 'eeyye' yoo ta'e rakkooleen naannoo hangafoonni maal fa'a?
 - 2.1. Rakkoolee naannoo kanaaf sababa kan ta'an maal fa'a?
- iii. Rakkoolee naannoo hiikuuf qaamonni dhimmi ilaalu eenyu fa'a jettee yaadda?
 - 3.1. Gaheen isaan hoo?
- iv. Rakkoolee naannoo hiikuuf gahee barnootaa maal ta'uu qaba jettee yaadda?
- v. Rakkoolee naannoo fahuuf mee manni barumsaa hawaasa waliin haala kamiin osoo hojjattee gaari jettee yaadda?

Deeggarsa Keessaniif Galatoomaa!

DECLARATION

I, the undersigned, declare this Thesis is my original work, has not been presented for degrees in other university and sources of materials used for the thesis have been duly acknowledged.

Name: Juneydi Woliye

Signature 

This thesis has been submitted for examination with my approval as a university advisor.



Akalewold Eshete(Assistant Professor)

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