CHAPTER 1 INTRODUCTION

1.1. Overview of the chapter

This chapter introduces the study. It describes the geography, economy, educational system and the state of environment and environmental education in Tanzania. It then describes the purpose of the study, and outlines the research questions. It sets out the significance and the limitations of the study. It closes with an overview of the chapters.

1.2. Introduction

Environmental education (EE) is an issue of great concern which gained an international prominence through a series of intergovernmental meetings and documents[1] in the 1960's and 1970's. However, for Tanzania, EE is a new field in formal education and an often challenging one. Following a national curriculum review in 1997, EE was included in the curriculum. However, the implementation has been tricky for many teachers in Tanzania, including me. I teach in an advanced level secondary school in Tanzania. I undertook this study to investigate the issues associated with the implementation and development of EE, particularly the support available to foster curriculum delivery for EE, and the roles of people who have a stake in education. This has led to an active personal interest in exploring stakeholders' views on their involvement and participation in EE.

Prior to conducting this study, I completed a small scale investigation of the potential, and opportunities of environmental education in Tanzania, using New Zealand schools as examples (Mtaita, 2005). This experience also contributed to my motivation and interest to conduct research in secondary schools. As a starting point to this work, I reviewed current literature related to this study. The literature supports

[1] These included the *Belgrade Charter* in 1975 (UNESCO, 1975), the *Tbilisi Declaration* in 1977 (UNESCO, 1978), the *Brundtland Report* in 1987 (World Commission on Environment and Development (WCED), 1987, and *Agenda 21* of the *Rio Earth Summit* in 1992 (UNESCO 1992) (discussed in chapter 2).

the idea of stakeholders having a clearly identified role in education (see Epstein, 1996; Knipprath, 2004; Khong & Ng, 2005; Pang, 2004). The choice of this research topic was also informed by a recent call for a participatory approach in contemporary EE (see chapter 2) which seeks to empower all people of all ages, gender, and race to actively participate and get involved in environmental improvement and protection (Hart, 1997; Palmer & Birch, 2005; Tilbury, 1995). Little was known about the reaction of peoples in Tanzania to this matter.

This study sought to explore the stakeholders' views about their involvement and participation in EE in Tanzania. It adopted an interpretive approach, based upon an investigation of the particular views and understanding of EE held by respondents. It examined the stakeholders' perceptions of current practice of EE in schools, and the role of stakeholders to determine how participatory processes advocated in EE literature are implemented in schools. In addition, the study explored stakeholders' views of collaboration in the implementation and development of EE in Tanzania.

1.3. The context of the study

The United Republic of Tanzania (see figure 1.1) is located in the eastern part of the African continent. It is bordered in the north by Kenya and Uganda; Rwanda and Burundi are to the northwest; the Democratic Republic of Congo to the west; Zambia and Malawi to the southwest and Mozambique in the south. The Indian Ocean lies to the east of the country, where the islands of Zanzibar, Pemba and Mafia are situated. The United Republic of Tanzania is one of Africa's most ecologically rich countries. The climate varies from tropical along the coast to temperate in highlands. Reserve forests which account for 13 million hectares, host various types of ecosystems. The eastern coastline extends about 240 km north to south along the Indian Ocean. Additionally, there are several lakes, rivers and swamps, which contain diverse types of aquatic life forms.

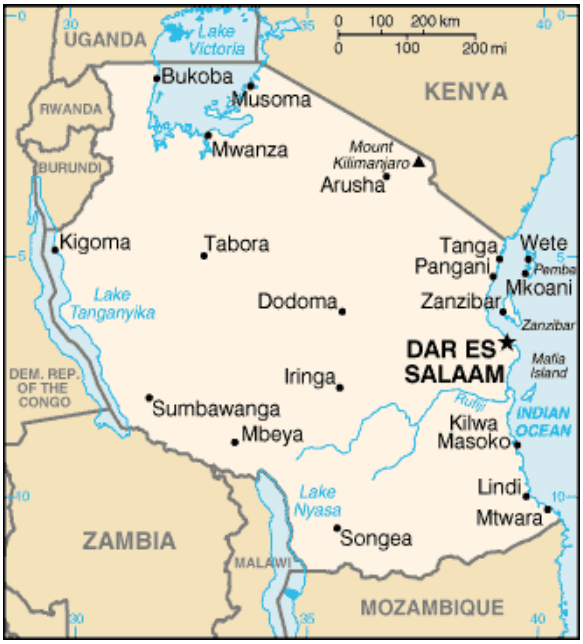

Fig 1.1 The Map of Tanzania (source: World Factbook, 2006).

Tanzania is one of the developing countries, highly populated. A 2006 estimate put the population at about 37.4 million (World Factbook, 2006). Tanzania's land area total is about 945,087 sq. kilometres. The economy is heavily dependent on agriculture, with the lowest per-capita income in the world. Agriculture accounts for almost half of GPD, provides 85% of exports and employs 80% of the work force (World Factbook, 2006). Education is one sector that has been adversely affected by the poor economic situation such that education services are inadequate both in quantity and quality at all levels (MoEC, 1995).

1.3.1. Education system in Tanzania

The structure of education in Tanzania is at present 2-7-4-2-3+ of formal school education, that is, 2 years pre-primary school education, 7 years of primary education, 4 years of Ordinary Level secondary education and 2 years of Advanced Level secondary education, followed by a minimum of 3 years of University education.

Apart from this structure there exist other channels that characterize post-primary or post-secondary education and training (URT, 1995). Pre-primary is for children aged between 0-6, primary is for children aged 7-12, secondary is for children aged 13-18, university is for 18 years and above. Pre-primary serves the preparatory function for smooth continuation into primary education. It is also aimed at developing communication skills of children. Primary is 7 years of basic education after pre-primary. At the end of the seventh year, pupils sit for the national examination known as Primary School Leaving Examination (PSLE) which selects pupils to join public secondary schools. Those pupils who are not selected join private secondary schools, while the rest can go to vocational training or enter the workforce (URT, 1995). The medium of instruction in pre-primary and primary schools is Kiswahili, the National language, but English is taught as a compulsory subject in primary schools.

Secondary school education "refers to that full Program of education provided in accordance with Government-approved curricula and availed to students who will have completed primary education" (URT, 1995, p. 39). In Tanzania, formal secondary education consists of two cycles, four years Ordinary and two years Advanced level. The O-level cycle begins with Form 1 and ends with Form 4, while A-level has Form 5 and Form 6. Currently, English is the medium of instruction at secondary school level and most instructional media and pedagogical materials available at this level are also written in English (except Kiswahili which is taught in Swahili). English is also taught as a subject at this level.

The government through the Ministry of Education is responsible for the production, distribution and availability of instructional, learning materials, and equipment. The Ministry of Education is also responsible for teacher training and professional development (URT, 1995). The Tanzanian Institute of Education (TIE) is responsible for curriculum design, development, review, update and dissemination, monitoring the implementation and evaluation. The issue of financing education is a responsibility to be shared between government, communities, parents and end users (URT, 1995).

1.3.2. The state of the environment and environmental education in the country

The concept of environmental education for the improvement of the environment has been gaining ground in Tanzania since the 1980's. The government response to the environment and environmental education was partly due to the declining wealth of the country and to a large extent influenced by global concern towards the environment. International summits (see chapter 2) have influenced the development of policies in various sectors and curricula in formal education.

The state of the environment

Despite its ecological richness, the country has been facing environmental challenges such as deforestation, loss of wildlife habitats and biodiversity, land degradation, drought, deterioration of the aquatic systems and lack of accessible, good quality water, and environmental pollution (URT, 1997). The factors central to such environmental problems have been a result of a high population increase which implies increased demand and competition for natural resources as realised in activities such as overgrazing, unplanned fires, cultivation and settlement; human related developments such as urbanization, infrastructure, roads and industrialization; agricultural practice which is the main activity in Tanzania for economic growth, and often is the main cause of soil degradation; industrial waste discharges, domestic waste and sewage; and uncontrolled mining activities when washed into the rivers and lakes; and improper treatment and disposal of solid wastes (Johnson-Pynn & Johnson, 2005; URT, 1997). The combined results of these problems are that both air and water have been contaminated with pollutants, which are detrimental to human health (Johnson-Pynn & Johnson, 2005). Diseases like cholera, Malaria, Sleeping sickness, Dysentery and Schistosomia have been related to this environmental dilapidation.

It has been recognised that EE would help people in getting rid of such diseases, avoiding their future occurrence. In addition, it has been realised that planting trees would help to conserve land and water resources, that means attracting rainfall and hence reduce poverty because people could grow more food. In its National

Environmental Policy (NEP), the government of Tanzania admitted that the country needs to adopt environmentally sustainable natural resource management practices in order to ensure that long-term sustainable economic growth is achieved (URT, 1997).

The state of environmental education

In Tanzania, EE began as awareness raising-Programs supported by both government and non-government sectors (URT, 2004). In 1983, the National Environmental Council (NEMC) was established by an Act of Parliament under the Office of Vice President, Division of Environment to advise government about the environment (URT, 1997). NEMC has been responsible for the development of policy and coordination of the broad-based environmental Programs and projects in Tanzania. A number of activities supporting *Agenda 21* implementation have been undertaken by NEMC including pollution prevention and control; environmental management, environmental education and public awareness; and natural resource conservation and management (URT, 1997). In addition, it has been actively working with the Ministry of Education and other governmental and non-governmental organizations to promote formal and non- formal EE (URT, 2004).

Apart from NEMC, many government ministries and organisations have been undertaking activities relevant to the implementation of *Agenda 21* such as agriculture, water energy and minerals, land, urban development, education and culture, science and technology, community development, women affairs, industry and trade, and the universities (URT, 1997).

Another initiative came from environmental clubs such as the Malihai Club of Tanzania (funded by the Tanzanian government and a group of international funders and NGOs), and established in 1985; the World Conservation Society of Tanzania (WCST), established in 1988, and Roots and Shoots established in 1990. These clubs were the first environment conservation movements based on individual or group concern for the environment and have been working with schools with their activities focusing on EE for youth on *learning about* and *caring for* the environment, where *actions* and *attitudes* are major components of the Program (Irma & Downie, 1999).

There have also been efforts to communicate the environmental information through media, radio and TV (URT, 2004).

There has been financial support for environmental education from the private sector, international companies, and the business sector to enhance local *Agenda 21* initiatives, thus increasing the profile and opportunity for environmental education and sustainability at the local level (URT, 1997). A growing number of local as well as international NGOs have developed their own Programs to respond to environmental challenges. However, some local NGOs, which are community-based, have been continuously affected by problems of poor leadership and lack of financial resources. Donor dependence has also affected the functioning of most NGOs (URT, 1997).

The challenge facing the country has been that of elements of EE having many players with different approaches creating fragmentation in its delivery e.g. more than ten government ministries and over 100 NGOs have environmental education components into their programs geared towards addressing environmental issues. It is worthy having many players like these although in a number of incidences the approaches bring about duplication of effort, unwise use of financial and human resources and competition rather than complementarity, which in some cases confuse the public. A lack of an effective monitoring and evaluation mechanism means it has been difficult to gauge the success or failure of these activities due to a lack of coordination, thus creating duplication of Programs, leaving gaps and encouraging unnecessary competition. Another challenge is inadequacy of resources (financial and human support) to run EE activities (URT, 2004).

Environmental education in schools

Following environmental problems facing the country and the government's response to global challenges, it has been logical to include EE in the formal curriculum. The aim is to enable school children to have opportunities to learn about environmental issues in order to develop their understanding, awareness and concern about Tanzania's ecological richness and participate in solving the problems for sustainable

conservation of natural resources and national development (URT, 2004), Addressing environmental issues has never been an easy job for Tanzanian teachers (Mtaita, 2005). The decision to include environmental education has also emanated from the enthusiasm to translate and implement some deliberations made in the *Agenda 21* document about the environment and sustainable development (see URT, 1997).

Following the 1997 curriculum review by the Ministry of Education and Culture (MoEC), EE replaced the topics ecology in Biology and soil in Geography and Chemistry subjects for both O-level and A-level syllabuses (Ministry of Education, 1997). The implementation of EE in Tanzania, however, is reported to face different constraints (see for example URT, 2004; Mtaita, 2005). Such constraints may be summarized as those related to limited resources, inadequate time for EE, lack of funds for transport to appropriate sites for field trips, lack of texts and guides. Another issue includes lack of coordination resulting in disintegrated efforts in the development of EE in Tanzania (URT, 2004).

It has been suggested that the path towards a better future for all Tanzanians involves including EE in every curriculum and in all levels of education (URT, 2004). There is no doubt that EE is an important element/component in the school curriculum (UNCED, 1992). There is strong evidence to suggest that the holistic nature of EE would require a whole school approach and a participatory mechanism (Bolstad, Cowie & Eames, 2004; Eames & Cowie, 2004; Tilbury, 1995).

A recent EE Management Action Plan has further focused attention on EE and the need for increased participation by the people of Tanzania in environmental decision-making (URT, 2004). NEMC in collaboration with government ministries, agencies, academic and training institutions, NGOs and individuals has prepared a national strategy to facilitate effective implementation of EE. On these bases the government has recently endorsed inclusion of EE at all levels of education (URT, 2004). The 2004/05 syllabus review included EE in every syllabus and it has to be taught to every child, something that partly meets the demands of the United Nations (UN) through the United Nations Environmental Program (UNEP), which demands

provision of EE to every individual in the community at different levels of education and a call for participation of all people in sustainable development practices (UNCED, 1992). The following questions were posed to in this study to investigate this issue.

1.4. Research questions

The purpose of the study was to explore the stakeholders' views on involvement and participation in the implementation and development of EE in Tanzania. The research questions addressed in this study were:

- What are the views of stakeholders (i.e. teachers, school leaders, students, school community, government agencies, and EE agencies) involved in education about their understanding, and the relevance of EE in Tanzania?
- What are the characteristics of the roles and the self-perception of their roles, of these stakeholders in schools in relation to EE?
- What are the perceptions of stakeholders of collaboration in the implementation of EE in schools in Tanzania?

1.5. Significance of the study

This study is significant for a number of reasons. It offers a detailed insight into stakeholders' perspectives of participation in EE developments of which there are few or no studies in the field of EE in Tanzania. It contributes to theoretical knowledge about EE in Tanzania. Information contained in this study may be a challenge to all people who have stake in education and are interested in EE. The information may challenge curriculum developers, teacher education and those concerned with professional development of teachers. There is also information that may be a challenge for future research and valuable to policy makers in the promotion of EE in Tanzania.

1.6. Limitations of the study

The study required few stakeholders in Tanzania (teachers, students, school leaders, parents, environmental education and government officials) to express their views on and perceptions of their understanding of EE, roles and involvement with EE and about collaboration in provision and development of EE in schools and Tanzania in general. All the respondents were derived from one region in Tanzania; as such, findings may be limited to this case. It is believed that the respondents could provide data required but they may not have presented a range of their views or might have responded differently. There is also a possible bias from the researcher's analysis and interpretations of data. Above all these potential limits, as set out in chapter 5, the findings support the conclusions reached by several studies.

1.7.Overview of the chapters

The remainder of this thesis is set out in five chapters. Chapter 2 examines the literature regarding EE and participation in it. Chapter 3 describes the methodology and methods used in this study. Chapter 4 presents an analysis of data derived from this study. Chapter 5 presents a discussion of the main findings of the study and sets the conclusions and implications of the findings of the study.

CHAPTER 2 LITERATURE REVIEW

2.1. Overview of the chapter

This chapter presents a review of relevant literature related to the study. It begins with an overview of the historical trend and development of environmental education (EE) worldwide. This is followed by a review on views and approaches of EE. The concepts of participation and collaboration in EE are examined and some empirical studies related to the current study are explored. The chapter concludes by providing a summary of the reviewed literature and its significance to the present study.

2.2. Historical trends and development of EE

The environmental education movement around the globe has evolved as a result of growing concerns over the environment and its associated problems in the 1960s (see Palmer, 1998; Tilbury, 1995). It has been the focus of several international declarations and agreements including the *Belgrade Charter* in 1975 (UNESCO, 1976), the *Tbilisi Declaration* in 1977 (UNESCO, 1978), the *Brundtland Report* in 1987 (World Commission on Environment and Development (WCED), 1987), and *Agenda 21* in 1992 (UNCED, 1992).

In the early days of its evolution the movement has focused on education that would raise individuals' awareness, knowledge and understanding of the environment (Disinger, 2005; Palmer, 1998; Palmer & Birch, 2005). A significant step forward was a call for EE programs that have more stances about environmental problems. In 1977 an intergovernmental summit held in Tbilisi, Georgia, led to an international declaration calling for EE that included opportunities for people to be actively involved in working towards the resolution of environmental problems (UNESCO, 1978).

The development of skills, values and attitudes or encouraging individuals to change their behaviour were also considered important[2].

The Tbilisi declaration also identified five objectives of EE as a mechanism to achieve these goals. These are framed, for example, as five aims of EE in the *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999, p. 9):

1. Awareness and sensitivity to the environment and related issues;
2. Knowledge and understanding of the environment and the impact of people on it;
3. Attitudes and values that reflect feelings of concern for the environment;
4. Skills to identify and help resolve environmental challenges;
5. Participation and action in activities that lead to the resolution of the environmental challenges.

The emphasis on conservation of resources was embraced in the *Strategy for World Conservation* (IUCN/UNEP/WWF, 1980). With the influence of the *Tbilisi Declaration* and the *World Strategy for Conservation* there has been an increase in concerns about the environment from both government and non-government organisations in several locations of the world (Bolstad et al., 2004; Brown, 2003; Irma & Downie, 1999). In Tanzania for example, there has been initiation of organisations that worked with communities, sometimes involving children, in awareness campaigns of environmental issues and conservation education (see Irma & Downie, 1999; Johnson-Pynn & Johnson, 2005).

[2] These aspects were emphasised in the *Tbilisi Declaration*, stated in the three goals of environmental education (the three goals of environmental education were first suggested in the UNESCO/UNEP IEEP *Belgrade charter*, *A global Framework for Environmental Education* in 1975 (UNESCO, 1975, cited in Palmer, 1998, p. 8)). That is, (a) to foster clear awareness of and concern about economic, social, political and ecological inter-dependence in urban and rural areas; (b) to provide every person with opportunities to acquire knowledge, values, attitude, commitment and skills needed to protect and improve the environment; and (c) to create new patterns of behaviour of individuals, groups and societies as a whole towards the environment (UNESCO, 1975, cited in Palmer, 1998, p. 8).

In 1987 the World Commission on Environment and Development (WCED, 1987), in its report, *Our Common Future* (the Brundtland Report), suggested the focus on environmental problems to consider social and economic factors, often the major causes of environmental problems. The decline of natural environments and the economic trends worldwide also served for international conferences and meetings to redefine and clarify the links between environment and development. The report of the WCED led to the United Nations Conference on Environment and Development, The Earth Summit, in Rio de Jeneiro, Brazil, in 1992, which produced a report generally called *Agenda 21*. *Agenda 21* of the Summit, called for the re-orientation of environmental education towards sustainability (Tilbury, 1995).

Since the late 1990's, the concept 'sustainability' or education for sustainability (EfS) has taken root and it has been conceived as reflecting development that meets the needs of the present without compromising the opportunity of future generations to meet their own needs (Fien & Tilbury, 2002; McKeown & Hopkins, 2003).

Education for sustainability calls for an EE that would enable citizens to understand, appreciate and implement sustainable practices. It involves participatory action research approaches to changing behaviours and resolving socioecological problems (Palmer & Birch, 2005). Some literatures reflect differing assumptions about the connotations of EE and EfS (McKeown & Hopkins, 2003; Tilbury, 1995). However, the discussion about this matter is beyond the scope of this work. It should be noted that in this thesis the term EE is used because it is a terminology used most often in both international and national literature on EE and in the Tanzanian education system.

The impacts of the above outlined series of international meetings and declarations influenced the school curriculum, in different ways, at different times, in several locations of the world (Bolstad et al., 2004). For Tanzania, it was not until the late 1990's that the government called for the need for consideration of EE in the formal sector. The 1997 syllabi reviews included EE in social studies, sciences and geography but it was left for schools/teachers to decide whether or not to include it

(Ministry of Education, 1997). There is evidence that this strategy of implementation of EE has not been successful (Mtaita, 2005).

With the influence of contemporary focus on sustainability and the need for increased participation by the people of Tanzania in environmental decision-making (URT, 2004), the Ministry of Education in Tanzania, suggested the integration of EE into every subject in the curriculum. However, little is known currently in Tanzania about the response of people who have a stake in education to this suggestion, and in particular about their participation in EE.

This study then sought to explore how different people involved in education view their roles, involvement and participation in the implementation and development of EE in Tanzania. Literature on ways in which stakeholders participate in EE is discussed later in section 2.6. However, for people to demonstrate the role they have to play, they should have an understanding of the issue in question. That is, if EE is not understood by practitioners, it seems unlikely that they would undertake a step towards implementation. For example, incorporating EE in their teaching involves teachers' views and understanding of teaching and learning of EE (Hart, 2003). According to Hart (2003), teaching, like learning, is a personal activity with a strong basis in perception and action. In this stance stakeholders' views of EE are considered important for their involvement in EE to be realised. Therefore, it seemed logical to explore from the stakeholders' perspectives, interpretations and consideration given to EE, that is, to what extent the stakeholders' understanding of EE is related to their views of involvement and participation in EE. A review of views of EE is presented in the next section.

2.3. Views of EE

In response to a global call for EE, there have been a number of efforts made, each trying to define EE, and to develop strategies for implementing it. This section looks at different ways in which EE has been viewed in the literature.

2.3.1. The objective view

This objective view has been implied from the beginning of EE movements where the focus was mainly on increasing environmental awareness, knowledge and understanding (Gough, 1997). The literature referred to this as education *about* the environment (Tilbury, 1995). The assumption was that an understanding of the natural environment or ecological perspectives would lead to actions that would prevent further deterioration of the environment (Gough, 1997; Palmer, 1998). In the objective model, the content of the school curriculum is prescribed and teaching and learning strategies are mainly based on a linear model of communication or information transfer (Gough, 2002; Gough, 1997). This emphasis on content is consistent with the behaviourist model of learning in which the student plays a passive role (Gough, 2002; Gough, 1997; Jensen & Schnack, 1997), and is counter to the contemporary views of learning (see for example Ballantyne & Packer, 1996; Driver et al., 1994; Duit & Treagust, 1998; Jensen & Schnack, 1997; Walker, 1997) which requires learners to actively participate in learning, and in knowledge construction through involvement and interaction (Slingsby & Barker, 2005; Tilbury, 1995), and the action view of EE, which requires learners to actively participate in the resolution of environment problems (Jensen & Schnack, 1997).

2.3.2. The process view

Environmental education as a process was first suggested in one of the earliest international meetings on environmental education held in 1970, Nevada, USA:

> Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. (IUCN, 1970, cited in Palmer, 1998, p. 7)

Based on this definition and the recommendations of the *Tbilisi Declaration* EE has been considered as a continuous lifelong process (Gough, 1997). In the context of Tanzania, education policy statements define EE as a process and it signifies the problem-solving view. In the National Environmental Education Strategy document (2005-2009), EE is defined as a "life-long process aimed to equip individuals and the whole Tanzanian society to acquire knowledge and develop ethics and become environmentally aware/conscious, responsive and have relevant skills in identifying, managing, monitoring, evaluating and solving environmental issues and problems" (URT, 2004, p. 9).

The process model has been seen as more suitable as it emphasises skills, attitudes and decision-making, in contrast with the objective model which centres on awareness and understanding of the environment (Gough, 1997). However, the development of these aspects suggests that content need not be selected and the outcome of learning pre-specified (Gough, 1997). The difficulty with EE is that, within the traditional curriculum which has dominated in most parts of the world, content is selected with the goals of representing the form of knowledge specified in the curriculum (Gough, 1997). The pre-specification of the learning outcomes is thus incompatible with the process model. This challenges the appropriateness of the process model in EE, but also indicates a need for a transformed educational paradigm (see Gough, 1997; Palmer, 1998; Sterling, 2001; Walker, 1997).

2.3.3. The values oriented view

Contemporary EE emphasises that schools teach values for sustainability (environmental ethics) including values of social responsibility, harmony with nature, commitment to work with and for others; values which influence environmental quality etc (Tilbury, 1995). This has been a critique of the behavioural model for its value-free approach to learning. However, while the emphasis on values is supported in the literature (Gayford & Dillon, 1995), others such as Ballantyne & Packer (1996) argue that if the teaching of attitudes and values is emphasised at the expense of an adequate and accurate knowledge, there is a danger that students' environmental

behaviour may be driven by misconceptions, thus they suggest an integrated approach. The integrated approach is evident in a participative world view.

2.3.4 The action view

Contemporary EE seeks to involve pupils in real and simulated action; provide knowledge and experience in a variety of environmental actions including negotiation, persuasion, consumerism, political actions, legal action, ecomanagement; and involves pupils in active learning (e.g. simulations, role-plays, games and discussions) (Tilbury, 1995). In other words it aims to build students' ability to *act* with reference to environmental concerns (Jensen & Schnack, 1997). The word action competence as suggested by Jensen and Schnack (1997) can be recognised in Wals opinion:

> ……being informed about the environment and having a positive attitude towards the environment are, although essential, not sufficient in resolving environmental problems. In order for people to be able to act upon their knowledge and awareness they need to become acquainted with a variety of action skills. (1990, p. 6).

Effective EE is thus much broader than knowledge per se. This highlights the claim that EE should be oriented towards education *for* the environment (Tilbury, 1995). Indeed action competence reflects how that knowledge can be translated into action (Ballantyne & Parker, 1996). It is about empowering people to participate in decision-making and transferring power in the society. In schools, it enables pupils to participate in learning through action and solving problems in society.

In discussing the role of democracy, however, Jensen and Schnack (1997) suggest that individuals need to decide for themselves the action they will take. In addition, it is important that children do not only take action but also understand why they are taking that action (Eames et al., 2006). According to Jensen and Schnack (1997), action can be direct or indirect. Direct actions contribute directly to solving environmental problems, whereas indirect actions are those which seek to influence others to contribute to solving the problems. Pupils need to be encouraged to be involved in decision-making processes and community-based action research and

problem-solving in the environment (McLean, 2003; Palmer & Birch, 2005). It has been noted that action can provide pupils with opportunity to exercise personal responsibility and control (Ballantyne & Packer, 1996). However, research shows that student action taking is not a consistent part of EE in most locations of the world, as there has been an under-emphasis of education *for* the environment (Cowie et al., 2004; McLean, 2003).

2.3.5. The social problem view

Environmental problems are social problems caused by societal practices (Gough, 1997). This, according to Hart (2003), is based on the idea or assumption that the environment is a social concern. If taken this way, EE should examine not only its content, but the root cause and resolution of environmental problems. In line with the process model, the problem-solving objectives of EE, seem to be most compatible with the action orientation view of EE (Jensen & Schnack, 1997) and parallel the social nature of learning (Gough, 1997). In the problem-solving objective, the students formulate or are engaged in problem-solving and the shapes of the solutions, and the forms they take, are highly variable (Gough, 1997). In contrast with a behavioural objectives approach, there is no homogeneous behaviour at the end of an instructional period. Real issues and problems within communities provide context for learning and require students to have power to evaluate, reflect and act carefully. This adds relevance of EE in the curriculum (Tilbury, 1995). The teaching and learning promoted in this view include student-centred approaches that link strongly to participation because they involve student choice, power sharing within the learning environment and exploration of relevant issues. This requires school/teachers to involve pupils in identifying issues, investigating issues, seeking solutions to issues, carrying out actions to address issues, and evaluating the impact of environmental actions (Tilbury, 1995). However, Hart (2003), in the study with teachers in the Canadian perspective, reported that less attention was paid in the school curriculum to environmental local issues which ignores the concept of relevance discussed earlier.

2.3.6. The social critical construct view

The social nature of the learning process and sociocultural perspectives has highlighted the role of social interaction and participation in communities of practice in learning. Much of the literature in EE supports this assertion and suggests that EE should adopt a socially critical approach (UNESCO, 1980, cited in Gough, 1997, p. 93). According to such literature, the key characteristics of a socially critical approach to EE are taken to be its notion of community, including its notion of the school as a learning community; its views about participation and collaboration; its use of negotiation; and its aim of critical reflection and self-reflection.

A socially critical approach has implications for the styles of teaching and learning adopted in schools and for content of the curriculum. Gough (1997) explains that in a socially critical school, teachers teach less often by a didactic approach and encourage more inquiry, critical reflection and action. Therefore, learning experiences have to be negotiated between the students and teachers, other staff and the wider community. In this sense, learning is seen as a co-operative process and students are seen as agents for producing working knowledge through interaction with others in socially significant tasks. Such tasks include collaborative community projects which are a response to community concerns and which engage students in collaborative reflection and learning from direct experience.

However, Gough (1997) contends that the emphasis given to EE in schools has been on environment rather than education, and certainly not on socially critical education. A number of authors have identified the challenges of critical components of EE in schools (Gough, 1997; Walker, 1997), suggesting the need for transformative and reflective practices among practitioners. In his study, Walker (1997) noted that the reason for the ineffectiveness of the socially critical approach in the growth of EE in schools has been the structure of the education system and as Sterling (2001) suggests, for EE to be successful it would require a transformed education system.

In summary, while it is apparent that views of EE such as a process, a social problem, an action-based and a socially critical construct are oriented to the participation of learners in the learning process and action oriented activities, literature suggests that in most cases, the focus in schools has been on an objective model where EE is defined as content, or the study *about* the environment, with the dominant behavioural approach to teaching and learning. According to such literature, successful EE needs a transformed educational paradigm.

One of the specific objectives of this study was to explore the stakeholders' perception of their current involvement and practice in EE in Tanzania. The aim was to understand how their views of EE are related to their views on participation in EE. The next section reviews approaches to implementation of EE and discusses their implications in school context.

2.4 Approaches to implementation of EE

Both research and global environmental initiatives have acknowledged the importance of education as a means of instilling learners with environmental knowledge and achieving behavioural change (IUCN/UNEP/WWF, 1991; Tilbury, 1995; UNCED 1992; WCED, 1987). *Agenda 21* of the Earth Summit proposed that countries should promote environmental sustainability through education. It states "Education is critical for promoting sustainable development and improving the capacity of people to address environment and development" (UNCED, 1992, Chapter, 36, p. 2). As such, governments have attempted to integrate EE in formal education. However, the complexity, and the wide views of EE have been challenging and therefore created a debate about its place in the curriculum.

2.4.1. Placing EE in the curriculum

EE as a separate subject

There have been arguments against establishing EE as a separate subject. It has been widely acknowledged that EE is not a subject, a body of knowledge or skills like

other disciplines. It is a situation in which the learner may be involved or in which others may be involved. It should be a new orientation or emphasis permeating the whole curriculum, (UNESCO, 1976; UNESCO, 1978), yet in practice this may not be so. There is evidence that EE has been and still is taught as environmental studies or environmental science as a newcomer among the other established subjects of the curriculum (Gough, 1997). This runs counter to the current focus on participatory and holistic perspectives of EE and has been related, as explained earlier, to the dominant objective teaching approach.

EE as an orientation in the curriculum

There has been promotion of EE as an orientation in the curriculum with the idea in mind that the aim of EE is not to be achieved by any one subject (Gough, 1997). EE as an orientation in the curriculum intended to capture the involvement of all subjects within existing school Programs, best approached as an across-curriculum initiative. It has been seen that by integrating EE within broad learning areas students can develop understandings, skills and attitudes which enable them to participate in the care and conservation of the environment. However, Gough (1997) explains that despite the advocacy for a whole curriculum approach to EE, the school curriculum tends not to be organised in broad learning areas, but in subject disciplines whose proponents rarely communicate with each other.

EE as a holistic approach

EE has been recognised as holistic in nature (Tilbury, 1995). The complexity and totality of EE thus suggests a holistic approach to teaching and learning. The *Tbilisi Declaration* stated that EE should consider the environment in its totality, natural and built, technology, cultural, historical, moral, aesthetic (UNESCO, 1978). The holistic nature of EE underpins participation in all aspects of life. The approach to EE in schools should, therefore, be interdisciplinary, drawing on the specific content in each discipline:

> EE does not attempt to replace any subject, but its success depends upon the holistic treatment of environment and development issues through all areas of understanding and experience, aesthetic and creative, human and social, linguistic and literary, mathematical, moral, physical, scientific, spiritual and technological. (Tilbury, 1995, p. 200)

Recent literature in EE supports the holistic view of environmental education (Bolstad et al., 2004; McClaren & Hammond, 2005). Thus, the emphasis in EE has been on curricula integration. This according to McClaren and Hammond (2005) creates opportunities for exchanges or collaborations among different subjects and disciplines, for example, concepts from more than one discipline may be integrated by a central theme, issue, problem, topic or experience.

However, the inter/multi-disciplinary nature of EE has been creating considerable challenges in the education system (Mappin & Johnson, 2005; Palmer, 1998). Many multi-or interdisciplinary programs of EE fail to clarify or have students develop a clear appreciation of what different disciplines or forms of knowledge contribute to an understanding of environmental topic (McClaren & Hammond, 2005). Second, EE has been historically marginalised within formal education systems, often placed on the periphery of regular school subjects such as science, geography, or social studies and mainly dominated by a traditional conception of knowledge transfer within body of discrete disciplines (Gough, 1997; Palmer, 1998). The situation has been described as 'rhetoric-reality gap' (Palmer, 1998), that is, the mismatch between what is 'environmental education' and what is actually practiced in schools.

There is a need for schools to integrate EE in all subjects and adopt holistic interdisciplinary approaches so as to close the rhetoric-reality gap. This also requires teaching and learning strategies that would focus on the three dimensions of EE (Tilbury, 1995).

2.4.2. The key dimensions of EE

It is often suggested that teaching of EE should comprise three dimensions, education *about* the environment, education *in* the environment, and education *for* the environment[3].

Contemporary EE adopts *in-about-for* the environment and Tilbury (1995) suggests that to achieve the goals of EE would require the integration of these three approaches to environmental work:

> In practice, this will entail ensuring that learning Programs include developing environmental awareness, knowledge, values, concern, responsibility, and action, although not necessarily in that order. (Tilbury, 1995, p. 207)

However, what is actually in practice does not fulfil this pattern (Palmer, 1998). For example, most reports indicate that EE teaching is based on *in* and *about* the environment, whilst very few are reported to be based on *for* the environment (Bolstad et al., 2004; Brown, 2003; McLean, 2003), students are seldom involved in decision-making (Barker & Rogers, 2004; Bolstad et al., 2004), and little is done to empower the students to address the issues and resolve the problems (Hart, 2003; Palmer, 1998). In some locations of the world EE is not mandated, it is for schools/teachers to decide what and how to teach (Bolstad et al., 2004; Eames & Cowie, 2004).

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[3] The "in-about-for" classification was Lucas' (1979) attempt to categorise the different meanings that had been given to the term "environmental education".

Education *about* the environment is concerned with developing *awareness, knowledge and understanding* about human-environment interactions. The environment is a topic or theme of study. Through it pupils develop ecological understanding, although at times environmental concern may also result.

Education *in* the environment favours pupil-centred and activity-based learning. This approach usually takes the form of outdoor education/field work developing environmental *awareness* and *concern* by encouraging personal growth through contact with nature.

Education *for* the environment regards environmental improvement as an actual goal of education. Whilst *in* and *about* the environment limit themselves to promoting understanding, appreciation and concern, education for the environment goes beyond this to develop a sense of *responsibility* and *active pupil participation* in the resolution of environmental problems. It adopts an holistic outlook to the study of environmental problems, reflected in its global and interdisciplinary approach. However, to achieve the goals of environmental education requires integration of these three approaches to environmental work. (Tilbury, 1995, p. 207)

From this review it can be realised that the complexity of EE not only created challenges in its interpretation but also in the way in which it could be approached. EE has been marginalised in most school curricula (Palmer, 1998). There has to be restructuring in schools so as to accommodate the real aim of EE (Walker, 1997) which according to Sterling (2001), would involve whole system thinking[4] towards a participative world view.

2.5. Participative world view

2.5.1. Educational paradigm

Literature suggests that the traditional approach, based on a mechanistic world view, which has dominated much current educational practice in most of our societies, is of little assistance in creating a sustainable lifestyle (Gough, 1997; Sterling, 2001). According to this literature, the real need is for educational paradigm transformed to an ecological paradigm which considers schools as institutions for social change and transformation. According to Sterling (2001), the value and theory of EE are and have been affected, influenced and constrained by the systems in which they are embedded. Thus, changing the educational paradigm would involve redesign of education systems and institutions, rethinking whole systems on a transformative, constructive, and participative basis. Given the urgent need for participative approaches towards sustainability there has been a call for re-visioning and re-orientation of education system, in which all interested parties would be involved and participate in sustainable practices. Sterling (2001) elaborates that the transformative perspective involves changing who we are by orienting our abilities to participate, to belong, and to negotiate meaning, and change in perspective within education institutions to deal with problems that we are currently facing. It is within this viewpoint the present study is based and it is further discussed in the next sections.

[4] Whole system thinking has been divided into three, interrelated contextual levels: educational paradigm, organization and management, and learning and pedagogy. (Sterling, 2001, p. 56)

2.5.2. *Pedagogies for participation*

For many years a didactic approach has dominated the education system in Tanzania, and thus EE (Gough, 1997; Sterling, 2001). As discussed previously, a didactic approach is a form of teaching in which knowledge is transmitted to the pupil, who is expected to passively receive it based on teacher-designed didactic lecture and instruction, it therefore encourageing passive learning (Osaki, 1995). Osaki (1995) argues that this approach is essential at times but does not lead to permanent learning outcomes. This implies that the model is not suitable in the teaching of EE, because, being passive, students do not get an opportunity to participate actively in the lesson and exploit their own experiences (Osaki, 1995). The need for involvement and participation of learners in learning led some theorists to suggest active pedagogies which depart away from the dominant traditional didactic teaching (Ballantyne & Packer, 1997). Pedagogies such as inquiry learning or discovery learning, personal construct or experiential learning and social construction or co-operative learning place heavy emphasis on student-centred learning, and involvement or participation of learners in knowledge construction (Ballantyne & Packer, 1996; Eames et al., 2006; Gough, 1997; Osaki, 1995).

Discovery/inquiry learning

Discovery or inquiry learning emanated from Piaget's and Bruner's ideas about intellectual development which consider learning as active as opposed to the idea of the teaching process of imparting knowledge to the learners (Osaki, 1995). Within this perspective, children are considered to play a central role in learning. They are motivated, eager to learn and explore the world around them. For learning to happen the teacher role is that of organising the materials and the environment for the child to explore and then letting them do the rest by themselves (Osaki, 1995). The teachers who favours the discovery or inquiry learning process encourages the child to participate actively in learning by asking questions, carrying out well planned projects or involves learners in identifying and solving problems, and reflecting to gain an understanding or make informed decisions (Eames et al., 2006; Osaki, 1995).

Experiential leaning

Experiential learning is based on humanists' theory (Kolb, 1984; Rogers, 1969). In the experiential learning stance, a learner constructs meaning for new information, knowledge, skills, and values from experience (Rogers, 1969; Wurdinger, 2005). They do so by attempting to associate it with their prior knowledge (Gough, 1997; Slingsby, & Barker, 2005). It may occur outside traditional classroom settings where students have contact with real life experiences or engage in problem-solving activities (Wurdinger, 2005). Experiential learning relies on self-initiation, free choice and personal involvement (Roger, 1969; Wurdinger, 2005). It combines theory and practice (Wurdinger, 2005), in other words, it combines minds on (e.g. thinking and planning, and hands on e.g. action and problem solving), as well as reflection and application (Bell, 1995; Law, 2003; Wurdinger, 2005). It can be a group-based, but still lead to personal growth (Bell, 1995).

Major tools for experiential learning include projects, field-based experiences and activities such as practical tasks, simulations, games, role play, or an expressive approaches, like drama, art (Osaki, 1995; Wurdinger, 2005). It is suggested that these activities should be student directed; in this case, educators need to delegate authority to learners that would allow them to make decisions and take responsibility for their learning (Eames et al., 2006; Osaki, 1995; Wurdinger, 2005). They should help learners identify appropriate projects, and once students begin to work, the students themselves engage in critical inquiry and the discovery process. In this theory, self-evaluation is the principal method of assessing progress or success (Roger, 1969; Wurdinger, 2005). This involves students' communication of their ideas, e.g. presentation or exhibition; keeping records of what they are doing e.g. a portfolio; and setting criteria to be used to judge their work.

The literature outlines the significance of experiential learning as applicable to environmental education to include active learning (Herbert, 1995); students gaining more from the field and direct experience (Wurdinger, 2005); being meaningful and applicable (Fraser, 1995); students involved in problem-solving (Osaki, 1995); may lead to personal commitment and responsibility, that is, once the students are

involved in decision-making, they have responsibility to help carry decisions through, and implement it instead of remaining on the sidelines as a recipient of someone else's decision (Eames et al., 2006; Herbert, 1995).

The challenges of the humanistic, experiential learning approach centres on its free will, self-fulfilment, and personal needs in which learners are free to choose their own learning. This is problematic to both curriculum formulation and implementation. On the other hand, in reality people have different experiences, although discussion of experiences takes this for granted as if experiences have fixed, inherent meaning (Bell, 1995). Secondly, when students are involved in experiential learning they make decisions that affect their learning and individual decisions might affect the safety of an individual or group. In this case, student choice needs to be guided and monitored by educators. Indeed, educators should make sure students understand what they are doing before doing it (Wurdinger, 2005).

Cooperative learning

Cooperative learning theory emphasises learning through social interaction (Eames et al., 2006). It may involve students working in small groups in tasks that have been outlined by a teacher or chosen by students themselves (Griffith, 1995). Two elements in cooperative learning identified in the literature include a group goal and individual accountability (Griffith, 1995). There is evidence that cooperative learning promotes higher achievement than individualistic learning structures across all age levels, subject areas, and almost all tasks (Griffith, 1995). Cooperative learning research has also identified positive changes in students' attitudes towards each other (Griffith, 1995). According to Griffith (1995), positive attitudes can promote learning. Some studies have also demonstrated that when students are allowed to work together, they experience an increase in self-esteem, self-direction, and role-taking abilities (Griffith, 1995).

While personal constructivism concurs with experiential learning, based upon individual construction as the basis of learning and that teaching should start from existing perceptions of EE, cooperative learning or social constructivism is based on

the principles of collaborative learning and emphasizes the importance of the social interaction in the learning process. It gives the learner a full opportunity to take part in the lesson and involve all participants in problem-solving activities (Osaki, 1995). Osaki (1995) suggests that for this approach to be useful, learners should have some experiences on the knowledge passed on and will be guided through receiving information and interaction with each other, including the teacher, in order to make sense of the content being taught. Teaching and learning strategies suggested involve interaction between teachers and pupils and among pupils, e.g. through projects, small group activities, and discussions. However, Osaki (1995) explains that this model can be inapplicable in the context where there is an acute shortage of instructional materials such as reference books. It also requires a skilled teacher who has knowledge of participation of students in the group and the communication networks.

It can be realised that the active learning methods discussed above agree with transformative perspectives (Mezirow, 2000), fostering personal and social change or social interaction as they provide opportunity for learners to participate in the learning processes and in problem-solving through decision-making, action and reflection. Thus, educators need to depart from teacher-centred didactic teaching to student-centred teaching encouraging participation of learners.

In Tanzania, environmental education policy is built upon five hinges: "behavioural perspectives (seeking to change behaviour and making people aware); experiential learning perspectives (seeking to educate/learn through experiences in nature); constructivist perspectives (whereby learners create or construct meaning for themselves); socially critical perspectives (the concern is the social processes in creating knowledge and critical intervention for change); and outcome-based education (where the focus is on outcomes and managing education for society's economic development)" (URT, 2004, p. 9). This research then seeks to examine whether there is evidence for the practice of these perspectives through the views of the stakeholders in school-based education.

2.6. Participation of stakeholders in EE

The notion of participation in education has long been advocated (see Epstein, 1996; Khong & Ng, 2005), although it is still recent in EE. Literature in EE supports that the participative modelling which can be carried forward into organisation, actual development and management of EE, as an ongoing learning process involves all players (Sterling, 2001). Thus, contemporary EE seeks to involve different people, (including the school children) to participate in environment challenges (Palmer, & Birch, 2005; Tilbury, 1995). This is clearly articulated by Fien and Tilbury:

> All persons and communities should be empowered to exercise responsibility for their own lives and for the life on earth. Thus everyone must have full access to education, political enfranchisement and sustaining livelihoods, and be able to participate effectively in the decisions that most affect them (IUCN, UNEP and WWF, 1990, cited in Fien & Tilbury 2002, p.5).

2.6.1. Children's participation

Both international declarations and research in EE view children as the main target audience for EE (Hart, 1997; Palmer, 1998; Tilbury, 1995; UNCED, 1992)**.** Education *for* the environment and education for sustainability consider real EE to be occurring when students are actively involved in solving environmental issues:

> EE generates action by challenging pupils, on a personal level, to change parts of their lives, so that they are engaged in leading more sustainable lifestyles. At a public level, they are encouraged to take responsibility for the care and management of the environment, directly through participation in practical conservation projects or indirectly, as informed and concerned adults through democratic process. (Tilbury, 1995, p. 203)

According to Tilbury (1995), EE should therefore engages pupils in the process of identifying issues, investigating issues, seeking solutions to issues, carrying out action to address issues, and evaluating the impact of the environmental actions taken to resolve these issues. In discussing the role of action, Tilbury points out that:

> …it is not merely about discussing solutions in order to enhance awareness. It is about active exploration of issues, about identifying potential solutions and acting upon them. (Tilbury, 1995, p. 203)

As discussed earlier, the teaching and learning strategies that emphasise active learning involve the participation of the learner in a way which generates an action orientation. According to Tilbury (1995) it is a form of learning that empowers pupils to exercise responsibility for their own lives and for the environment:

> Participatory learning creates a climate within the classroom that explicitly values and affirms each individual and encourages that pupil to take responsibility for their own learning. It promotes the dynamic readiness to accept responsibility and the creativity required for constructing a sustainable environment (p. 204).

In this case, Tilbury (1995) suggests some of the active learning strategies for EE to should involve games, simulations, and role playing, as well as class and group discussion (in response to stimuli, e.g. photographs, media or personal experience). In addition students should be given an opportunity to voice their decisions and take their own responsibility for their learning.

Jensen and Schnack (1997) sought to differentiate activity from real action and explained the former as for example, when students undertake an environmental activity which does not lead to a solution to the underlying problem, while the latter results in solving of the actual problem and this requires pupils' understanding of the necessity to carry out an action. Similarly, Hart (1997), in his ladder of children's participation encourages that pupils be given opportunities to decide or initiate their own projects, views or opinions. Hart's ladder of children's participation is a useful framework, providing an important example of participatory process that could be utilised in schools to achieve the aims of EE. Hart's ladder of children's participation is based on eight rungs or types of participation which depicts increasing degrees of initiation by children in decision-making (see Table 2.1). Hart's non-participation levels are characterised by adult control and domination, leaving no opportunity for children to share their views or opinions for example, using young people to carry or voice adults' messages but portraying them as children's views. This, according to

Hart (1997), ignores children's ability to choose whether they wish to be involved or not involved.

Table 2.1. Hart's 1997 ladder of children participation

Non-participation			**Degrees of participation**				
			→				
Manipulation or deception	Decoration	Tokenism	Assigned but informed (social mobilisation)	Consulted and informed	Adult initiated shared decisions with children	Child initiated and directed	Child initiated shared decisions with adult

(adopted from Hart, 1997, p. 41)

However, Hart (1997) contends that while the upper levels of the ladder express increasing degrees of initiation by children, they are not meant to imply that a child should always be attempting to operate at the highest level of their competence. The figure is rather meant for adult facilitators to establish the conditions that enable groups of children to work at whatever levels they choose. A child may elect to work at different levels on different projects or during different phases of the same project. Also, some children may not be initiators but are excellent collaborators. In order for genuine participation to occur, Hart (1997) emphasises the avoidance of the type of participation shown in the left hand columns (Non-participation). The role of facilitator therefore, according to Hart, is crucial in determining the type and level of participation in which the children engage. Adults or teachers need to help a child to work at whatever level they choose, however, they should encourage children to choose a more participative role when possible to enhance learning.

2.6.2. The role of the teacher

The literature maintains that active participatory strategies are essential if teachers are to teach EE effectively (Hart, 1997; McLean, 2003; Tilbury, 1995; Willson-Hill, 2003). The implementation of a participatory approach would therefore, require teachers to share power and decision-making with students. Harvey et al. (1999) referred to this relationship as "negotiation", that is, teachers negotiate learning with

students. McLean (2003) provides examples of teacher/student roles in education especially *for* the environment (see Table 2.2).

Table 2.2. Teacher/student roles in education *for* the environment

Teachers' role	Students' role
Allow students to have a role in determining their own learning; Assist the students to discover the symptoms and real causes of environmental issues; Develop students' critical thinking and problem-solving skills; Arrange collaborative action projects in negotiation with students and community; Focus on one or two issues in depth; Ensure projects are multidisciplinary; Take part in the learning alongside students and community members; Utilise a facilitative teaching style.	Identify and choose an environmental issue to resolve; Think critically and solve problem to decide on course of action to take; Take time to reflect on their action; Work collaboratively; Learn alongside community members; Have ownership.

(adopted from Mclean, 2003, p. 5)

Mclean (2003) emphasises the need for the teacher to maximise opportunities for teaching EE, by utilising current local issues and involving students in decision-making on the issue to be investigated and planning the actions to be taken. Like Hart (1997), McLean (2003) supports the concept of teacher as a facilitator, leading students in action towards resolving the environmental issues, rather than targeting symptoms of environmental issues. As Walker (1997) pointed out, McLean emphasises that both the teacher and the students would need to engage in reflections on their action. In other words, students need to be reflective practitioners to reflect on their learning and action. However, with the traditional strategies, teachers found it difficult to release control and include a more participatory approach (McLean, 2003). This has been reported to relate to a lack of understanding of the participatory strategies (Brown, 2003) and therefore is a suggestion for professional development of teachers especially *for* the environment (Brown, 2003, McLean, 2003).

Teacher needs in terms of professional development support and more general acceptance and recognition of EE publicly have been reported elsewhere (Bolstad et al., 2004; Hart, 2003; Mtaita, 2005). According to Hart (2003), teachers' pedagogical practices are related to their views or epistemological beliefs, therefore teachers' environmental beliefs and environmental-related practice need to be examined. Hart's (2003) research recognises that what teachers think and believe, reflects what they do in the classroom, and ultimately shapes the kind of learning experiences that young people get. There is a need for research to help teachers explore their theories, assumptions, values, ideologies, and worldviews in relation to EE and hence support them with appropriate strategies.

2.6.3. Community participation in EE

Literature suggests that the involvement of parents in children's learning is a key to successful learning and school improvements (Knipprath, 2004; Khong & Ng, 2005; Pang, 2004). That is, the closer the parents are to the education of the child, the greater the impact on child development and educational achievement (Fullan, 1991). In this case, to ensure parents are not left out of their child's learning, schools/teachers can set tasks that could require their involvement (Ballantyne et al., 2001; Bolstad et al., 2004; Knipprath, 2004; Khong & Ng, 2005; Pang, 2004).

Epstein (1996) provides a useful framework of six types of involvement of parents and the community in the school, which could be used to form patterns of parent/community involvement in EE and includes parenting, communicating, volunteering, learning at home, decision-making, and collaboration. Table 2.3 provides details of types of parent involvement and examples of their involvement in schools.

Parenting, communicating, and learning at home

Epstein's type 1 model depicts how the family members can create an environment which is supportive to children's learning. As it has been suggested, friends, parents, families, or other adults can play an important role in EE (Palmer & Birch, 2005). For example, Palmer and Birch (2005) note research that has found that adults can act as

role models for young adolescents. For Palmer and Birch (2005) this is an interpersonal relationship in developing environmental concern. In this case, outreach to parents has been recommended as an important aspect of EE.

Table 2.3: Model of parent/community involvement in schools

Type of parent Involvement	Note	Examples
1. Parenting	Schools help all families establish home environments to support children as students	School/students share EE issues with parents
2. Communicating	School-to-home and home-to-school communications about school programs and children's progress	Log books, newsletter, homework
3. Volunteering	Schools recruit and organise parents help and support	Fund raising, projects, exhibition, competition, school visits
4. Learning at home	Schools provide information and ideas to families about how to help students with homework and other curriculum-related activities	Homework Projects
5. Decision making	Schools include parents in school decisions	Parent leaders/ representatives
6. Collaboration	Schools integrate resources and services from the community to strengthen school programs, family practices, and student learning and development.	Visits/tours for students

(adopted from Epstein, 1996, p. 215-216)

From Epstein's perspectives (types 2 and 4), parents not only act as a role model but can assist in homework, assignments, or projects at home (Epstein, 1996). As suggested in Hart's ladder of children's participation, parents can be a critical factor in facilitating their children's learning as they engage in their decision-making or choices of an environment project to work with.

For example, in the younger grades, parents could be given suggestions on how to reinforce their children's learning through discussion at home and this could be incorporated into the environmental learning through the design of homework activities (Ballantyne et al., 2001). In the older grades, teachers could involve parents in student projects and presentations. In their study (Ballantyne et al., 2001), some parents were reported to have been helpful in their children's environmental projects. According to authors, this could be an effective way of communicating and promoting reflection on action in relation to local issues (Ballantyne et al., 2001). Thus, children need to have the opportunity to learn about environmental management within their own communities.

Communication (Intergenerational influence)

In addition, for parents to establish an environment to support children at home, school settings can also provide opportunities for parents to engage in the process of EE (Palmer & Birch, 2005). Ballantyne et al. (2001) referred this to as an 'intergenerational influence'. This involves encouraging students to discuss environmental issues and actions with parents and other adults in the community (Ballantyne et al, 2001; Epstein, 1996). However, the extent to which such involvement leads to students, their parents, and other adults in the community developing an increased appreciation of the relationships between people and environments and enhanced insights, commitments and skills for acting on behalf of the environment remains unclear (Ballantyne et al., 2001). Few studies have been reported in this respect.

Rickinson (2001) reports on the result of three studies on the capacity of school students to influence the environmental attitudes and behaviour of their parents through communication about environmental matters. The studies based in Europe, Australia and the UK led Rickinson (2001) to suggest that if children could be given EE at school and encouraged to disseminate it at home and in the community, this could be an effective way of influencing and educating parents to sustainable environmental behaviour (Rickinson, 2001).

In a similar vein, Ballantyne, Fien, and Packer's (2001) case study explored the impact of two schools' environmental education programs. The impact of the programs was explored from the perspectives of the students (using questionnaires), their teachers (using personal interviews) and their parents (using telephone interviews). The result showed that the programs were successful in engaging students in thinking and learning about environmental issues.

In the interviews, parents were asked whether the students had discussed aspects of the program with them, and if so, what was the nature of their discussions, and they were also asked in what ways they felt the Program had impacted on their children. The report shows that the nature of discussions between children and parents were mainly by parents' initiation, and only two families indicated their child's initiation. Some parents indicated that the student's discussion with their parents led them to modify their own environmental attitudes and behaviour (Ballantyne et al., 2001). This indicates that young people might have the capacity to influence their parents' environmental behaviours, especially if the program is planned to include adults as well as children, and to tackle local and relevant environmental issues (Rickinson, 2001).

School-community partnership

The literature suggests that with strong school-community partnership (Epstein's types 3, 5 and 6), parents are provided with more opportunities to support the school Programs by volunteering their time, effort and resources (Pang, 2004). It also gives parents a legitimate channel to voice concerns in order to help resolve problems and issues that arise for their children (Khong & Ng, 2005; Pang, 2004). For example, parents or community members might visit the schools and talk to students about environmental issues or help teachers in classroom activities (Tal, 2004), or schools in collaboration with community might organise visits or tours for students (Mtaita, 2005).

However, Pang (2004) noted that though the concept of involving parents in children's learning has been experimented in some schools, most teachers have not

yet realised the importance of such a joint venture and the role they need to play in it. Teachers seldom invite parents to assist in the classroom. Parents lack of time, teachers high workload, and the mismatch of time for teachers to meet parents have been noted as major difficulties in enhancing family-school communication and cooperation (Pang, 2004). The low teacher perception of parent efficacy is also discouraging teachers from involving parents in their children's learning (Pang, 2004).

For example, Epstein (1996) considers involvement of parents in decision-making as important for school governance and advocacy activities. However, literature suggests that the school personnel have been reluctant in involving parents in aspects of school decision-making (Khong &Ng, 2005; Pang, 2004). In some cases, principals did not think that it was important to involve parents in decision-making or to consult parents on major school decisions. It is no wonder that the failure of an environmental Program may be contributed to by parent misunderstanding of the relevance of EE. Disinger (2005) suggests that research-based information about parental dispositions toward EE in its various forms, and whether or not parental feelings about teaching about environmental problems and issues in their children's classrooms are parallel to public concerns about environmental quality would be an interesting question to explore. This study addresses part of this question in some Tanzanian schools.

2.6.4. Participation of environmental agencies

As noted previously, a number of non-governmental organisations have established some initiatives to address environmental problems in most parts of the world, especially in developing countries. Non-governmental organisations (NGOs) are organisations outside of government that some have stake in education, health or some other public good. It has been suggested that non-governmental organisations can make an important contribution in designing and implementing educational programs (UNCED, 1992). For example, Disinger (2005) noted that although NGOs have no direct influence on education policy for EE, they have been producing some excellent teaching resources, through websites, videos, computer software, and printed materials that are often free to schools. Most of the resources have been

reported to be useful in aiding or enriching the requirements of the national curriculum, although some have been reported to be irrelevant. In Tanzania, for example, some NGOs have been working with schools, and children in projects for environmental conservation (Irma & Downie, 1999; Johnson-Pynn & Johnson, 2005). The assessment of some NGOs involved with EE in Tanzania shows that their programs have been essential in linking the schools and community and increasing community knowledge and awareness of particular environmental issues (Johnson-Pynn & Johnson, 2005; Seidel, 2000).

However, in discussing environmental advocacy, Slingsby and Barker (2005) explain that although many NGOs played a major role in development and practice of EE (e.g. sponsoring for funding resource development), many may have what others consider as political agendas. Disinger (1999) cited in Mappin & Johnson (2005) also cautioned educators that resources developed by government agencies and NGOs have a tendency to focus on policies and mandates of their sponsors rather than on education as the primary outcomes. In some cases, these agencies may perceive schools as effective locations for advocating their message, policy, or mandate (Disinger, 2001, cited in Mappin & Johnson, p. 5) using education as a social instrument in environmental policymaking (Mappin & Johnson, 2005). In this case, education may be perceived by agencies outside school as a social strategy to achieve a particular policy (e.g. conservation, sustainable development, biodiversity). On the other hand, these agencies might sometimes have different purposes and be counteractive with the government objectives. There is a need for coordination of activities between NGOs and government sectors so as to have a shared consensus of purpose.

2.6.5. The role of the government

The government is an important stakeholder in education. Government departments and agencies play a significant role in influencing public understanding of EE through mandated school curricula and environmental policies that link education and international agreements (Slingsby, & Barker, 2005). For example, as a response to a global call for EE, many countries in the world (e.g. UK, NZ, Australia, US, Japan,

Denmark, and African Countries, including Tanzania), have developed comprehensive national strategies for incorporation of environmental education in formal school curricula. The curriculum could be a form of statement of what EE is and education for sustainable development means. This is what is sometimes referred to as the intended curriculum. The operational curriculum, on the other hand, is what happens in the classroom. That is, how the planned curriculum is put into practice (Spurr, 2002). However, policy or curriculum statements vary in their effectiveness (Cohen & Ball, 1990). As it is often with the complexity of EE, the implementation in schools is open to multiple interpretations.

In their study on the relationship between policy and practice in the implementation of education change, Cohen and Ball (1990) found that instructional policy can be a challenge to practitioners. It showed that the policy had been interpreted and enacted in a variety of ways (Cohen & Ball, 1990). They noted that while the policy might have influenced practice, the practice also has had a profound influence on the new policy (Cohen & Ball, 1990). The teachers in the cases did not simply assimilate new policy; they enacted new instructional policies in terms of their inherent beliefs, knowledge, and practice. Hence when teachers implement the policy, they do so in terms of their pre-existing practice, knowledge, and beliefs. They can frame the policy in terms of what they already know, believe, and do in classrooms (Cohen & Ball, 1990).

This has direct implications in EE. The literature has noted a gap between intended or mandated and interpreted EE, that is, what actually happens in the classroom, in other words, the rhetoric-reality gap (Palmer, 1998). Therefore, the intended EE may not be effectively implemented (Palmer, 1998). A reason may be that although teachers have been asked to implement changes, they have not been offered support (Cohen & Ball, 1990; Fullan, 1991). For example for EE, only a few have the opportunity for professional development (Bolstad et al., 2004); few have the opportunity to see examples of teaching in EE (Mtaita, 2005). Teachers may not have been able to engage in conversation with other teachers within and beyond the school who would support their implementation (Cohen & Ball, 1990; Fullan & Hargreaves, 1992).

There is a need to include more support for teachers for the promotion and development of EE (Robottom & Hart, 1993).

The last section discusses collaboration in EE, focusing on how the stakeholders could work together to enhance EE.

2.7. Collaboration

Collaboration is a term that has been described in a variety of ways across diverse fields (Montiel, 2005; Radford et al., 2003). It is an activity that touches almost every aspect of business or social life (Huxham & Vangen, 2005). In all cases, collaboration is seen as an important opportunity to involve individuals to participate in an agreed objective or course of action (Montiel, 2005). The relationship can involve individuals or organisations working for a long term shared vision or for delivery of short-term projects (Huxham & Vangen, 2005). The view corresponds to an holistic social constructivist worldview in which meaning is constructed and relationship is the unit of analysis (Montiel, 2005). Various terms such as partnership, coordination and/or cooperation have often been seen in various discussions of collaboration (Epstein, 1996; Khong & Ng, 2005; Pang, 2004; Slater, 2004), although the different level or degree of participation or engagement of collaborators differentiates collaboration from these and other joint efforts (Montiel, 2005; Slater, 2004). The discussion on the different views of these terms is beyond the scope of this study, readers are referred to Montiel (2005). This section explores briefly the reasons for the emphasis on this collaboration trend in EE and factors associated with it.

2.7.1. Why collaborate

The literature identified various motives for people to collaborate.

Collegial support

It has been realised that effective implementation of change or improvements of the existing program are a result of collective thought rather than individual enterprise (Fullan & Hargreaves, 1992; Fullan, 2005; Montiel, 2005). In this case, teaching of EE, as a new area in the curriculum, is considered to be more successful when

teachers collaborate. According to Fullan and Hargreaves (1992), when teachers work together they learn from each other and increase their efficacy. In other words, teachers working together in teams develop a cascade of interpretations that translate the intended curriculum into the operational curriculum (Spurr, 2002). Hargreaves and Fullan (1998) note that such networking provides teachers and others with ways to share ideas, swap experiences, exchange lesson plans, provide support and undertake professional learning based upon their perception of their own needs and agendas and not mandates'. Fullan and Hargreaves (1992) termed this voluntary collegiality as opposed to contrived collegiality. This means that collaboration relations arise not from administrative compulsion, but from perceived value and understanding among participants that are working together (Slater, 2004).

Literature supports that collegiality has greatest possibility for teachers' ongoing learning and personal development (Slater, 2004). For example, in Mtaita's (2005) study, the New Zealand teachers reported that working and discussion with other colleagues who are keen on EE was a source of support and encouragement. Fullan and Hargreaves (1992) suggest that such collaboration among teachers may involve team teaching, joint planning, observation, action research, mentoring, shared decision-making, shared new ideas, resources and expertise. Research, however, has identified that teachers work in isolation, and are rarely sharing ideas or resources or planning jointly (Kitta, 1997; 2004). Professional development may be needed to help teachers develop the spirit of working together. One of the limitations of teacher collaboration is the structural organisation of the school. This is because of the workload and limited time to collaborate (Kitta, 2004). Also, Fullan and Hargreaves (1992) remind us that caution must be taken not to overemphasise collaboration as it may suppress important qualities of teachers as human beings associated with individualism.

Partnership

It has been argued that successful change is likely to occur where teachers not only interact with themselves, but also with personnel beyond the school who are also involved in change. It is believed that outside the teachers' boundary exists expertise,

insight, learning opportunities and support for teachers. At a time of rapid change and in the implementation of a new area in the curriculum like EE, having access to this professional learning and expertise is more important than ever (Hargreaves & Fullan, 1998). Indeed, a one-shot workshop is important but not adequate for teachers to cope with changes. For example, in the study by McLean, (2003), when asked to identify factors that helped the implementation of EE, apart from collegiality support, teachers most often mentioned support from the principal and senior staff, local government and external agencies. In this case it is suggested that teachers develop stronger collaborative work, not only with their colleagues in their own school, but also with other people beyond the school (Hargreaves & Fullan, 1998). This is significant for their continuous professionalism and the possibilities include engaging in joint electronic learning networks, participating in innovative curriculum development, and/or participatory action research projects (Hargreaves & Fullan, 1998; Keown, 1999).

Keown et al. (1995; 1999) conducted case studies that included parents, teachers, and students in New Zealand, and found among other things that action projects involving specialists from outside the school provided motivation and focus and opened up interesting possibilities for environmental learning and understanding. They found that the Enviroschool committees established within schools, and within clusters of schools, provided valuable forums for discussion, planning, and linking to community agencies. The authors also noted the importance of involving all participants and stakeholders in planning and running of EE, so that a negotiated shared agenda for setting and achieving clear goals for EE could be developed.

School-community engagements

There has been excessive emphasis on school-community partnership. This aligns with an increased concern about family and community participation in a children's education (Knipprath, 2004). It has been noted that the parents' role in child education has been limited to supporting learning and behaviour, expected and solicited by the school, and not involvement in decision-making and other collaborative activities (Knipprath, 2004). Collaboration between community and

schools can also involve tapping of resources and services from the community (Epstein, 1996), as well as involving school/students participating in community activities. Tal (2004) investigated school-community collaboration in an elementary school in Israel. The aim of the study was to describe school-community partnership in planning and executing comprehensive EE programs and to describe teachers' and parents' perceptions of collaboration. The study involved the parents and community members in various indoor and outdoor activities. In this partnership, parents were encouraged to participate and to be involved in planning a school-based curriculum and participate in school's formal and informal activities. The teachers and parents developed the school's mission, which declared that the school should serve the community at large, and that its programs should reflect community issues. The curriculum incorporated national mandatory subjects as well as local themes.

In such collaboration, the parents were heavily involved in the EE Program by participating in the initial curriculum design team and by providing continuous help with the field trips and other projects (Tal, 2004). In order to promote involvement, responsibility and participation in decision-making, the students were also engaged in activities that encourage collaboration among children and between children and adults such as public debates, and community work. The result of the study showed that such partnership emphasised local ideas of project-based learning in EE. A suggestion from the study was that schools should initiate local projects and become the centre of larger community efforts (Tal, 2004). The study also found that integration of formal and non-formal programs allows a better fulfilment of the EE goals, which is to provide social groups and individuals with the opportunity to appreciate the environment, care about it, be actively involved in resolution of environmental problems, and act towards improving the quality of the environment (UNESCO, 1980; WCED, 1987).

Ballantyne et al. (2001) also noted that through community projects students not only benefit themselves, but also contribute to the community. Collaboration between school and community can offer possibilities of addressing local issues. However, this requires the kind of programs that involve the students and the community. A

study by Rao, Arcury and Quandt (2004) involved students in community-based environmental health project in North Carolina. The students were involved in various aspects of the projects including planning, data collection, and analysing and reporting the results. The result of the study indicated that community-based projects benefited from student participation, while encouraging the development of future community-oriented environmental health researchers. However, it has been noted that initiation of collaboration with the community mainly comes from the school. Seldom does initiation of such relationships come from the community or industry. There seems to be a need of more policy support to encourage and secure the support of business/industry and community for education development and reform (Pan, 2004).

Cooperation and coordination

Huxham and Vangen (2005) explain that collaboration may involve development of a relationship and some exchange of information among collaborators or it may require a cooperation or coordination, that is, joint investment in action or bringing together of different resources including technology or expertise. This form of relationship may involve individuals in an organisation, intra-collaboration, (e.g. teachers from different departments collaborating), or different organisations, inter-collaboration (e.g. schools, community, and other organisations) (Slater, 2004). Literature suggests that these models of relationship may guarantee efficiency of activities, reduce duplication of activities, or they may help to achieve whatever visions one may have by tapping into resources and expertise of others (Huxham, & Vangen , 2005; Montiel, 2005). This is particularly relevant in Tanzania as EE is reported to have many participants with different approaches creating fragmentation or leaving gaps in delivery (URT, 2004).

In teaching, cooperation is also used as a strategy of bringing learners to work together. It reflects the goal of team work and participation of learners. Most cooperative learning involves projects. For example, Volk and Cheak (2003) describe the study which involved students, parents and the community in a project in Hawaii. The study was designed to help learners take an in-depth look at environmental issues

in their community; make data-based decisions about those issues, and participate in resolving those issues. The students worked in small groups cooperatively, selected a local issue for investigation, planed and conducted the investigation, made recommendations based on their findings and participated in trying to solve those issues. The findings showed that the program was successful in enhancing students' cognitive skills and critical thinking skills. In terms of participation, the data indicated that the students had learned to interact with the community and deal with issues in the community. This helped them to develop a feeling of competence with taking actions and passing knowledge to other community members.

Similarly, the study by Eames et al. (2006) comprised five case studies of New Zealand classrooms, in an action research involving mentors, researchers (co-ordinators) and teachers working together in the design, implementation, and evaluation of an EE unit. The intent of the study was to investigate teachers' pedagogical approaches in EE that promote students' action competence. Teaching of EE units involved student-centred pedagogies, including cooperative learning pedagogies where children worked collaboratively and communicated their observations with peers and other adults. In some cases, the students were encouraged to make decisions, identify local issues and choose and take their actions. The study reported significant outcomes of this partnership project, including that cooperative learning pedagogies engaged students emotionally, encouraged them to participate, interact, and support each other, and it helped to build their self-esteem, confidence, and willingness to provide an opinion. It can be concluded that the findings of these studies are significant for the teaching and learning of EE in schools.

2.7.2. Key factors for collaboration

The process of collaboration is complex (Huxham & Vangen, 2005; Montiel, 2005). As such, building collaborative cultures in the school takes time (Fullan & Hargreaves, 1992; Hargreaves & Fullan, 1998; Khong & Ng, 2005; Rao, Arqury & Quandt, 2004). Indeed, positive relationships with the world outside school are not all straight forward (Hargreaves & Fullan, 1998). According to these authors, several elements need to be considered for successful partnership or collaboration.

It has been argued that the process of collaboration brings people together. In this case, a positive relationship should exist between the partners (Eames et al., 2006), and such relationships need to be interactive with open communication and information sharing (Eames et al., 2006; Huxham & Vangen, 2005). In successful collaboration there is also a visible commitment from all parties involved. Several studies demonstrated the significance of commitment of individuals (Eames et al., 2006; Keown, 1999; Rao, Arqury & Quandt, 2004; Volk and Cheak, 2003). Commitment promotes individual participation and contribution to a partnership (e.g. resources, skills, or expertise). Rao, Arqury and Quandt (2004) noted that such individual contribution needs to be valued and considered. In addition, in collaboration, participants need to accept others' view points (Rao et al., 2004). Many of the collaborative activities may be funded by external agencies, this implies that ongoing support is necessary (Keown, 1999). Literature on collaboration also emphasises the importance of the role of leadership (Fullan, 2001). For this study, the school leaders or principals are considered as leaders because they play a major role in collaborative initiatives.

According to Hargreaves and Fullan (1998) an effective principal is one who is committed and maintains a good relationship with staff and parents, using effective forms of communication, and using a variety of strategies for getting things done. For example, Keown (1999) found in the study of collaboration between teachers and community members in developing partnership that the principals of schools that had successful partnerships in EE with the community were highly supportive of their staff. It has been reported elsewhere the importance of administrative leadership in supporting school improvement, and building and maintaining school-stakeholders partnership (Foster & Hilaire, 2003; Khong & Ng, 2005; Weal, 2004).

The study by Khaparde, Srivastava and Meganathan (2004) explored the management devices followed in successful schools in an Indian context. In-depth case studies of three successful Navodaya schools were carried out. The main objectives were to examine the role and functions of principals, teachers, and other actors in the

planning and implementation of various activities such as (a) curricular and co-curricular, administrative and financial, etc; (b) the management of specific relationships between and amongst various actors in these successful schools; (c) the management of teaching-learning processes in successful schools; and (d) the management of support conditions, such as support received from the government, materials, resources, and linkage with parents.

The studies employed a triangulation approach in which data were collected employing different methodologies (personal interviews, observations, and questionnaires/schedules) from various categories of respondents (principals, teachers, students) by a team of researchers. Results indicated that successful schools adopted a participative management system in running the day-to-day activities of the schools, gave people autonomy but also made them accountable for successful completion of the tasks, followed democratic methods of taking decisions, gave priority to the welfare of students, maintained a supportive relationships with teachers, attempted to establish linkage with parents, set up higher goals for themselves and schools, adopted innovative pedagogical methods and evaluation devices, and recognised good work by teachers (Khaparde, Srivastava & Meganathan, 2004). Based on this research, this study should also take into account the principals' role and factors enabling them to initiate and sustain collaboration cultures and participation of stakeholders in school.

2.8. **Summary**

The literature reviewed suggests that environmental education is complex and is an evolving field. This has not only created challenges in its interpretation but also in the way in which it has been approached and practiced. The review indicated that most teaching had been based on *in* and *about* the environment; much less had been reported to be based on *in* and *for* the environment. This runs counter to the current focus on participatory and holistic perspectives of EE and has been related to the dominant objective/behavioural teaching approach. Literature suggests that there has to be restructuring which would involve whole system thinking towards a

participative world view, that is, changes in current practice of policy and education practices, organisational structures as well as teaching and learning pedagogies to accommodate the characteristics and approaches of contemporary EE.

Given this urgent need for a participative world view, there has been a call for re-visioning and re-orientation of the education system, in which all interested parties would be involved and participate in sustainable practices. This is to enable students to have an opportunity to participate in decision-making, problem-solving strategies and community action oriented activities; teachers or educators to challenge their model of teaching and develop strong collaborative partnerships within and beyond the school; the school leaders to initiate and maintain collaborative cultures in their school; the community/agencies to become involved in collaborative efforts to solve EE issues; the government leaders to disseminate information to subordinates and provide them with continuous support for effective implementation of EE; and the parents to understand their role in their child's education and participate in curriculum decisions and collaborative activities. It is this standpoint that has informed the present study.

This study then sought to explore the views of groups of people (i.e. teachers, school leaders, students, school community, government agencies, and EE agencies) of their involvement and participation in EE in Tanzanian schools. Specifically, the study explored the views of the groups of people (mentioned above) of EE in Tanzania. It examined the perception of characteristics of current practice of EE in Tanzania, the roles and the self-perception of their roles, of the groups of people (listed above) in schools in relation to EE. The study also explored the perceptions of the groups of people (listed above) of collaboration in the implementation and development of EE in schools in Tanzania. The next chapter presents the methodology for this study.

CHAPTER 3: METHODOLOGY

3.1 Overview of the chapter

This chapter explains the methodological basis for the research. The chapter begins with an outline of the research questions followed by a description of the theoretical framework that guided this research. A description of research design, which includes the context of the study, the population, sample and the methods that were used in data collection and analysis follows. Next, consideration is given to validity and reliability as well as ethical issues in this research. Finally, a summary of the chapter is provided.

3.2. Research questions

This research was an investigation which explored views of stakeholders (i.e. teachers, school leaders, students, school community, government agencies, and EE agencies) of their involvement and participation in EE in schools in Tanzania.

The research questions guiding this study were:

- What are the views of stakeholders (i.e. teachers, school leaders, students, school community, government agencies, and EE agencies) involved in education about their understanding, and the relevance, of EE in Tanzania?
- What are the characteristics of the roles and the self-perception of their roles, of these stakeholders in schools in relation to EE?
- What are the perceptions of stakeholders of collaboration in the implementation of EE in schools in Tanzania?

3.3. Methodological framework

A methodological framework or paradigm is a context which provides the basis on which to generate, analyse and interpret data (Cohen, Manion and Morrison, 2000). The key frameworks employed by educational researchers include the positivist or normative approach, the post-positivist or interpretive approach and the critical approach (Cohen et al., 2000; Guba & Lincoln, 1989; Robottom & Hart, 1993).

Earlier, the positivist paradigm tended to dominate and influence research in EE (Palmer, 1998). According to Cohen et al. (2000), the positivist approach takes the position that 'truth' consists of observable and verifiable (or objective) facts, and not of internal conditions, such as personal dispositions or values. The approach thus sets the observer outside the phenomena being investigated and the researcher tends to rely upon instruments as devices for collecting, analysing and validating data. In addition, in the positivist approach, data are collected in conditions which are characteristically precisely specified (via an hypothesis), and result is presented in numerical, and more specifically, in statistical form and often generalised.

There is a realisation now that the positivist approach is not effective in examining the complex nature of EE issues. However, "despite the criticisms levelled at the quantitative traditions, the positivist or normative approach, we must not ignore the contribution that studies aligned to it have so far made to the field, and indeed their ongoing role and significance" (Palmer, 1998, p. 104). Rather, there has been a shift to the post-positivist paradigms which are characterised by concern for the individual (Cohen et al., 2000). Whilst positivism sees reality as external to the individual, interpretivism sees it as internally constructed (Bell, 1999). For example, it could focus on investigating how students and teachers conceptualise the environment, how people develop the meaning of environmental concepts, individual reflections and experiences related to the environment (Palmer, 1998; Palmer & Birch, 2005). Cohen et al. (2000) elaborate that while in normative research, data gathered may be described as objective, external, quantifiable, explanatory, publicly verifiable, and

replicable, interpretive data by contrast, may be referred as subjective, internal, qualitative, interpretive, unique, and negotiable.

Indeed, interpretivists believe that it is impossible to predict or to generalise about human behaviour with accuracy, since behaviour is uniquely linked to a situation and an individual (Cohen et al., 2000). Researchers in this field rely on the transferability of principles and themes, rather than replicability and generalisability (Palmer, 1998). On the other hand, advocates of the critical paradigm argue that our subjective views are not only internally constructed but also influenced by persuasive social forces, thus individuals or groups cannot be considered separately from their social context (Palmer & Birch, 2005). A researcher favours an inner view of the social reality and is therefore much involved, an involvement which frequently demands participation in ongoing action as a member of a group they are studying. The researcher may be in a neutral position trying to seek more insight and knowledge of the way the group conceives the world (Palmer & Birch, 2005). In critical theory, the purpose is not merely to understand the situations and phenomena but to change them. In particular, it seeks to emancipate the disempowered, to redress inequality and to promote individual freedoms within a democratic society (Cohen et al., 2000).

Cohen et al. (2000) uphold that although these paradigms differ in perspective, all have the same purpose, 'the search for truth'. In this sense, they suggest that the guiding principle when considering the research paradigm should be 'fitness for purpose'. Indeed, a decision has to be made about which approach and method are best for the particular purpose of research (Bell, 2005). The nature of this research with strong emphasis on participative perspectives indicated use of an interpretive paradigm. The approach is thus based on the exploration of the participants' views of reality about EE, rather than external reality.

The knowledge so generated must make sense to those to whom it applies and the researcher needs to understand the actions and meanings rather than the causes (Cohen et al., 2000). Indeed, the interpretive research can be carried out using a range of methods including case studies, participant observation, unstructured or semi-

structured interviews, discourse analysis, open-ended questionnaires, and action research (Cohen et al., 2000; Palmer & Birch, 2005). In order to obtain relevant data that fulfilled the research objectives and answer the set questions, a choice has to be made on a research design and methods to be adopted (Cohen et al., 2000).

3.4. Research design

According to Cohen et al. (2000), a research design is a plan showing the strategy of investigation conceived by the researcher. It stipulates clearly the type of data needed, the method that is used for the data collection, the procedures for obtaining data and data analysis procedures. Cohen et al. (2000) suggest that choosing a research design depends on the purpose of the research, looking broadly at the kind of questions to be explored, available money, available time and depth as well as breadth of required information. This study used mainly semi-structured interviews and open-ended questionnaires which mainly allowed the generation of qualitative data. Qualitative research, through an interpretive paradigm, allows for a deeper understanding on the part of the investigator about the issues under investigation (Cohen et al., 2000). The approach enabled the researcher to obtain information such as understanding, opinions, point of views, attitudes, values and perceptions of participation in EE from different groups of people.

3.4.1. Context of study

The study was conducted in the Dar es Salaam region, located on the East Coast of Tanzania (see Figure 1.1). The city has large industrial, commercial, and governmental sectors which together offer many job opportunities and attract migrants from less developed areas of Tanzania. There were strong reasons for conducting research in this city. First, Dar es Salaam is where diverse communities could be reached and different systems operate. It is where the Ministry of Education and Ministry for Environment are located. In addition, the city has a number of non-governmental organisations (NGOs) dealing with EE, and has a variety of schools which could support and provide researcher access to teachers and students. Second,

the choice of the study area was limited to available funds and intended to maximize the use of limited time scheduled for data collection.

3.4.2. The population

A target population is a group of respondents from whom the researcher is interested in gathering information and drawing conclusions (Cohen et al., 2000). The population of this study comprised all private and government owned schools in Dar es Salaam region, all parents whose students are studying in those schools, government ministries involved in education and the environment, and all EE agencies. A representative sample was obtained from this population to serve as the researcher's sample.

3.4.3. The sample, sampling techniques and procedures

Because the target population was too large to work with, and with constraints of time, expense, accessibility and other resources the researcher was limited to a small sample. It is maintained that the researcher must obtain a minimum sample size that will accurately represent the population under survey, thus a very large sample might become unwieldy to study and a very small sample might become unrepresentative (Cohen et al., 2000). Cohen et al. (2000) suggest a correct sample size is one which fulfils the requirements of the study. The researcher used purposeful sampling to get the respondents for this study. A purposive sampling entails one that deliberately selects cases on the basis of specific qualities that they illustrate (Cohen et al., 2000). The sample for this study comprised two schools, 100 students, 56 community/parents, seven teachers, four school leaders, three government agencies, and two EE agencies. Table 3.1 shows participants and the nature of involvement in the study.

Table 3.1: Participants and the nature of involvement in the study

Participants	Total number of participants	Interviews	Questionnaires
Students	100		√
Teachers	7	√	
School leaders	4	√	
Government leaders	3	√	
EE officials	2	√	
Community	56		√
Total	**172**		

Schools

Selection of schools was done purposely and two schools were carefully selected to make sure that two school types were represented, that is, one privately-owned, and one government-owned. The selection of schools was largely influenced by funds, accessibility, and time factors. Singe is a pseudonym given to the privately-owned school and Kola, for the government-owned school; both catered for both Ordinary Level and Advanced Level students.

Selection of students

Although children form the majority of the population, and are among the vulnerable groups in society (Hart, 1997), and are stakeholders in education (Galabawa & Agu, 2001), their views and situations are often neglected. These were the features which attracted the researcher to focus on children. Selection of students was done purposely. The reason behind this was to involve pupils who can express themselves verbally and literally, also students who have been in a school for at least four years that have lots of experience with the school and EE in particular. A total of 100 students of form four classes (14-16 years old), were involved in the study, 50 were from Singe school and 50 from Kola school, among them there were 50 males and 50 females. The students were important in providing data and information on their perceptions of the way the subject was taught/should be taught, their roles in the

learning process, their views on the roles of other stakeholders in the implementation and development of EE in schools, etc. The data were collected through questionnaires.

Selection of parents

Parents were involved in the study because they are important stakeholders in education, since they are responsible for their school-aged children (see Epstein, 1996; Galabawa & Agu, 2001; Khong, & Ng, 2005; Knipprath, 2004). Only parents who have children in the sampled schools were included in the study. They were contacted via their children. The number of questionnaires distributed was 100; however, as Cohen et al. (2000) noted, postal questionnaires always suffer low return rates, therefore, the actual respondents in the end were 56, of which 30 were from Singe school and 26 from Kola school. As Cohen et al. (2000) suggest, this number was adequate, as when discussing the practical implications of postal questionnaires, they comment that a 50% response can be satisfactory.

Teachers and school leaders

For the purpose of this study it was necessary to involve teachers because they are the key players in the implementation of the curriculum. Teachers possess information about the curriculum, parents, pupils, and the school environment, they are also important in the sense that their perception, interests, abilities, values, motivation, needs, prior experience and other characteristics like pedagogy and conceptual understandings influence the quality of education offered (McGee, 1997). Their selection, like that of students and parents, was purposeful. A total of seven teachers were involved in the study, four were from Singe school and three from Kola school, and were teachers of chemistry, biology, geography, Kiswahili, English and physics. The school heads and academic deans were involved since they are responsible for managing the program at school, including assigning of teachers' work, allocation of resources, and administrative matters (Galabawa & Agu, 2001). A total of two school heads and two academic deans, one from each school were involved in this study. The teachers, school heads, and academic deans participated in interviews.

Government and EE agencies

The researcher chose the purposive sampling techniques for government and EE agency officials because it was more appropriate since the target group was small. However, not all expected respondents were accessed, for example, six people from three government ministries, and four people from two environmental agencies were desired for the study but the participants accessed were three from the government and two from EE agencies. This is because of various reasons some expected respondents were inaccessible and others had other responsibilities by the time the interview/study was conducted. Government and EE agencies officials participated in interviews.

3.4. 4. Methods

As mentioned previously, this study used both interviews and questionnaires to collect data with the former being used with school leaders, teachers, government and EE agencies officials and the latter used for students and community/parents. Instruments were piloted with ten students and four teachers before being administered to sampled participants. The students tried students' and parents' questionnaires, while teachers dealt with interviews for teachers and other respondents in this study. The researcher felt that if teachers understood the questions then there should be no confusion for school leaders, government agencies and EE agencies answering the questions, and if students understood questions, it seemed likely that the parents would be able to answer the questions.

The research wanted both the questionnaires and interviews to be clear and easy to follow. A pilot study was not done with other participants such as parents, government and EE agencies because of time constraints, accessibility and other reasons discussed earlier in this section. Feedback from the pilot study was used to revise the prototypes into a second version for research. Following feedback from participants in the pilot study, the researcher reworded some of the questions, clarified the instructions and made alterations to the layout of the questions. The

researcher asked pilot participants to note down the length of time it took them to complete the questionnaires.

Interviews

Interviews were used because of the interpretive nature of the inquiry. This instrument involves gathering information through interaction between the researcher and the respondents based on research objectives (Cohen et al., 2000). The interview provides access to what is inside a person's head, makes it possible to measure what a person knows (knowledge or information), what a person likes or dislikes (value and preferences) and what a person thinks (attitude and beliefs) (Tuckman, 1972, cited in Cohen et al., 2000, p. 268). It may be used to test hypotheses or to suggest new one; or as an explanatory device to help identify variables and relationships, or may be used in conjunction with other methods in a research undertaking (Cohen et al., 2000). Interviews might be used to follow up unexpected results or to validate other methods or go deeper into the motivation of respondents and their reasons for responding as they do (Cohen et al., 2000).

Literature maintains that interviews offer the opportunity to correct misunderstanding, they are suitable for respondents with poor literacy, they are good for visually handicapped persons, and they are fine for people with language difficulties (Cohen et al., 2000). Interviews can produce information which cannot be accessed through questionnaires (Bell, 1999). They have the advantage of allowing open-ended questions or open-ended probes which allow respondents to say what they think and to do so with great richness and spontaneity (Oppenheim, 1992).

Oppenheim explains that interviews have a higher response rate than questionnaires, because respondents become more involved and hence, motivated; they enable more to be said about the research than is usually mentioned in a covering letter to a questionnaire, and they are better than questionnaires for handling more difficult and open-ended questions (Oppenheim, 1992)

However, interviews are expensive, and time consuming to conduct and process. In addition, the respondents may feel uneasy if the questioning is too deep (Cohen et al., 2000). According to Cohen et al. (2000) interview transactions would inevitably have bias, which is to be recognised and controlled.

There are number of types of interviews; the three most common are structured, semi-structured and unstructured (Cohen et al., 2000). A semi-structured interview was used in this study because it allowed open questions to be asked, and emerging points that needed further clarification to be discussed (Cohen et al., 2000). The interview questions are given in appendices A – D. Cohen et al. (2000) contend that completely open-ended questions provide a means of getting a lot of information. However, they are time-consuming methods, and Cohen et al. noted such interviews require a great deal of expertise to control and a great deal of time to analyse. Questions were arranged in a definite order to maintain both consistency and direction during the interview session. Individual interviews with teachers, school leaders, government, and EE agencies sought information about their views on EE. In addition, interviews sought to explore respondents' perceptions of their roles and involvement in EE and their views on collaboration in the implementation and development of EE in Tanzania. Interviews with teachers and school heads also sought information on challenges and supports in relation to EE.

Interview analysis

Each interview lasted about 45 minutes and was recorded on an audio-tape. The audio-taped data for each interview was transcribed and complemented with field notes. Field notes were necessary to capture more information and relevant points raised by interviewees (Cohen et al., 2000). As mentioned, the initial interviews were semi-structured but, as might be expected, rather different issues emerged from each participant. Interviewees were sent their transcripts for comments. Some respondents returned comments offering clarification of some of their remarks. The transcripts were then analysed in detail, as a way of searching for emerging points (Maykut & Morehouse, 1994). The key themes were identified in relation to the research

questions, using a method which quantified the data such as counting frequencies of occurrence of ideas or themes, at the same time reserving its qualitative nature.

Questionnaires

The questionnaire is one of the most used techniques for obtaining information from research subjects. Cohen et al. (2000) maintain that the technique has the advantage, as it is simple to use as compared to interviews; there is also low costs of data collection, and processing; and it has the ability to reach respondents who live at widely distributed addresses or abroad. In addition, the questionnaires tend to be more reliable, because they are anonymous, encourage greater honesty, and are more economical than the interview in terms of time and money. Yet the method has the following disadvantages: generally low response rates; biases; unsuitable for respondents of poor literacy; unsuitable for people with language difficulties; no opportunities to correct a misunderstanding or to probe or to offer explanations or help; no control over the order in which questions are answered; and no check of incomplete responses (Cohen et al., 2000; Oppenheim, 1992).

The questionnaires used in this study were composed of both closed- and open-ended questions (see Appendices E - F). The choice to use both open-ended and closed-ended questions was deemed necessary so as to enable the researcher to achieve optimal outcomes (Cohen et al., 2000). According to Oppenheim (1992), closed-ended questions have the advantage that they require little time, there is no extended writing, low cost of analysis, and they make group comparison easy. But closed-ended questions have disadvantages such as loss of spontaneous responses, bias in answer categories, and sometimes they are crude and may irritate respondents. On the other hand, open-ended questions have the following advantages: freedom and spontaneity of answers, opportunities to probe, and usefulness for testing hypotheses about ideas or answers yet, they are time consuming, coding is very costly, they are slow to process, may be unreliable and they demand more effort from respondents (Oppenheim, 1992). However, with open-ended questions, respondents answer questions with more freedom (Cohen et al., 2000). Questionnaires were used to

discover information about direct attitudes, beliefs, values, opinions from students and their parents towards involvement and participation in EE.

Analysis of questionnaires

Complex statistical analysis was not used as the number of respondents was small. Likert type questions were analysed by counting the number of respondents to a particular item or theme. For each open-ended question asked, replies were summarised in a few words and entered onto a chart which indicated with a tick the position and who had made the remark. Together with interviews, questionnaire responses were further analysed to form main categories based on the research questions. Consequently an analysis led to the identification of a number of common themes which provided the framework of data presentation of the next chapter of this thesis.

Document analysis

Document analysis was used to supplement information obtained by other methods (Bell, 2005). It is an important way to corroborate evidence from other sources (Burns, 2000). Documents can be divided into primary and secondary sources (Cohen et al., 2000). Primary sources are those items that are original to the problem under study or those which came into existence in the period under research (Bell, 2005; Cohen et al,. 2000). Secondary sources are those that do not bear a direct physical relationship to the event being studied, they may include quoted materials or interpretations of events based on primary sources (Cohen et al., 2000). EE policies, strategies, and curriculum, school documents, and some curriculum interpretations such as schemes of work, lesson plans and teachers' notes were taken as examples of documents analysed. However, literature suggests that careful analysis of documents has to be made as some documents may tend to be inaccurate, in error, might not give a true picture, or be unrepresentative and often heavily inferential (Cohen et al., 2000). To overcome this, a careful analysis of the documents was made, and any differences in interpretation between documents and respondents' responses are discussed in Chapter Four.

3.5. Validity and Reliability

Validity and reliability are two most important keys to effective research (Cohen et al., 2000).

Validity

Validity is concerned with 'accuracy' of findings. It determines whether an instrument had measured what it was supposed to measure (Bell, 1999). In quantitative research validity is based on the view that findings accurately describe reality and can be generalisable across contexts (Cohen et al., 2000). But more recently, validity has taken a number of forms; it can be viewed as an indication of the appropriateness of a research study's methodology. It also refers to the relationship between the data collected and the construct theoretical framework (Burns, 1994).

There are various ways of explaining validity. Two main forms, internal validity, and external validity are elaborated here. Internal validity is concerned that the researchers' interpretation of a situation is actually supported by the research data, that is, an authentic representation of reality (Cohen et al., 2000). Weakness in internal validity can result from inconsistencies in participants' responses, particularly, participants may tell the researcher what they think the researcher should want to hear, and they can lie, omit data or misrepresent claims (Cohen et al., 2000). These problems can be minimised through the use of other observers or a multiple respondent approach (Cohen et al., 2000). The veracity of this was reached by the data being reviewed by supervisors. In this study, a number of respondents from within different levels of each respondent were involved either in interviews or questionnaires to lessen the possibility of bias. As a follow up to this approach the respondents (in particular the interviewees) were asked to read and confirm that the data that had been collected was an accurate reflection of their responses (Cohen et al., 2000).

External validity is concerned with the transferability of results from one specific research setting to another context or generalisation across contexts (Cohen et al., 2000). While in quantitative research data might be improved through careful sampling, appropriate instrumentation and appropriate statistical treatment of the data (although, it is impossible to have this 100 per cent valid), in qualitative data the subjectivity of respondents, their opinions, attitudes and perspectives, and characteristics of the interviewer together contribute to a degree of bias (Cohen et al., 2000). Cohen et al. (2000) suggest that it is important for a researcher to try to minimise invalidity and maximise validity. Invalidity, according to them, refers to overstating or understating the attribute or true value of results.

In qualitative research, external validity might be addressed through honesty, depth, richness and scope of the data achieved, the participants approached, the extent of triangulation and the disinterestedness or objectivity of the researcher (Cohen et al., 2000). Lincoln and Guba (1985) suggest that researchers should provide sufficient data for readers and users of research to determine whether transferability is possible. In this study, an attempt has been made by the researcher collecting sufficient data, using open-ended questions and providing detailed, in-depth data to readers so that others can decide the extent to which findings from this research can be transferable to another situation (Cohen et al., 2000).

Reliability

Reliability, according to Cohen et al. (2000), is essentially a synonym for consistency and replicability over time, over instruments and over groups of respondents. It is concerned with precision and accuracy. That means that for research to be reliable it must demonstrate that if it were to be carried out on a similar group of respondents in a similar context, then similar results would be found. Quoting LeCompte and Preissle (1993 p. 119), Cohen et al. (2000) argue that reliability is applicable to quantitative research which assumes the possibility of replication, that is, if the same methods are used with the same sample, then the results should be the same. Similarly, the quantitative method requires a degree of control and manipulation of phenomena. However, this distorts the natural occurrence of phenomena (Lincoln &

Guba, 1985; Patton, 1990; Straus & Corbin, 1990, 1998). Indeed the premises of naturalistic studies include the uniqueness and idiosyncrasy of situations, such that the study cannot be replicated (Cohen et al., 2000).

For qualitative research replication means repeating the status position of the researcher, the choice of informants (respondents), social situation and conditions, the analytic construct and premises that are not easily done (Cohen et al., 2000). It is suggested that reliability as replicability in qualitative research can be addressed through stability of observation: same observation and interpretation observed at different times or in different places; parallel forms: same observation and interpretation made paying attention to other phenomena; or inter-rater reliability: observation of the same phenomena made by another observer using the same theoretical framework (Cohen et al., 2000). In addition, in qualitative research, reliability can be regarded as a fit between what researchers record as data and what actually occurs in the natural setting that is being researched, i.e. the degree of accuracy and comprehensiveness of coverage (Burns, 2000; Cohen et al., 2000). Reliability in qualitative research can also be explained as dependability (Guba & Lincoln, 1985). Dependability involves among others, member checks (respondent validation), debriefing by peers, triangulation, prolonged engagement in the field, and independent audits (Cohen et al., 2000). According to Cohen et al. (2000), audit trails enable the researcher to address the issue of confirmability of results. This was done by the researcher taking back the transcripts to the respondents and recording their comments reporting the analysis. Member checks were also carried out with transcripts returned to participants for checking errors in interpretation and for additional information.

Triangulation

Triangulation is one way of checking on validity and reliability of data (Burns, 1994; Cohen et al., 2000; Miles & Huberman, 1994). It helps the researcher to be confident with findings, countering the effect of bias in methods, data sources and investigators. It is also useful to compensate for weaknesses inherent in any one of the research techniques, data can be generated in more than one way. Convergence of major

themes or patterns in the data from interviews, questionnaires and documents can lend strong credibility to the findings (Maykut & Morehouse, 1994). Triangulation may also include multiple respondents approach. In this study it was hoped that the use of a multiple respondents approach would increase the likelihood of validity and reliability (Cohen et al., 2000). This involved interviewing participants from different organisations and levels within the organisational structure e.g. in schools, beginning with heads, academic deans, and working down through classroom teachers and students. Furthermore, in order to ensure validity and reliability, the research objectives and research questions guided the questionnaire and interview questions construction. Using the same questions for all interviewees with a particular group, and in the questionnaires, giving all participants the opportunity to add any relevant or appropriate point they felt to make helped consistency. In addition, the researcher attempted to ensure that the coverage of the questionnaires and interviews was both comprehensive and fair, using open-ended questions in the questionnaires and interview questions to gather the information because they allow for greater depth of response.

3.6. Ethical concerns

In all research involving people ethical issues have to be considered. They are important in protecting the researcher and the researched from potential harm (Cohen et al., 2000; Lester, 1996). Literature suggests two concerns to be observed in ethical considerations, firstly, the manner in which the research has to be conducted in relation to the research subject (matters such as informed consent, confidentiality, and accurate portrayal of situations and persons involved), and secondly, acknowledgement of the contribution of others (that is acknowledging all people involved in the research and as well as open recognition of individuals whose research has influenced the present research) (Cohen et al., 2000; Lester, 1996; Kvale, 1996).

In this study, the guidelines of the New Zealand Association for Research in Education were followed. An application was completed outlining my research topic,

aims and objectives, justification of the study and identification of all possible ethical issues and how they would be handled throughout the whole study. This was sent to the Centre for Science and Technology Education Ethics Committee, University of Waikato. Ethical approval was gained in January of 2006. Ethical issues related to participants were addressed in the covering letter requesting their participation. These issues were also briefly addressed just before each of the interviews and discussed in the following sections.

Accessibility

The initial contacts with participants were made through the Ministry of Education and relevant authorities in other government agencies, and EE agencies in Tanzania. Full details of the intention of the study and how participants would be involved was provided to these organisations. Permission to undertake this research was obtained from these organizations. Further procedures of recruitment of participants as well as obtaining their consent were completed through the relevant authorities at their work place. The ease of accessibility has been facilitated by the fact that the researcher shared similar cultural identity with participants.

Informed consent

Respondents' informed consent was obtained before data collection began. The heads of each school were approached and asked if they would participate in the research. For the teachers and students, school heads were contacted to seek informed consent of the involvement of their teachers and students in the study. Informed consent was asked from the teachers and students as well to seek their willingness to participate. The parents were contacted via their children.

Relevant authorities in the government and EE agencies were contacted. The communication contained information explaining the research objectives. Those who showed interest to participate were involved in the study. A letter of thanks was sent to each participant.

Confidentiality

The interviews were conducted in a private room. Participants were assured that all data collected during interviews and questionnaires would be kept securely and confidentially at all times, only the researcher, and the research supervisors would have access to research data. Furthermore, confidentiality was maintained by excluding names of participants in data analysis and presentation. For participants to remain anonymous, they are identified by names other than their own. Participants were randomly assigned a pseudonym for the purpose of reporting data in this study.

Potential harm to participants

According to Cohen et al. (2000) potential harm can be associated with participants' involvement in expressing their concerns, perception, attitude, and feelings. However, this was solved by seeking participant consent to participate and be tape recorded. It was explained that participants do not have to answer all questions. In the interview session this was solved by researcher not acting as an authority figure and by keeping interviews relevant. This was also done by ensuring that no comments used in the final report are identified as coming from a specific person.

Participant right to decline

It was stated that any participant had the right to withdraw from the research at any stage or not to participate in a particular aspect of the research. And those participants who withdrew from the research had the right to ownership of all data collected from them.

3.7. Summary

This chapter has described the methodology of this thesis; it outlined the research questions of the study, introduced the methodological framework and discussed methods used to collect data, issues of validity and reliability, and ethical concerns. The study sought to explore stakeholders' (students, teachers, school leaders, government agencies and EE agencies) views of involvement and participation in EE in Tanzania. The purposeful sampling strategy adopted in this study facilitated the derivation of sampled participants consisting of two schools, 100 students, 56 parents,

three government officials and two EE officials, all from the Dar es Salaam region. It was explained that an interpretive framework, adopted in this research, required the participants to be involved in order to construct reality, unlike positivist research where the researcher seeks data through instruments and remains detached from the data collection process. The choice of both semi-structured interviews, and open-ended questionnaires was deemed necessary to allow generation of mainly qualitative data that would allow respondent's meaning of their EE perceptions to be explored. Respondent triangulations as well as member checks are some of the measures taken to ensure validity and reliability for the data. Ethical manners were maintained by asking for volunteers to participate, and providing information which explained the purpose of the research, avoiding direct potential harm to participants, as well as excluding their names in the final report. The next chapter presents the data gained using this methodology and methods from this study.

CHAPTER 4 FINDINGS

4.1. Overview of the chapter

This chapter presents the findings for this study that explored the stakeholders' (students, teachers, school leaders, parents, government, and EE agency officials) views about their involvement and participation in EE in Tanzania. The data is presented based on the research questions as outlined in chapter one. Firstly, the respondents' characteristics are considered. Secondly, the views of the stakeholders of EE are presented, which include the views on the relevance of EE in schools/Tanzania. Thirdly, the roles of stakeholders and their own perception of their involvement, in schools in relation to EE, are considered. Following this, the perceptions of the stakeholders of collaboration in the implementation and development of EE in schools in Tanzania are presented. Finally, a chapter summary is given.

4.2. The respondents

As mentioned in chapter three, participants of this study included students, teachers, school leaders, and parents (community), derived from two schools. Singe, is a pseudonym given to the privately-owned school and Kola, for the government-owned school; both catered for both Ordinary Level and Advanced Level students. Other participants included government and EE agency officials.

4.2.1. Students

A total of 100 Ordinary Level students participated in answering questionnaires, 50 were from Singe school and 50 from Kola school. Of the 100, 50 were males and 50 were females. The age of the students ranged between 14 and 16. All the students were studying Mathematics, Physics, Chemistry, Biology, Geography, English, Kiswahili, Civics and History. EE was meant to be taught as integrated components within each of these subjects. Table 4.1 presents the students' characteristics.

Table 4.1. Students' characteristics

	Singe (n=50)		Kola (n= 50)		Total 100
	M	F	M	F	
Age					
14	2	5	2	4	13
15	13	12	12	9	46
16	10	8	11	12	41
Total	25	25	25	25	100

4.2.2. Teachers

The study involved seven teachers in individual interviews. These teachers were involved in teaching either sciences, languages or geography in Ordinary Level forms (age 14 -16). Pseudonyms have been used here in referring to teachers in the schools. Emma, Sera, Lina and Joyce were all females and from Singe school and the other participant teachers included one female teacher, named Anna and two male teachers, Ringo and Shem from Kola school. In terms of qualifications, Emma, Sera, Joyce and Shem had bachelor degrees while Lina, Ringo and Anna had diplomas in education. The teaching experience of the teachers ranged from 5 to 25yrs and only Emma and Shem had responsibility as heads of departments and the rest were normal classroom teachers. Table 4.2 presents the teachers' characteristics.

Table 4.2. Teachers' characteristics

Name of teacher	School	Gender	Qualification	Experience	Subject
Emma	Singe	F	BSC.Ed	25yrs, head of biology dept	Biology
Sera	Singe	F	BAEd	11yrs	English
Lina	Singe	F	DipSc.ED	6yrs	Chemistry
Joyce	Singe	F	BSC.Ed	10yrs	Geography
Ringo	Kola	M	DipSc.ED	6yrs	Physics
Anna	Kola	F	Dip.Ed	5yrs	Kiswahili
Shem	Kola	M	BAEd	20yrs, head of geography dept	Geography

4.2.3. School leaders

There were four school leaders involved in individual interviews, two from each school. The leaders comprised school headmasters and academic deans. As with the case of the teachers, pseudonyms have been used in subsequent references to the school leaders. At the time of this research, Temba was a headmaster at Singe school, while Mchovu was acting as an academic dean at that school, and Ruta was a headmaster at Kola school while Chao acted as an academic dean at that school. Overall all school leaders had degrees either in arts or sciences and were experienced in teaching and leadership. Table 4.3 summarises characteristics of the school leaders.

Table 4.3: Characteristics of school leaders

Name of Leader	School	Gender	Qualification	Experience
Temba	Singe	M	MA.Ed	25yrs teaching 3 yrs headmaster,
Mchovu	Singe	M	BA.Ed	14 yrs teaching, 4yrs academic dean
Ruta	Kola	M	MA.Ed	25yrs teaching, 5years headmaster,
Chao	Kola	F	BSc.Ed	10 yrs teaching 3yrs academic dean

4.2.4. Government agencies

Three government leaders derived from three government agencies participated in individual interviews (see Table 4.4). Juma had an MSc. Ed and was a senior manager in the National Environmental Management Council (NEMC), working with people who are involved with EE. He had three years in that position, although he had experience in other areas including teaching for 35 years. NEMC is responsible for facilitation, coordination and dissemination of EE strategies, including monitoring and evaluation of EE implementation, facilitating networking, preparing EE materials, resource mobilisation and undertaking research on EE. Obedi had a Masters of Education working as curriculum planner, secondary, in the Ministry of Education and Culture (MoEC), and had been in that position for five years. In Tanzania, the

Ministry of Education is responsible for education and training policy, implementation, monitoring and evaluation of EE, developing materials for schools and colleges, developing and implementing training programs, undertaking research on EE, and disseminating information on EE. Njau had a Masters of Science education majoring in geography, and she has been teaching in secondary schools for 20 years. She has had a position as curriculum developer for four years at the Tanzania Institute of Education (TIE). TIE is responsible for curriculum development, monitoring and evaluation, undertaking training, identifying and developing training materials and also undertaking research.

Table 4.4. Characteristics of government agency officials

Name	Government Agency	Position	Gender	Qualification	Experience
Juma	NEMC	Senior manager	M	MSc.Ed.	35, teaching, 3yrs in position
Obedi	MoEC	Curriculum planner, secondary	M	MA.Ed	29yrs teaching, 5yrs in position
Njau	TIE	Curriculum developer	F	MSc. Ed, Geography	20yrs teaching 4yrs in position

4.2.5. EE agencies

Two participants from two environmental agencies were involved in individual interviews (see Table 4.5). Shuma had an MBA in geography and environmental learning, was a volunteer at Joint Management Action Plan (JEMA), and had been in that position for three years. JEMA is a non-profit making organisation founded in 1996 by students, graduates and staff of the University of Dar es Salaam. The main activities of JEMA have been to raise public awareness of environment management and development, to encourage community participation in sustainable development practices, to devise ways for cooperation, partnership and collaboration of parties e.g. schools, researchers, policy makers, NGOs, donors in participative approaches in environment management and sustainable development, to carry out research and projects in EE etc. The other participant, Judy had a MSc. and she had five years of

working experience in information and communication at the World Conservation Society of Tanzania (WCST). WCST is a conservation club founded in 1988 by the government's conservation society with the main activities involving conservation of resources, education and awareness raising on conservation and protection of the flora and fauna, working with other partners in conservation Programs including school children and communities, organising school visits and competitions, carrying out research and projects, production of EE materials, training and workshops on conservation etc.

Table 4.5. Characteristics of EE agency officials

Name	EE agency	Position	Gender	Qualification	Experience
Shuma	JEMA	Volunteer	M	MBA geography and environment learning.	3 years
Judy	WCST	Information and communication	F	MSc.	5 years

4.2.6. Community/parents

Fifty six community or parents participated in answering questionnaires. They comprised 21 teachers, eight doctors or nurses, two engineers, six businessmen, two accountants or economists, two human resources specialists, one IT technologist, two sewing and knitting workers, three catering staff, four auditors and five indicated no occupation. Their characteristics in terms of age and gender versus occupation are presented in Table 4.6.

The table indicates that most respondents from the community were females and between 41-50 years of age. In terms of occupation, most respondents were teachers (37.5%), followed by those who were involved in management (14.3%), and those in service industry (14.3 %). Doctors or nurses formed 14 percent, and businessmen 10.7 percent, while those indicated no occupation formed 8.9 percent of the total respondents

Table 4.6. Community/ parents' Age and gender Vs Occupation

Occupation	Age and Gender							
	41-50		51-60		61-70		Total	
	M	F	M	F	M	F		%
Teacher	2	8	5	2	3	1	21	37.5
Doctor/nurse	2	3	2	1			8	14.3
Engineer			1	1			2	3.6
Business	2	2	1	1			6	10.7
Accountant/economists		2					2	3.6
Human resource		2					2	3.6
IT technologist	1						1	1.8
Sewing and Knitting				2			2	3.6
Catering		2		1			3	5.3
Auditor		4					4	7.1
No occupation		5					5	8.9
Total	7	28	9	8	3	1	56	100

4.3. Views of EE

The first research question sought to ascertain stakeholders' views of EE and its relevance in Tanzania. The research findings for this question are now discussed.

4.3.1. Students' views of EE

The students' views of learning are under-researched in Tanzania. Since students are the main subjects of EE, understanding of their views of EE as well as their explanations of why they should learn EE at school was deemed essential. This study was also interested to discover how students' interpretations of EE are related to teachers' interpretations of EE and their views on their participation and involvement in EE.

Descriptions of EE

Five categories emerged from their responses to a question that asked the students for their understanding of what EE is. The definitions given by the students reflected some aspects in the definition, aim, goals, objective and principles governing EE in

Tanzania as set in the National Environmental Education and Communication Strategy 2005 – 2009 (see URT, 2004), as well as some aspects in some international literature e.g. the aims of EE in the *Guidelines for EE in New Zealand schools* (Ministry of Education, 1999). Table 4.7 summarizes the students' responses.

Table 4.7. Frequencies of students' descriptions of EE

Description	Students' responses (n=129) *			
	M	F	Total	%
Awareness and consciousness	8	11	19	15
Knowledge and understanding	27	36	63	49
Ethics, attitude and values	4	1	5	4
Skills	27	14	41	32
Decision making	1	-	1	0.8

Note: *The number adds to more than 100 because some responses were counted in two or more categories.

Awareness and consciousness

Nineteen (15%) of the students' descriptions of EE were in this category, as seven of the students mentioned awareness of the environment, e.g. "It is education of the environment" and 12 commented about awareness of environmental problems, e.g. "EE is the study that help people to become aware of the environmental problems e.g. pollution".

Knowledge and understanding

Thirty six females and 27 males, which formed 49% of the total responses, were focusing on knowledge and understanding as their view of EE. Of these, 29 (46%) responses mentioned knowledge and understanding of the surroundings e.g. "EE is education which impart individuals with knowledge about surrounding or environment e.g. soil, water or air". Fourteen (22%) responses mentioned learning about relationships between organisms and the environment, e.g. "Is the study about the relationship between organisms and the environment," and 20 (32%) wrote about knowledge to solve problems, e.g. "Is education aimed to impart knowledge and skills to solve environmental problems".

Ethics, attitudes and values

Only five (4%) of the total responses described EE in terms of attitudes, e.g. "It is education that encourages to change our behaviour and making the environment clean".

Skills

Responses that reflected skills 41 (32%) indicated that EE involved education that would develop in them skills either for valuing or concern for the environment (21 responses, 51%), or for solving environmental problems (20 responses, 49%). There were more males (27) than females (14) responding in this category. Some of the responses were "It is education aimed to impart knowledge and skills to solve environmental issues", or "Education aiming to impart individual skill for valuing the environment".

Decision-making

Interestingly, only 1 (0.8%) response seemed to fall in this category and the description was, "It is education enabling individuals to understand the effect of technology on the environment and help them to cope with the world".

Relevance of EE

Question five in the students' questionnaire asked students to explain if it is important for them to learn EE at school, and give their reasons for their answer (see table 4.8).

Table: 4.8. Students' views on the relevance of EE

Category	% of students (n = 117)*
Environmental literacy	60
Solve problem	31
Communication	6
Change behaviour	4
Decision making	1

* Note: n >100 some responses were counted in two or more categories

Overall, 70/117 (60%) mentioned development of environment literacy. Fourteen of the 70 responses considered that EE would help in developing their awareness and

consciousness of the environment or environmental issues. Forty one of the 70 responses discussed the relevance of EE in terms of developing knowledge that would lead them to understand their surroundings. For example, "The environment is where we live, it should be understood by all of us" or "It can help me understand the relationship between organisms and the environment" or " It is important because students are taking the largest part of the population therefore once they are educated nearly the whole society is educated". Fifteen responses out of 70 considered environmental education as important for them as it would help to have an understanding of the issues e.g. "I can get to know about environmental issues".

Of these 117 responses, 36 (31%) focused their reasons on problem solving as 17 saw EE as important as it would help to develop an understanding and knowledge of the environmental problems and how to solve them, and 19 wrote about acquiring skills for solving problems, e.g. "I will understand the environmental issues and how to address them" or "I will learn how to eradicate diseases e.g. Malaria". Other responses included skills (7/117, 6%) to communicate to others about the environment. The attitudinal responses 3/117 (4%) included making the surroundings clean, e.g. "It will encourage people to keep their Mazingira[5] clean". Only one percent of the students mentioned the aspect of decision-making and viewed the school as the place where knowledge is originated, e. g. "The school is where we learn most of things, I can know how the technology has affected the environment and this would enable me to decide what is and not good for me and the environment".

Summary

Generally, there was a likeness between the students' descriptions of the meaning of EE and their reasons for learning EE at school. Most of the students' views were based on ideas which most literature referred to as education *about* the environment that included developing awareness, knowledge and understanding of the environment and its associated problems (Tilbury, 1995). Although some students mentioned knowledge, skills, and attitude, either for protection of the environment or for solving local problems (e.g. Malaria, which is a result of environment depletion),

[5] Mazingira is a Swahili name for surroundings

there were no specific mentions of how they could be involved. Only one of the students explained EE in terms of helping them engage in decision-making. This suggests that the contemporary view of EE which focuses mainly on active participation in decision-making and problem-solving activities was a limited part of the students' descriptions of EE.

4.3.2. Teachers' views of EE

Teachers' interpretations and enactment of EE may be viewed as the result of their knowledge, beliefs and values, personal meaning and experiences (Hart, 2003). As in Tanzania EE is suggested to be taught within each discipline (URT, 2004) which varies in their nature and foci, so the teachers were asked to outline their views of what EE meant to them.

Descriptions of EE

Analysis of the teachers' responses led to the emergence of five categories of awareness, knowledge and understanding, skills, *in* the environment, and participation and action. As was the case with the students, some responses were counted into two or more categories and some aspects in the Tanzanian EE strategy as well as Lucas' definition of EE the *in*, *about*, and *for* the environment, were reflected in the definitions given by the teachers.

Awareness

Two (22%) of the teachers mentioned key aspects such as awareness of the environment or surroundings in their descriptions, e.g. "It may mean study of or a program which would help students to raise their awareness of the surrounding, living and non living things, or understanding the reciprocal relationship between organism and the environment" (Emma, Biology, Singe).

Knowledge and understanding

Four (44%) of teachers' responses were placed in this category and indicated that the teachers were concerned about students gaining knowledge to solve problems, knowledge and skills for environment conservation, knowledge about proper care of resources, and knowledge and skills for protecting and improving the environment. Some responses were "helping children to have knowledge and skills for protecting and improving the environment" and "it is so broad, it may mean students getting education about environmental issues or about conservation", (Joyce, Geography, Singe).

Skills

The one response (11%) in this category focused on conservation, e.g. "It depends on your understanding, to me it is studies which allow children to gain important skills for conservation" (Joyce, Geography, Singe).

Attitude

One response (11%) indicated a concern for developing student knowledge for caring for resources.

In the environment

The one response (11%) in this category indicated that this teacher viewed the environment as a context for learning and equated outdoor learning as environmental education, e.g. Lina, a Chemistry teacher at Singe school said "It is education about the environment, or taking the students out for field trip so that they can interact with the environment".

Participation and action

Only one (11%) of the teacher responses fell in this category and the description focused on involvement of the students in projects, e.g. Shem, Geography, Kola thought that EE is a "program of studies which may involve students in some activities in the society e.g. collect rubbish from beaches or bus stops".

Relevance of EE

Incorporation of EE related activities into teachers' teaching practices reveals the purpose inherent within them, and as such, attention was given to the reasons these teachers gave for engaging in teaching about EE. Questions like Do you think the students should learn EE? or, Why do you teach EE?, probed teachers' views on the relevance of EE in Tanzania. More than half of the teachers' responses (60%) reflected the development of environment literacy. For example, Emma, a Biology teacher at Singe school, thought EE would help students gain knowledge and understanding of their relationship to the environment, while Joyce, a Geography teacher at the same school thought EE was necessary for students to have skills for environment conservation, as she said, "Yes, EE is important, my thinking is that emphasis should be put in environment conservation, children need education for conservation, so they can benefit the future world…. conservation is something students should know". Other teachers (20%) thought of EE as something which can help to solve local problems e.g. Shem, a Geography teacher at Kola school, said, "EE is relevant for students as there are many problems facing the country". One response indicated that EE would help children to gain experience in the environment and only one viewed EE as a basis for behaviour change.

Summary

Like the students, most (66%) of the teachers' descriptions of EE were based on ideas for students to gain awareness, knowledge and understanding of the environment and problems associated with it or education about the environment (Tilbury, 1995). Their main reason for teaching EE in schools was to help students to develop environment literacy. There was only one teacher who regarded EE as a means of leading students to participate in some activities in society. Although there was a mention of taking students out for field trips, it meant for interaction with the environment and not for taking actions. Few teachers considered involving students in problem-solving activities. This seems to suggest that the concept of participation was a limited part of their thinking and/or emphasis.

4.3.3 School leaders' views of EE

Since school leaders were responsible for managing the program at school including assigning of teachers' work, allocation of resources, and administrative matters (Galabawa & Agu, 2001), understanding of their views on EE was considered important. Therefore question two in the interview schedule probed the school leaders on their understanding of EE, the reasons that the students should learn EE in school, and the relevance of EE in Tanzania.

Descriptions of EE

Like the teachers and the students, the school leaders' descriptions of EE were classified into five categories that emerged from their responses. As with the case of the students and the teachers, the definitions given by school leaders placed more emphasis on environment, relationship between the environment and organisms, protecting, and respecting the environment. To encourage responsibilities among individuals was also part of the school leaders' definitions of EE.

Awareness, knowledge and understanding

Two (25%) of the responses from the school leaders were placed in this category, e.g. Ruta, a head at Kola school mentioned that EE is about "awareness and understanding of the environment and everything that surrounds".

Attitudes

Two responses (25%) which seemed to fall in this category mentioned aspects such as attitude and change in habit e.g. Mchovu, the academic dean at Singe school, was concerned about "education that encourages attitudes for respecting the environment", while Temba, a head at Singe school, viewed EE as "education that impart individuals with skill and encourages [them to] change their habit by not throwing rubbish everywhere".

Skills

Only one response (25%) in this category indicated that school leaders were concerned about skills for protection of the environment e.g. "is education that impart individual with skill.

Responsibility

One (13%) school leader seemed to agree with others about the importance of helping students to raise their awareness and knowledge of the environment but also mentioned the concept of responsibility in their description of EE, for example Chao from Kola school pointed out that "…… a program that would enable children to gain knowledge, awareness, and responsibility for the environment".

Relevance of EE

In responding to a question which asked the respondent to describe why the students should learn EE at school, one leader held the following view about students passing on knowledge to their parents about disease prevention:

> It is important for a student to have an understanding of his/her surroundings, as s/he will have knowledge and talk to parents on the importance of cleaning the surroundings at home to eliminate disease e.g. Cholera or Malaria. (Ruta, Head, Kola).

Temba from Singe school, in emphasising the implication of EE in facilitating change in attitudes, pointed out that "It is relevant not only for the life of today but also for tomorrow", while, Chao, the academic dean at Kola, emphasised responsibility, she thought that "It is important to teach young generations about factors which have negative effect to the environment so that they can be responsible for it". These comments suggest the key focus on future dimension.

Summary

It can be recognized that although the school leaders showed the concern for raising awareness and understanding of the environment, there was some emphasis on

encouraging children to change their attitude or behaviour. The school leaders also saw the importance of encouraging students to communicate whatever they have been doing at school to their parents so the parents can also participate in environmental improvement, and the improvement of their health. It appeared that there were some understandings among school leaders of the influence of students on their parents or what the literature referred to as the intergenerational influence (Ballantyne et al., 2001; Rickinson, 2001). Again, the participation aspect on the part of the students in environmental education was not emphasised by the school leaders but mention of responsibility does hint at a more active participation.

4.3.4. Government agencies' views of EE

Since the government agencies are responsible for curriculum design, development, review, update and dissemination, as well as monitoring its implementation and evaluation, together with other accountabilities such as production, distribution and availability of instructional, learning materials, and equipment, as well as training and professional development of teachers (Galabawa & Agu, 2001), understanding their views of EE were requisite for consideration of their views on their roles and participation in EE. Therefore, after an introductory section in the interviews, the first question asked the government leaders to explain their understanding of EE and to give their reasons that the students should learn EE at school, and thus the relevance of EE in Tanzania.

Descriptions of EE

The analysis of the government leaders' descriptions of EE was found to mimic Lucas' definition of EE, that is, education *in*, *about* and *for* the environment (Tilbury, 1995), and most of the aspects in the Tanzanian EE strategy as well (URT, 2004) were also reflected in the definitions given by the government leaders.

About the environment

The government leaders talked about education either for the environment or about environmental issues e.g.:

> EE means a lot in Tanzania, it can mean about the environment or about environmental issues. We can help our nation by teaching young generations about these issues. (Obedi, MoEC).

In the environment

Obedi, from the Ministry of Education, also saw the importance for the students to have an experience in the environment. He said, "EE may also occur when the teachers allow the students to experience the environment". Likewise, Juma, from NEMC regarded the environment as a context for learning, he said "…it may mean field work to study nature, what they [students] can learn from the environment". There was no indication here though of anything more than nature study but at least experience is mentioned.

For the environment

Some responses from the government leaders reflected 'for' the environment as they mentioned aspects such as involvement in problem-solving, decision-making, and taking actions. The descriptions were:

> I'm not sure whether I can define it correctly, it's very broad! Actually, we have set out our EE strategy, I can't quite state it correctly, but in our context there are some elements which we would like [educators] to emphasise, things like knowledge, ethics, and environment consciousness, decision-making, and taking actions…….. (Juma, NEMC)

> Initially it was awareness programs of the environment and problems associated with it under some government and private sectors. Currently there are a lot of people involved with it especially NGOs and it is even now incorporated in the curriculum. Yes, from primary school. The focus has also moved on to include involving school children in tackling problems, and encouraging individuals to change their behaviour from destructive to protective and action taking. (Njau, TIE)

Relevance of EE

Government leaders were also asked to express what they felt were the main reasons that students should learn EE at school. Three reasons were identified from their responses. The major reason noted was to encourage students to get involved in

solving environmental issues and in the protection of the environment. This reason was mentioned by all government participants, e.g.:

> Yes it is relevant at the school level, if they [students] have knowledge they will definitely help in solving our major problems. I think EE efforts will succeed if EE is targeted at the grass root level, that is, from nursery school onwards, but community as well, for example, the issue of poverty…….(Juma, NEMC).

The other reasons included to encourage teachers to utilise the environment when teaching:

> I think that, especially in the teaching of most Biology topics, teachers need to use the environment,…Yes, it may help to encourage teachers to use other strategies other than lecturing, for example, taking students out for field trips or use the school surroundings when teaching. (Njau, TIE)

> I don't think you can do anything about environment education without using the environment. (Obedi, MoEC)

The other reasons reflected helping kids to change their behaviour e.g.

> There is a lot of pollution. I am sure if our children understand about the effect of it they would help in keeping the surroundings clean, look people are throwing rubbish everywhere especially papers and plastic bags even if there are dustbins around…." (Njau, TIE)

Summary

The views of government agencies and their descriptions of the reasons for students to learn EE at school were not only focusing on awareness and understanding of the environment or environmental issues but also on involving students as well as community in solving problems, taking action and in making decisions. The findings might not surprise as the government leaders are responsible for working out the curriculum, this might be easier for them to understand the underlying focus of EE. However, as is always the case with curriculum interpretations and enactments, there was an indication of a gap between the views held by the government leaders and the

views held by curriculum practitioners as the findings from students, teachers as well as school leaders suggested. Encouraging responsibility was also part of the government leaders' reasons for students learning EE, although, there is a conflicting view in the literature on the question of whether or not it is the responsibility of the students to solve environmental problems (Jensen & Schnack, 1997). The government leaders also thought EE would help children to change their behaviour.

4.3.5. EE agencies' views of EE

Descriptions of EE

Although EE agencies may not have direct influence on the teaching of EE in schools, in most developing countries, like Tanzania, they have been involved in addressing some of the environmental challenges, and sometimes involve school children, teachers as well as community in some of their projects (see Irma & Downie, 1999; Johnson-Pynn & Johnson, 2005). In this sense, it was felt important to involve these people and explore their conceptions of what EE meant to them. Therefore, EE agency officials were asked to describe their understandings of EE and what they consider as the relevance of EE in school/Tanzania. Their descriptions tended to reflect the education part or schooling, and/or their main activities in relations to EE. The concept of responsibility was also part of their descriptions.

Knowledge

Responses that were placed in this category mentioned EE as the study of the environment and it reflected the biological part or an ecological definition:

> EE….well, it depends on which circumstance you are talking about. I would rather define the two terms separately and then try to put them together. As far as my understanding is concerned, 'Education' is about imparting knowledge from one generation to another and 'environment' includes living things e.g. plant, and non-living things e.g. soil, so I would say EE means imparting knowledge about the environment, living and non-living things, from one generation to another. (Shuma, JEMA)

Responsibility

The response in this category seemed to reflect the environmental agencies' major activities and it was emphasising responsibility for environment conservation, e.g. Judy said, "It is education about conservation and protection of the resources. Our major thinking is what we can do for environment conservation in which sense the individuals' awareness and a sense of responsibility".

Relevance of EE

The responses to a question which asked for the relevance of EE in schools/Tanzania indicated that the EE officials considered EE as applicable in daily life. For example, although Shuma, from JEMA, viewed EE as transfer of knowledge about the environment from one generation to another, he recognised the importance of helping young children to change their behaviour and to help them with knowledge which is relevant. He talked of a 'relevant knowledge', knowledge that could be applicable in the daily life. As he said:

> There should be emphasis from grassroots level so as to change attitude. EE does not mean only planting trees or gardening; it is all about changing behaviour. We expect some of our children will be managers in different companies and they should be knowledgeable so that the knowledge acquired is transferred to working areas. (Shuma, JEMA)

Summary

The views of EE held by the environmental agency officials were based on the idea that EE is knowledge or content that has to be transmitted to students (Gough, 1997; Palmer, 1998). This suggests a didactic approach which is counter to the current emphasis on participative approaches (Gough, 1997; Osaki, 1995; Sterling, 2001). This is obvious as there was no mention of participation or active involvement of the students. However, they emphasised giving the students knowledge that could be applicable in their daily life. The EE agencies also talked about responsibility in environmental conservation.

4.3.6. Community/parents' views of EE

Since research in both developed and developing countries suggests that involvement of parents can make important contributions to children learning and school improvements (Epstein, 1996), their views on EE were believed to be significant. The parents were asked to describe with their own words their understandings of EE.

Descriptions of EE

Out of 56 who returned a questionnaire, 53 (95%) responded to this question. As with the case with other stakeholders, aspects such as awareness (26), knowledge (11), skills (7), attitudes (7) and participation (2) appeared in their descriptions. Some responses were counted into two or more categories (see Table 4.9).

Table 4.9. Frequencies of parents' descriptions of EE

Response category	no. of respondents (n = 53)	% of respondents
Awareness	26	49
Knowledge and understanding	11	21
Ethics, attitude and values	7	13
Skills	7	13
Participation and action	2	4

Awareness

Nearly half (26/53) of parent responses were placed in this category, as the most frequently mentioned responses were awareness and understanding of ourselves and the environment , environment and how to maintain it, and relationship or interaction. For example, a parent, who indicated that he was a doctor, thought EE was concerned with understanding of ourselves and everything that surrounds us, and a parent who indicated that he was a teacher pointed out that "It is a field of study dealing with what surrounds human being, a relationship between population and the surrounding", while other mentions included "Awareness of the importance of the environment" or "Awareness of the environment problems".

Knowledge and understanding

Eleven responses 11 (21%) in this category mentioned knowledge about the environment or issues. "It involves education about issues", "Studies out of the classroom to develop students' knowledge of the environment".

Ethics, attitudes and values

Responses (7, 13%) in this category described EE in terms of activities or behaviour change, e.g. "All sorts of activities in our surroundings, for example, cleaning our home environment or planting trees or flowers etc." Other responses included "Opportunity to develop good behaviour."

Skills

Responses (7, 13%) in this category indicated that EE was concerned with students learning about practical tasks such as conservation of the environment or analysis of issues, e.g. a parent who also indicated that he was a teacher wrote, "It is any practice which is concerned with protection of any part of the earth e.g. forest, water bodies, air etc." A parent who indicated that he was an IT technologist wrote that "Studies which allow students to analyse the impacts of science and technology on the environment."

Participation

Only two (4%) out of the total parents' responses seemed to fall in this category and this mentioned EE as education about involvement in some activities e.g. "Is that part of education which involve people in some activities in the surroundings" or " A program for keeping the surroundings clean."

Relevance of EE

In responding to a question asking why their children should learn EE at school, the majority of the parent responses 39/65 (60%) (see table 4.10) noted the relevance of EE in terms of developing student environmental literacy, as ten mentioned reciprocity between people and the environment, e.g. "It is necessary to develop in child awareness of their potential for the environment and the potential of

environment on them" or "Because good environment will create a health man with a health mind. Man has to live in a good environment in order to live longer."

Table 4.10. Parents' views on the relevance of EE

Response category	% of parents (n =65)*
Environment literacy	60
Solve problems	25
Change behaviour	8
Communication	3
Experience	1
Others	3

Note: * n >56 some responses were counted in two or more categories

Other comments (7/39) reflected literacy of environmental conservation, e.g. "Because if a child has been taught about environment education at its early stage s/he will be involved in the process of environment conservation" or "So that they know how to take care of environment because there is a lot of gain when environment is conserved." Some responses (22/39) indicated the importance of developing student knowledge for the environment, e.g. "It is good for him to have the knowledge for the environment". Some parents (16/65, 25%) were also concerned with the involvement of their children in solving issues, for example, "They would be sure of how to tackle environment issues". The attitudinal responses (5/65, 8%) were, for example, "Encourage good behaviour", "If they have knowledge about the importance of the environment they won't pollute it" and "If they study it at school they will share ideas with parents or clean up their home surroundings". Only two (3%) mentioned that it would help children to gain experience in the environment and one response simply indicated that EE is something students should know.

Summary

Like other participants in this study, the key terms in the parents' descriptions of EE and the reasons for their children to study EE at school were to develop awareness, knowledge and understanding of the environment or environmental issues. The parents also talked of the involvement of children in some activities like cleanliness or planting trees as part of EE. In addition, the parents saw EE as important to their

children as it would lead them to develop knowledge of the environment or skills for solving issues, or understanding their relationship to the environment. The parents also talked of the essence of EE being to encourage good environmental behaviour among their children and thought that if there was any EE learnt at school, it would impact on them as well.

4.3.7. *Summary of the views of EE*

It can be realized that although there were some variations in the descriptions across different groups of respondents, the majority (130/207, 63%) of those who described what "environmental education" meant to them included education about raising students' awareness and understanding and development of knowledge for the environment or issues. The literature referred to these ideas to as education *about* the environment (Disinger, 2005; Gough, 1997; Palmer, 1998; Palmer & Birch, 2005; Tilbury, 1995). The response to a question asking about relevance of EE in Tanzania also indicated coherence in this view as most respondents (117/207, 57%) considered EE as relevant in developing student environment literacy. Only 1/8, 26% of respondents considered EE as problem-solving and that it would help students develop knowledge and skills of solving local problems like Malaria. Other views included values and attitudes or education for change in habits. Fewer respondents viewed EE as education *in* the environment. A very small number of responses (4%) considered EE as involving education *for* the environment; they mentioned aspects such as responsibility, decision-making or participation and indicated that students' actions should be based on involvement in activities such as cleanliness or planting trees.

Analysis of data across the groups indicated that students, teachers and school leaders mainly emphasized awareness, knowledge and understanding. School leaders and parents noted attitude and behaviour change. School leaders and government leaders emphasised student responsibility for the environment and EE agency staff emphasised application of knowledge to students' lives. Some parents and school leaders mentioned student communication of their ideas to others, like their families

and the community as an essential part of learning EE. Respondents from the government agencies regarded EE as relevant for teachers to change their teaching strategies. The data seems to suggest that there was a bit wider understanding of EE among government leaders as might be expected; it showed that for the government leaders or curriculum developers had clearer understanding of the underlying focus of EE, as they are involved in the working out of the curriculum. This gave an impression that there was a gap in stakeholders' views of EE. This analysis is summarized in Table 4. 11.

The next section presents data on the roles of stakeholders in EE.

Table 4.11 Summary of the stakeholders' views of EE

Response category	Number and percentage of respondents *						
	Students	**Teachers**	**School leaders**	**Govt leaders**	**EE agency officials**	**Parents**	**Total**
Meaning of EE							
Awareness Knowledge and understanding	82 (63.6%)	6(60%)	3 (37.5%)	1(20%)	1(50%)	37(69.8%)	130(62.8%)
Skills	41(31.8%)	1(10%)	2(25%)			7(13%)	51(24.6%)
Attitude	5(3.9%)	1(10%)	2 (25%)			7(13%)	15(7. 2%)
In the environment		1(10%)		2(40%)			3(1.4%)
Responsibility, participation, action, and decision-making	1(0.7%)	1(10%)	1(12.5%)	2(40%)	1(50%)	2(3.7%)	8(3.8%)
Total responses	**129**	**10**	**8**	**5**	**2**	**53**	**207**
Relevance of EE							
Environment literacy	71(60.6%)	6(60%)			1(50%)	39(60%)	117(56.5%)
Solve problems	36(30.7%)	2(20%)	1(20%)	3(37.5%)		16(24.5%)	58(28%)
Change behaviour	3(2.5%)	1(10%)	1(20%)	1(12.5%)	1(50%)	5(7.6%)	12(5.7%)
Communication	7(5.9%)		1(20%)			2(3%)	10(4.8%)
Experience		1(10%)		2(25%)		3(4.6%)	6(2.8%)
Teaching strategy			2(40%)	2(25%)			4(1.9%)
Total responses	**117**	**10**	**5**	**8**	**2**	**65**	**207**

Note: * n>172 as some responses were counted in two or more categories

4.4. Involvement with EE

The second research question sought to ascertain stakeholders' views of their roles and involvement with activities related to EE. The research findings are now discussed.

4.4.1. Involvement of students

As well as understanding students' views of EE, the study was also interested to explore the different ways or activities they have been involved or would like to be involved in relation to EE, what they learnt or thought they would learn from those activities.

4.4.1.1 Students' report of the involvement with EE activities

Students' report of the involvement with EE activities is summarised in Table 4.12.

Table 4.12 Students' report of the involvement with EE activities

Activity	% of students (n = 100)				
	Have been involved	Have not been involved	No response about involvement	Like more involved	Not more involved
Picking up rubbish	100	-	-	86	14
Recycling	-	48	52	-	-
Planting trees and gardening	60	40		87	13
field trips, tours and camps	37	63	-	100	-
Researching	-	47	53	-	-
Letter submissions	-	10	90	-	-
Others	9	-	91	-	-

Picking up rubbish

Using a tick box, all the students (100%) indicated picking up rubbish as an activity they have been involved in, and of them, eighty six (86%) indicated that they would like to be more involved. The students outlined what they learnt or thought would learn more from this activity, e.g. "Cleanliness and picking up rubbish, I learnt that I can help to reduce rubbish in the school and home surroundings", "Doing cleanliness

at school and home, whenever I see rubbish, I must pick it up and put in the dustbin", "Keeping the environment clean is the duty and responsibility of each individual and every citizen including I". Fourteen percent indicated that they would not like to be more involved in this activity but there were no reasons given.

Planting trees

Sixty percent indicated involvement in planting trees and gardening, while 40 percent indicated that they had not been involved in this activity. Out of 60 students who had been involved, 52 (87%) outlined reasons for their interest in more involvement, what they learnt or thought would learn from this activity, e.g. "I usually spend time taking care of my garden every after school programs [at home] because this make the environment to look good", "I am concerned and focusing on planting trees, I learnt that it can help to reduce soil erosion and increases the amount of rainfall", "Planting trees and flowers, it provide suitable place with good air and weather for relaxation and it can even attract tourists". Eight students (13%) indicated no interest in more involvement in planting trees and gardening and the reasons given were, for example, limited time e.g. "Because I don't have time".

Recycling

Fifty two percent of the students did not respond in this aspect. Only 48% of the students indicated that they had not been doing anything about recycling but they learnt about it, e.g. "We learnt that it can help to reduce waste and make reuse of materials", "Because it is one way of avoiding rubbish by using one package for other purposes".

Field trips, tours and camps

More than half of the students (63%) indicated that they had not been involved in field trips, tours and camps. Only 37/100 (37%) indicated involvement in field trips, tours and camps but all students indicated that they would like to be more involved. The students described what they learnt or would learn from experience in the environment as they wrote "Visit some places and be aware of issues surround us", "Go out for field trip to learn about the environment because I will learn about land

features, different weather and climate", "Because field trip would increase my understanding and care of the environment", "Take care of the environment because I become amongst the important part of environmentalists".

Researching

Fifty three percent of the students did not respond in this aspect. However, 47% of the students indicated that they had not been involved with researching but had learnt about it. About half of them indicated their interest in it but were concerned with time, e.g. "Research about disease transmission so that I can encourage people to keep their environment clean to set them away from disease", "To me it might consume much time unless if it is part of the exams".

Letter submissions

Analysis of data also indicated that none of the students made submission or written letters to organisations (e.g. Ministry for Environment) about pollution but only 10% of the students showed interest to be involved, e.g. "To give out my views and suggestions". Ninety percent of the students did not respond in this aspect.

Discussion

Nine percent of 100 students responded to a question which asked them to outline other activities that they had been or would like to be involved with and they mentioned the aspect of involvement in discussion, for example, they wrote "Involved in the discussion of environment pollution in the classroom, so as to be more active", "because it would allow me to express my views and ideas", " …for the sake of giving out views, opinions, and suggestions", " Get exchange of ideas and views with others".

4.4.1.2 Students' views on the involvement of other stakeholders

In the same way as understanding students' views of their roles or involvement in EE the study also explored their views on the ways other stakeholders could be involved. For example, in questions 7, 10, and 11 in the student questionnaires, the students were asked about the roles they thought schools should play in teaching them about

EE or would like to learn in EE in the future and how other stakeholders could help them learn better EE in schools.

4.4.1.2.1 Students' views on the role of teachers

Three main roles that teachers could play were identified from the students' responses as shown in table 4.13.

Table 4.13. Students' views on the role of teachers

Role	% of students (n=78)*
Teach about environment	67
Facilitate learning	33
Advise behaviour	24

* 22 students did not respond. Some students' responses have been counted in more than one category

Teach about EE

The majority of the students thought teachers should teach them about EE with (52/78, 67%) responses counted in an aspect (see question10) with a description that the teacher should tell them what they needed to know in EE. The reasons given were e.g. "The teacher should put emphasis on environment by teaching students important of environment".

Facilitate learning

One third of the students who responded to this question (25/78, 33%) considered teachers as facilitators who should involve students in learning e.g. group work, discussion, and presentation as they commented, "Facilitate the students on the roles they should play." Some students indicated that they would like the teachers to teach about environment or issues using a variety of strategies, e.g. "Teach about issues using real example", "Teachers should employ various techniques to facilitate learning", "Use field trip and tours for EE". The students also thought that the teachers should invite guest speakers, or visitors into the classroom, e.g. "Invite people who are specialist whom we can listen and question". The students, however, indicated that they were unsure of their own participation in action-oriented activities, as by means of a tick box they indicated *may be* in responses that required the teachers to involve them in decision-making on the EE topic, and develop action

plans for doing something for the environment, as well as being involved in community activities or projects.

Advise behaviour

Nineteen (24%), considered the teacher as an *adviser,* e.g. "Teachers should advise students on the advantage of keeping the environment clean".

4.4.1.2.2 Students' views on the role of school leaders

Forty one (53%) of the 78 students who responded to the question on what the school could do for them to learn better considered the school leaders as promoters and that they should *encourage teaching of EE*, as they wrote, "They [school leaders] should promote the subject of EE in schools", " encourage teaching of EE". Some students (37/78, 47%) considered the school leaders as leaders or directors that they should *encourage good behaviour* and cleanliness, "They are responsible to maintain good behaviour and cleanliness at school", "They should encourage cleanliness at the school surroundings", "Give cleanliness a first priority at school". Twenty two students (22%) did not indicate their views on the role of school leaders in relation to EE.

4.4.1.2.3 Students' views on the role of government leaders

When asked what the government leaders could do that would help them learn better EE in schools, three main tasks or responsibilities were identified from 54 responses (see table 4.14).

Table 4.14. Students' views on the role of the government leaders

Role	**% of students (n =54)***
Encourage teaching of EE	39%
Provide resources	37%
Educate society	24%

* Nearly half of the students did not have a view about the role of government leaders

Encourage teaching of EE

Of 54 students who wrote about government leaders' roles, 21 (39%) thought they should encourage EE at schools, e.g. "Encourage EE at all levels", "Encourage the topic environmental issues in the syllabus", "They [government leaders] should establish EE in school from primary level and other community areas so that people are more aware of the environment and the issues".

Provide resources

The other role mentioned by 20/54 (37%) students included sponsor, resource provider or guarantor, e.g. "Provide enough resources e.g. books for EE", "The Ministry of Education should provide required learning materials".

Educate society

Thirteen students (24%) considered the government leaders as *educators* and a source of change in the society as they thought EE could be promoted not only in schools, but in society at large, e.g. "Should promote environment policy, encourage environmental education in schools and provide funds to people dealing with it", "Should encourage and educate the community about the importance of the environment", "EE should be directed to the society to keep them aware", and e.g. "The government should enforce laws of the environment for those who break them".

4.4.1.2.4 Students views on the role of EE agencies

For the case of EE agencies, only 40 of the students suggested ways they could be involved (table 4.15).

Provide expertise

Fifteen (38%) thought the EE agencies should play a part in providing expertise, e.g. "Invite us for a visit", or "Visit our school and talk about EE to enable the students to get better understanding of the environment".

Table 4.15. Student' views on the role of EE agencies

Role	% of students (n=40)*
Provide expertise	38%
Advise society	33%
Supply resources	30%

* 60 students did not have views about EE agencies' roles

Advice society

Thirteen (33%) considered EE agencies as advisers and people who should work for the society, as they wrote, "They should advise people in various ways on how to preserve environment in different ways".

Supply resources

Twelve out of 40 (30%) students considered the EE agencies as a source of tools and practical suggestions, e.g. "They [EE agencies] could be involved in providing tools and practical learning".

4.4.1.2.5 Students' views on the role of parents

The analysis of students' questionnaires also revealed three roles that students felt parents perform for EE in schools (see Table 4.16).

Table 4.16 Students' views on the role of parents

Role	% of students (n = 78)*
Advise children	74
Support	14
Help	12

* 22 students didn't have a view of what parents could do

Advise children

Fifty eighty (74%) of the students responding to this question (n=78) and suggested that the parents could play a part in advising and encouragement both in terms of behaviour change and in learning, e.g. "[parents] should encourage their children to care for the environment and work together in cleaning the environment", "Encourage cleanliness at home", "encourage and advise their children to achieve

better learning". Other suggestions included, "Help their children by giving them advice on how to protect the environment", "Advise their children on how to preserve the environment in different ways".

Support

Some students eleven (14%) considered the parents as sponsors; supporters or providers e.g. "Buy books for EE".

Help

Another role mentioned by nine (19%) students that the parents should play a part was included providing active help, e.g. "Help in cleaning surroundings", "Help in planting trees."

Student-parent interaction

In order to understand student-parent interactions in relation to EE, the students were also asked whether they had ever talked to their parents about any EE they might have learnt at school and if not, whether or not they would like to talk to their parents about what they would learn in schools (question 8). Table 4.17 summarises the findings.

Table 4.17 Students - parent interaction

	% of students (n = 80)*	
	Yes	**No**
Have talked	30	70
Would like to talk	89	11

* 20 students did not respond to this question

The table indicates that only 24/80 (30%) have ever talked about EE learnt at school and explained what they talked about and the responses of the parents, e.g. "It was about cleanliness, it is their practice now", "About pollution, in order to keep them aware of what our teachers are teaching us." More than half, (56/80 70%) indicated that they had never talked to their parents about any EE learnt at school. Almost all students (50/56 89%) who responded to the question about whether they would like

to talk to their parents about EE, indicated that they would like to do so, e.g. “They would understand more about the environment and its importance”, “My parents know about EE and they usually tell me to be clean and keep our surroundings clean.”

When asked whether or not they had carried out environmental activities at home after doing any learning in EE at their school (question 9), 68/80 (85%) of the students indicated that they had been involved in cleanliness and planting trees and gardening at their home surroundings while 12/80 (15%) indicated that they had not carried out any activities related to EE.

4.4.1.2.6 Summary of the students' views on involvement with EE

The data on students' involvement with EE indicated that about half (44%) had done or would like to do something for the environment, for example, in activities such as picking up rubbish, planting trees and gardening. Some of the advantages from these activities were outlined such as reduce rubbish, eradicate diseases, reduce soil erosion, making the environment to look good, good air for relaxation and increase the amount of rainfall. However, the majority (84%) indicated that they had learnt or would like to learn more about the environment or issues, e.g. in recycling, field trips, tours and camps, or research. Ideas about biodiversity and sustainability are missing. Only 10 percent of the students indicated involvement in discussion, or submissions which could lead them to become active learners. When these findings and their views of EE are considered, the trend indicated that through EE they would learn about the environment or issues. This is apparent as the majority (67%) considered their teachers as educators or instructors who should teach them about the environment; however, they suggested that they could teach using variety of strategies e.g. experts, field trips and tours. It seems that the students were keen for more *in* the environment and not much *for* the environment. Only 29 percent of students considered the teachers as facilitators or advisers that should engage students in participation in decision-making and other action-oriented activities. Other stakeholders were thought to play a part in promotion, leading, supporting, e.g. in

resources, and encouraging teaching of EE, together with encouraging good behaviour and cleanliness.

4.4.2. Involvement of teachers

In relation to understanding teachers' views of EE, the study was also interested to understand their views on their roles in relation to EE, their current involvement in EE, and their suggestions on what they consider students should learn in EE and how it should be learned.

4.4.2.1 Teachers' views on their roles

Teach about the environment

Five out of the seven teachers who participated in this study mentioned teaching as their main role in schools. For example, Shem from Kola school said that "Basically teaching, I am also the head of the geography department, assisting teachers in organising scheme of work, lesson plan, and teaching aids, assessment of students, and sometimes organising field trips."

The response of teachers to the question on their current involvement indicated that they were mainly concerned with teaching about the environment, and the EE components were taught within other subject areas, while the teaching style adopted by most teachers included lecturing and discussion of environmental problems in the classroom. There was also an indication that the students were rarely involved in the learning processes, and other community activities, projects, or action-oriented activities unless invited, e.g. Shem said, "Not at all, except that last year they asked us to participate in for the environment week day and organize something to perform." There was also an indication that the teachers were not applying the expert strategy that is, inviting speakers or visitors in their schools. However, in their views it seemed that the students would liked outside experts, as Shem said, "Yes, I think so because students like to be taught by someone else." Sera from Singe school also said, "It was one of the agenda items in our last department meeting, there was a suggestion that teachers should invite people who could talk to students about EE." When asked what their short or long term plans were for EE, the teachers' views on

this aspect corresponded to their views of their roles and they mentioned teaching EE as their main plan, e.g. Sera said, "To teach about EE."

Facilitate learning

Facilitate learning was another role mentioned by one of the seven teachers, for example, Joyce said, "Create environment for student learning and facilitate learning." However, the concept of involving students in decision-making seemed also to be under-emphasised in teachers' teaching style, e.g.

> Yeah! yeah! It's good idea, students' views are very important. The thing is that we (Tanzanian) don't have that culture of valuing youngsters' view, we think they are still young to make a comment but in actual fact they are able to give wonderful suggestions and (possibly) make some changes. (Shem, Head of Biology, Kola)

The point was also raised by Lina from Singe school as she said, "… possible but things weren't like that before."

Communicate the progress of teaching

Another view recognised from teachers' responses included communicating the progress of teaching, e.g. Emma, who acted as a head of Biology department at Singe school, said her main role apart from teaching was to report on the progress of teaching, e.g. to "Provide information on way the subject is taught, organise and support academic trips."

4.4.2.2 Perceived challenges or needs

The teachers in this study pointed out the challenges or needs in relation to the implementation of EE and these included training and resources, e.g. Shem said, "Teaching and learning materials, we don't have specific books and manual for EE; another thing perhaps is training on how to include EE in lessons." Anna, also from Kola said, "Teaching materials, you know, in the absence of instructional materials and resources, particularly textbooks, teaching become so difficult." Other teachers considered time and funding as the main challenges, e.g. Sera said, "We have no time to do so; there is also a problem of lack of fund for transportation to different sites".

Joyce from Singe school said "Too much occupied, as we have to teach other topics as well."

4.4.2.3 Teachers views on the involvement of other stakeholders

In relation to their views of their roles and the perception on their involvement in EE implementation, the teachers were also asked to pinpoint the role they thought other stakeholders could play or any support they would like to receive from these people. For their fellow teachers, the teachers in this study suggested that they could help with teaching materials, initiate and maintain good relationships or communication with other schools for exchange of ideas, help with children's behaviour, as well as facilitate teaching of EE.

For the school leaders, the teachers suggested that they could provide a supportive atmosphere for teachers to teach and for the learners to learn. Other comments which matched to students' suggestions required the school leaders to encourage EE at school and help with students' behaviour. Other responses included, e.g. "Provide resources for EE", "support field trips or projects for EE" as well as "Encourage environment clubs at schools."

When asked about what they thought the roles that the government agencies could play or what they would like to receive from them, the teachers held the view that the government leaders could help them with training on how to incorporate EE in the subjects. Other suggestions included provision of enough resources, encouragement, recognition and provision of funding for field trips, as Shem said, "All what we need from them [government agencies] is training, motivation, and encouragement; it may be hard to implement something which you are not interested but if you are encouraged e.g. given fund, resources or an appreciation letter the work becomes so simple."

When asked what they consider as the role of, or what they would like the EE agencies to help with, the teachers said that they could visit schools to provide lectures about EE, involve schools in their projects, and where necessary help with

resources and training of teachers. The teachers were also asked to suggest what they would like the parents to help with in relation to EE. Their suggestions included help with children's learning and behaviour, help in transport for children for field trips, as well as visit the school and talk to students, e.g. "I think it can have major impacts if parents visit the school and talk to students."

4.4.2.4 Summary of the teachers' views on involvement with EE

The majority of the teachers (5/7 71%) involved in this study considered themselves as educators or instructors and the perception of their current involvement, and their short or long term plans was teaching about the environment. This corresponded to their views of EE as pointed out by the majority and the way the students thought of them. As also revealed in students' responses, there were indications that the teaching styles adopted were seldom involving students in the learning processes, and other community activities, projects, decision-making or action-oriented activities. However, the teachers in this study pointed out the challenges or needs in relation to the implementation of EE and these included training, resources, time and funding, encouragement, recognition and support.

4.4.3 Involvement of school leaders

4.4.3.1 School leaders' views on their roles

In view of understanding school leaders' views on their involvement in EE, they were also asked to provide a picture of their roles in schools in relation to EE.

Facilitator

The explanations of two of the four leaders mentioned the key term facilitator, showing that they considered themselves as facilitators, facilitating school programs. For example, Mchovu said, "I'm responsible for a quite number of things in this school, example to facilitate teaching and assessment."

Coordinator or manager

The school leaders also considered themselves as coordinators or monitors e.g. Temba, a head at Singe school said, "My role is to monitor and to coordinate all school's programs, including that for EE, to encourage teachers to teach EE components that are assigned in their syllabus, to monitor curriculum implementation, to organise meetings to discuss various issues concerning school surroundings, e.g. cleanliness." When asked to explain what were their short or long term plans for EE, the school leaders mentioned making sure EE is taught and encouraging cleanliness, e.g. Ruta said "Our plan in this school is to keep the environment clean all the time, and to make sure that teachers teach EE components in their respective subjects; we had a meeting; the discussion was about to develop an action plan for the implementation of EE". Temba also mentioned keeping the surroundings clean, he said, "Our plan is to make our school looks green." However, it was not clear whether the school leaders' comments about cleaning surroundings were linked to educating children for sensitivity as part of education process to have a health environment or related to making the school look nice and green to attract parents and students. It would be interesting to find out more about these ideas.

Allocate resources

Ruta, a head at Kola school, mentioned allocation of resources as one of their responsibilities in the management of the school programs, as he said, "….almost everything in relation to EE, for example, making sure that teaching is conducted well, allocate resources when available, and encouraging cleanliness, planting trees and gardens in school surroundings." This role matched up with what the teachers in this study claimed, that the school leaders should make sure resources are available for them to teach EE effectively.

4.4.3.2 Challenges or needs in relation to EE

The school leaders noted some challenges or needs in relation to EE and suggested how the teaching of EE could be facilitated, e.g. Ruta said, "Training of teachers is most important; teaching would not be successful in an environment where there is lack of knowledgeable people." He also stressed the issue of encouragement to

teachers and provision of funding as he said, “Teachers feel it as a burden therefore it needs a lot of effort and encouragement; lack of money is a problem especially when it comes to the issues of projects, or field trips.”

4.4.3.3 School leaders’ views on the involvement of other stakeholders

When asked what they thought teachers could do to facilitate EE at school the school leaders suggested that the teachers should be responsible for their work, e.g. Ruta from Kola school said, “I would like to receive support from teachers; they themselves should recognise their responsibility and act accordingly.” Similarly, Temba said, “I would like the teachers to be accountable for their work…Yeah, it’s a challenge, we accept challenge, we have to play active role in engaging teachers in order to make them play active role.” Other views included encouraging cleanliness at school, and helping to develop students’ behaviour towards the environment, as well as encouraging students to discuss EE issues with their parents. When asked what they thought school leaders should do to facilitate EE at school, the school leaders in this study suggested that they should encourage cleanliness in school surroundings, and facilitate EE at school, e.g. Temba said, “They should encourage environmental friendly practices in school e.g. the use of dustbin”.

For the government leaders, the school leaders suggested that they could help in training of teachers in EE, e.g. Temba from Singe school said, “Support from the Ministry e.g. train teachers and provide enough books for every subject”. The school leaders were also asked to suggest what part they thought the EE agencies could play in the development of EE at schools. They suggested that their activities could involve schools, e.g. Ruta said “Their programs could involve schools”. For parents, the school leaders suggested that they could help with their children’s learning and behaviour and help with funding for school projects e.g. Chao said “They should help with their children’s behaviour”, Temba said, “My suggestion is that they should help with fund raising programs for some school projects”.

4.4.3.4 Summary of the school leaders' views on involvement with EE

The school leaders mentioned roles that they had played or would like to play a part in facilitation, management and coordination of the school programs. Their short or long term plans included to maximise cleanliness and to facilitate teaching of EE. This orientation related to some of their interpretations and definitions of EE, their concerns for their involvement and the views of their roles in relation to EE, as demonstrated by some respondents in this study. Although the school leaders thought that EE agencies could involve schools in their activities, there were no indications on whether or not the concern was for engaging schools to participate in action-oriented or problem-solving activities. While the teachers in this study indicated the need of a supportive environment from school leaders to teach EE effectively at schools, the school leaders urged teachers to be accountable for their work. This seems to suggest the need of collaboration between teachers and school leaders in order that they negotiate their responsibilities and act accordingly. As also suggested by some teachers, the school leaders in this study indicated the need for support from other stakeholders for facilitation of EE in schools and this included training of teachers and provision of enough resources for EE, and other supports e.g. children learning and behaviour, and funding for some school projects, as well as encouragement of teachers.

4.4.4. Involvement of government agencies

4.4.4.1 Government leaders' views on their roles

The government leaders were asked to explain what they thought were their roles in the implementation of EE in schools, their current involvement with EE, and their short or long term plans for EE in schools. Five roles were identified from government leaders' responses. These are discussed below:

Curriculum monitoring and evaluation

Government leaders talked about their roles in relation to their responsibilities in their working positions, e.g. Mr. Obedi from MoEC said, "We are responsible for curriculum in general, review, implementation, monitoring and evaluation." Mrs.

Njau, working as curriculum developer from the Tanzanian Institute of Education, (TIE) said, "Curriculum development, monitoring and evaluation of the curriculum, professional development of teachers, and allocation of resources." In answering the question on how they know curriculum (e.g. for EE) is interpreted and enacted in the way it is intended (question 5) they indicated that it is done through evaluation, e.g. "It is through inspection and evaluation, the Ministry of Education is conducting school inspection regularly where it collects information on how curriculum is implemented." The government leaders also said that they receive feedback from the teachers via the heads of schools, who also got some reports from the heads of the departments.

Training

Government leaders talked about involvement in training, e.g.

> Our major plan is on capacity building to orient teachers on the curriculum implementation. The Ministry of Education (MoEC) in collaboration with TIE are now running workshop at selected zone for facilitators of EE … there would be another workshop for teachers at their respective districts which would be run by these facilitators. (Obedi, MoEC)

> Our fellows are in zones doing professional development for facilitators, and then there will be other follow up workshop for teachers in their respective districts. (Njau, TIE)

> We have been working collaboratively with MoEC, TIE and other EE agencies and NGOs on training of teachers. Yes, teachers need to be equipped with new skills whenever there is a curriculum reform so that they can put it into practice effectively and efficiently. (Juma, NEMC)

However, the government leaders mentioned the issue of funding as one of the main challenges in the development of EE in schools:

> As I mentioned earlier we are now running workshop for teachers on how to teach EE components in their respective subjects. The only thing is that we are running short of fund and therefore this workshop will be only for few teachers (Obedi, MoEC).

> ……another challenge is lack of fund, if we had fund we could run many lots of courses/Programs. For instance, we in collaboration with SUA, the centre of continuing education have a plan to have a two month professional development Program for professionals working in formal and non-formal sectors, those educators intending to integrate EE in formal sector but we still looking for fund and have not yet received any. We worked on the budget and it goes like 443 million US$. This is much money that you can not get at once so financial constraint is a big challenge to EE. (Juma, NEMC)

Provision of teaching/learning materials

The government leaders also mentioned their responsibility in production and provision of resources and equipments, e.g. Obedi said, "We are also responsible for production and provision of resources and equipments." When asked whether there were enough preparations in terms of books and other resources for EE, Mrs. Njau from TIE said:

> Well, we're not at the moment writing books. There are nowadays a lot of publishers, but they should write books which are relevant in terms of the level and context of the students. We asked them to publish books for EE, we hope that they will be available at schools once the work is finished.

In answering the question on how they make sure that the books published complied with the educational objectives Njau said, "Well, we always have to assess and they have to send to us so we can edit and recommend for publication."

Coordination

Another role mentioned by government leaders was coordination, e.g. Juma said:

> Coordination of all activities related to implementation of EE in Tanzania. For example we are coordinating environmental projects in the village working hand in hand with NGOs e.g. lower Kihansi Environment Project.

Advocacy

The government leaders also talked about the issue of dissemination or advocacy, e.g. Juma said "We have been also working with schools to release EE message to the community."

4.4.4.2 Government leaders' views on the involvement of other stakeholders

The government leaders were also asked to make suggestions of what and how other stakeholders should and could do to facilitate EE in schools.

Government leaders' views on the role of teachers

While teachers considered in their main role as being instructors teaching EE to students, the government leaders suggested that they should use the school and local environment to teach about EE, encourage students to play an active role in learning, work with others to facilitate EE, attend courses related to EE, and encourage student involvement in decision-making, e.g.

> Yeah, we emphasise decision-making, critical thinking, relevance and applicability. And one of our objectives was to orient the curriculum so that it would be more children-centred. (Obedi, MoEC)

However, in relation to curriculum implementation the government leaders pointed out teachers' attitudes as one of the challenges, as Juma said "Another challenge is teachers' attitudes, others took it positively, while others took it negatively, it's a challenge when teachers are not in a position to implement it."

Government leaders' views on the role of school leaders

The government leaders suggested that the school leaders should work alongside teachers to facilitate EE at schools. The data from teachers and school leaders also revealed the need for collaboration between teachers and school leaders. The government leaders also suggested that school leaders should be involved in training teachers, and encouraging parents to be involved in EE activities and learning of their children.

Government leaders' views on the role of EE agency and the community

For EE agencies, the government leaders suggested that they could be involved in training of teachers, involve schools, parents, community, and business in projects that focus on local issues, and work alongside NGOs and government agencies to

facilitate EE. The government leaders were also asked how they thought the parents could support the development of EE at school. They suggested that the parents could be involved in schools' projects or involve schools in their projects or issues, visit schools, and help with funding, e.g. Juma from NEMC said, "The schools can invite them [parents] to talk to students about prevention of disease."

4.4.4.3 Summary of the government leaders' views on the involvement with EE

The major responsibilities identified from government leaders' responses included curriculum development, monitoring and evaluation of the implementation, as well as coordination of EE activities and dissemination of the EE message to the society. As the teachers and school leaders in this study indicated, the government leaders also affirmed their responsibility in training of teachers in how to put EE into practice. However, they mentioned the issue of funding as one of the main challenges that might explain the limited opportunity for professional development of teachers. Although the government leaders mentioned provision of resources and equipment as one of their responsibilities, there was an indication of inadequacy as claimed by the student, teachers and school leaders in this study. While the teachers thought of themselves as instructors, who should inculcate students with knowledge about the environment, the government leaders recommended that they could change their teaching style by employing strategies that would facilitate students in playing an active role in learning, and being involved in decision-making as well as participating in action-oriented activities.

The government leaders, however, raised their concern in relation to the implementation and development of EE in schools and these included teachers' attitude, teachers' as well as leaders' understanding of the relevance of EE and professional development of teachers, as well as limited funds for professional development of teachers, and therefore suggested the need for involvement and support from other stakeholders in a variety of ways.

4.4.5. Involvement of EE agencies

In relation to understanding the views of EE held by the EE agency officials, the study was also concerned in understanding their views on their roles or activities that supported the development of EE at schools.

4.4.5.1 EE agency views on their roles

As advised by other stakeholders in this study, the EE agency officials also demonstrated their involvement as educators, facilitators, supporters, advocates, providers or sponsors.

Educators or experts

The EE agencies mentioned that they had been involved in teaching about EE in schools, e.g.

> We visit schools to teach about EE. We have done tours with primary and secondary children at Kilimanjaro National Park, Tarangire, and Manjara with the aim to raise awareness level and experience which can be useful to their home place. (Shuma, JEMA)

> We are involved with overall strategies of environment conservation; we have been working with other interested parties to raise community awareness about environment problems, orient activities towards environment conservation. (Judy, WCST)

Facilitator

The EE agencies also mentioned that they had been involved in activities that they considered as action for the environment, e.g.

> Our earlier activities were focusing on raising awareness, e.g. dustbins, fliers, or adverts but now we are facilitating action-oriented activities such as planting trees and gardening. (Shuma, JEMA)

> We are working with cleanliness companies for campus greening programs. (Shuma, JEMA)

When asked whether or not their activities had involved school, Shuma from JEMA said that their programs had involved schools in tree planting, while Judy from

WCST explained that they have been involved in establishing E (environment) clubs with schools.

Associates

The EE agencies cited examples of activities where they had been involved with other interested parties for the society, e.g. Shuma from JEMA said, "We have outreach to the community. We are also involved in tidying community areas e.g. around Kilimanjaro Mountain and near the University campus," and "We are also doing research with community on fire outbreak."

Sponsors

The EE agencies talked of sponsoring some activities related to EE as one of the things that they had been doing, e.g. Shuma from JEMA said, "We organise University E (environment) week once a year, the schools are invited to contest in different activities and we participated in sponsoring the awards."

4.4.5.2 EE agency officials' views of the involvement of other stakeholders

In responding to a question asking the EE agency officials to point how they thought other stakeholders could support the development of EE in schools, they pointed out that the teachers could use project and local issues in teaching about EE. As also noted by other stakeholders, the EE agency officials suggested that the school leaders could encourage EE at schools and lead the students to change in their behaviour and attitude towards the environment. For government agencies, the EE agency officials suggested that they could encourage and support projects at schools, and work collaboratively with other stakeholders to encourage EE at school. For EE agency officials, they considered that they could work with other stakeholders to address environment issues and involve schools in addressing local issues. For parents and the community, EE agencies thought that they could work with schools to address environment issues.

4.4.5.3 Summary of the EE agencies' views on the involvement with EE

The data indicated that EE agency respondents had been involved as experts in teaching about EE in schools and in advocating the EE message to raise public awareness of environment and issues. They had also facilitated activities for the environment, e.g. planting trees, sometimes involving schools. These roles were related to what had been identified by other respondents in this study as the part EE agencies should play a part. The EE agencies also mentioned that they had associations or links with schools and community in general for EE activities e.g. projects or cleanliness. However, other respondents in this study considered that they could also help with training of teachers and provision of tools and resources for EE in schools. Similar to what the government leaders recommended, the EE agency respondents suggested that teaching of EE could be fostered when teachers employ active teaching strategies and stakeholders work collaboratively with other stakeholders to support them in a variety of ways.

4.4.6. Involvement of the community/parents

4.4.6. Involvement of the community/parents

The community or parents were asked whether or not they had been or would like to be involved in activities related to the environment (question 11). The majority (54/56, 96%) indicated that they had been involved in activities such as cleanliness, planting trees and gardening, as well as seminars or projects, and among them, 39 (72%) indicated that they would like to be more involved. Only two parents indicated they had not been involved in any activity related to EE; however, they showed interest to be involved (see Table 4.18).

Table 4.18 Involvement of parents in EE

Response category	Have been involved	would like to be more involved	have not been involved	have not but would like to be involved
Percentage of parents	54(96%)	39(72%)	2 (4%)	2(100%)

Cleanliness

More than half of the parents (28/54, 52%) mentioned that they had been involved in cleanliness and all indicated that they would like to be more involved. The reasons given included, e.g. "A clean environment is a health to all of us."

Planting trees and gardening

Some parents (16/54, 30%) mentioned that they had been involved in planting trees and gardening, of these, 11 indicated that they would like to be more involved and gave reasons, e.g. "The survival of human being depends on the environment." Five out of 16 (31 %?) indicated that they would not like to be more involved in planting trees and gave reasons, e.g. "Because I have other commitments."

Seminars/projects

Ten out of 54 parents (19%) indicated that they had been involved in some projects or seminars, e.g. "Project with coastal management scheme," "Seminar on environmental pollution."

The parents were also asked to indicate activities that they would like their child to be involved in and to provide reasons for their choice (question 7). Table 4.19 summarises the findings.

Table 4.19. Parents' views on the involvement of their children

Activity	% of parents (n = 56)			
	Yes	May be	No	No answer
Picking up rubbish	77	23	-	-
Recycling	11	-	-	89
Planting trees and gardening	73	15	-	12
Field trips, tours and camps	86	14	-	-
Researching and writing letter to organisations	4	41	-	55

Picking up rubbish

Forty three out of 56 (77%) parents indicated that they would like their children to be involved in cleanliness and picking up rubbish, and the reasons or opinions given included, "They will know how to maintain cleanliness and hence avoiding some communicable disease due to dirtiness," "Because the rubbish affect negatively the environment," "He should not dispose of rubbish by throwing it away," "Most areas are affected by scattering of rubbish materials especially school campuses, s/he would be able to clean school surroundings as well as home surroundings." However, about 23% were not sure of the involvement of their children in this activity and there were no comments indicated for that.

Recycling

There were only a few (6/56 11%) parents who responded to this aspect, and they commented that they would like their children to be involved because they will understand its advantage, e.g. "He would know why materials should be recycled". Fifty (89%) of the parents didn't have a view about recycling.

Planting trees and gardening

Planting trees and gardening was indicated by 73 percent (41/56) and the reasons that the children should be involved were, e.g. "They will benefit from tree planting such as avoiding soil erosion, getting enough oxygen, and rain," "By doing so they should be able to protect the environment and prevent land degradation," "This will make improvement of environment, it makes good environment and brings about green belt." Fifteen percent of the parent respondents indicated they were unsure about the involvement of their children in planting trees and gardening, as their response was *maybe* for this aspect and the reasons included, e.g. "Busy with studies," "He might not have time for it."

Field trips, tours and camps

Most of the parents (48/56 86%) showed interest in involvement of their children in field trip/camps and tours, e.g. "See the actual environment/ecosystem," "They

should be exposed to affected areas and hence suggest preventive mechanism," "So that they can learn from experience," "They will be encouraged after seeing physically the importance of maintaining environment properly," "It is good to expose students, learning by seeing is very effective," "It is good for sociability, she will be able to interact with others in a different way than the classroom," and "There are lots of learning in a trip." There were only 14 percent who were not sure of the involvement of their children in field trips, tours or camps and there were no reasons indicated for this. Twelve percent of the parents did not have a view about planting trees and gardening.

Researching and submissions

The data also indicated that only four (4/56 7%) of the parents considered that the children should be involved in researching and presenting findings to a regional council or writing letters and submissions to a required authority e.g. Ministry for the Environment about pollution. The majority (55%) did not indicate what their responses were, while just under half (23/56 41%) indicated they were unsure of the involvement of their children by ticking *maybe* in these aspects and gave reasons, e.g. "They are still young, cannot make big change, however it will be a challenge to the society," "May be but they are still young to conduct research and present it to the authority," "Not possible at this age but they may try."

When asked which roles they thought the schools should play in teaching their children about EE (question 10) the majority put more emphasis on development of awareness, knowledge and understanding of the environment or issues, some reflected development of attitude and some parents considered that the students should be involved in solving problems (see Table 4.20).

Table 4.20. Parents' views on the ways the school should teach children about EE

	% of parents (n = 56)			
	Yes	May be	No	No answer
Understand the environment and the impact people have on it	100	-	-	-
Be involved in solving environmental issues	48	46	4	2
Learn respect and care for the environment	100	-	-	-
Develop critical thinking and decision making	46	-	-	54
Develop positive values, attitudes, and commitment for the environment	100	-	-	-
Be empowered to take action for a better tomorrow	59	-	-	41

Knowledge and understanding

All the parents (56/56, 100%) indicated that they would like the school to help their children understand the environment and the impact people have on it. This aspect was focusing on the development of knowledge and understanding of environment or issues.

Solving problems

Some parents (27/56 48%) indicated that they would like their children to be involved in solving environmental issues, while about half (26/56 46%) were not sure of the involvement of their children. Two (2/56 4%) showed no interest in involvement of their children in solving issues, and one (1/56 2%) did not respond in this aspect.

Attitudes

All the parents (56/56, 100%) indicated that they would like the children to learn respect and care for the environment and develop positive values, attitudes, and commitment for the environment.

Participation/action and decision-making

On action-oriented aspects, twenty six (26/56 46%) thought the schools should help their children to develop critical thinking and decision–making skills and 59 percent (33/56) of the parents indicated that they would like the schools to help their children

to be empowered to take action for a better tomorrow. The remainder of the parents did not show what their responses were.

The parents were also asked whether their child had ever talked to them about EE learnt at school, and if not, whether they would like to hear about any EE learnt at school by the child (question 8). All the parents responded to this question (see Table 4.21).

Table 4.21 Parents-students interaction in relation to EE

Response category	communicated	never communicated	never communicated but would like to hear	never communicated and would not like to hear
% of parents (n = 56)	54	46	92	8

The table shows that more than half the parents (30/56 54%) indicated that their children had communicated EE learnt at school e.g. cleanliness, planting trees and gardening and pollution. Twenty six (46%) indicated that the children had never communicated about any EE learnt at school and, of these 24 (92%) indicated that would like to hear about it, while two (8%) indicated that they would not like to be informed, e.g. "Would not like to be informed because of lack of time." Some of those who indicated interest to be informed provided reasons, e.g. "It may enable me to get a clear picture of their studies," "Because if they talk about EE it will show that they have knowledge about the environment conservation," "Would like to be informed, it's good to understand what is going on at school," "It will encourage my child to study hard." When asked whether or not their children had carried out any environmentally friendly activities at home after learning in environmental education at school, 54 percent marked yes, indicating that there were activities related to EE carried out by children at home and these included planting trees and cleanliness, e.g. "They used to plant trees to provide shadow and fruit trees", "Gardening and cleanliness," "Just participated in cleanliness after being instructed to do so because they have learned EE at school". Forty six percent of parents wrote that there were no such activities carried out by children at home.

4.4.6.1 Summary of the parents' views on the involvement with EE

Like the students in this study, the majority of the parents indicated that they had been and would like to be involved in cleanliness and planting trees. These were also mentioned as the activities they would like their own children to be involved with. They were also the main activities the children had communicated to parents or done at home. Parent emphasis on the ways the school should teach children was placed more on understanding and respecting the environment. As thought by some teachers in this study, some parents also indicated they were unsure of the involvement of their children in decision-making, writing letters and submissions as well as solving problems, considering them as still too young for their work to be considered.

4.4.7. Summary of the stakeholders' views of the involvement with EE

The stakeholders indicated a range of ways in which they had been playing and/or could play a part in the development of EE in schools. Teachers were mainly identified as educators about the environment and the students saw the opportunity for themselves to be educated. Only a few of the respondents thought that the teachers should facilitate learning while employing strategies other than the traditional lecturing method, and that the students should be involved in the learning process as active learners. The majority of the respondents did not consider that youngsters can make a change as they thought the children are still too young for decision-making and for their work to be taken into consideration. However, it showed that the feasibility for the implementation of EE in schools could be expected when consideration is given to teachers' attitudes, knowledge and understanding. Therefore, teachers' support in terms of encouragement, recognition, and other support e.g. training, resources, and expertise were thought of as having fundamental importance. However, teachers are challenged that their teaching styles should be in line with the objectives of EE, that they should work with others for exchange of views and resources, support their training, and be accountable for their work.

The school leaders were considered as the key players and that they should give teachers a supportive atmosphere; encourage learning, good behaviour and environmentally friendly activities at school; and work with other stakeholders to support teaching of EE and training of teachers. The data also indicated that for effective implementation of EE in schools, government roles in professional development of teachers, provision of resources, and funds for school projects should reach the majority. It is suggested that the parents should help students to change their behaviour, and improve their learning; they should visit schools and talk to students, encourage environmentally friendly activities at home, and provide other support in terms of funds for books, school projects and field trips. The EE agencies were thought to play a major role in expertise, tools and practical suggestions as well as in training, funding and resources. The stakeholders thus considered EE as a vehicle for enhancing school relationships with other stakeholders. This summary is given in Table 4.22.

It can be seen that the stakeholders' involvement in activities related to EE were limited to cleanliness and planting trees or gardening. However, there was an understanding among the stakeholders in this study of the advantages from those activities, which might help to address some problems facing the country e.g. to reduce rubbish, eradicate or avoid diseases, make the environment to look good, create a suitable place for relaxation, reduce soil degradation or erosion, get oxygen or fresh air, increase the amount of rainfall, etc. The next section presents data about stakeholders' perception of collaboration in EE.

Table 4.22. Summary of Stakeholders' views on their involvement with EE

Own role → / Role of others ↓	STAKEHOLDERS' VIEWS ON INVOLVEMENT WITH EE					
	Students	***Teachers***	***School leaders***	***Govt leaders***	***Parents***	***EE agencies***
	Learn about the environment, Doing something for the environment, Active learner	Teach about environment Facilitate learning, Communi-cate the progress of teaching.	Facilitator, manager, monitor, coordinator, provider	Curriculum developer, Monitor, evaluator, Coordinator, Training Resource provider advocator	Participate in cleanliness, planting trees, seminars and projects	Educators Advocator
Teachers	Teach about environment Facilitate learning Advise behaviour	Colleague for exchange of ideas, resources, Promote behaviour Facilitate teaching	Accountable Responsible Encourage behaviour Collaborate with school leaders Collaborate with parents	Collaborate with others, Teach using, local environment , involve students in learning		Teach using real examples,
School leaders	Encourage teaching of EE, good behaviour and cleanliness	Supportive atmosphere Encourage Provide resources, Initiate EE clubs	Facilitate teaching of EE Encourage cleanliness Collaborate with teachers Collaborate with parents.	Collaborate with teachers,		Facilitate EE, Promote good behaviour
Govt leaders	Encourage EE, Educate society, Provide resources.	Provide resources Encourage, Recognition Provide fund	Training Provide resources	Collaborate with other stakeholders		Collaborate with other stake-holders
Parents	Encourage/ad vise behaviour, learning and cleanliness, Support, Help.	Support learning, behaviour, and fund Visit school	Collaborate with schools Learning, behaviour and Fund for school projects.	Collaborate with schools, for funds, projects, expertise	Encourage good behaviour. Support learning, Materials, fund.	Address local issues
EE agency	Provide expertise, provide resources, Advise society	Provide expertise, Resource, Training, Involve schools in projects	Collaborate with schools	Training, collaborate with schools		Collaborate with other stake-holders

4.5. Perceptions of collaboration in EE

4.5.1. Teachers' views of collaboration

In order to investigate evidence of or interest in collaboration, teachers were asked whether or not in relation to their work and EE in particular, they had worked with other people within and from outside school, e.g. government agencies, NGOs, EE agencies, local government, or community (question 5a). Generally the responses indicated that all the teachers had rarely worked with other people both within and beyond the school. The teachers, however, mentioned that some NGOs had involved their schools in some of their projects and asked them to facilitate some of the activities e.g. Joyce said. "We worked with Roots and Shoots club to set up some tree nurseries."

4.5.1.1 Merit of working together

The responses to the question asked to pinpoint what the teachers found or thought would be the merit of working together (question 5b) were categorized into four main areas, e.g. exchange of ideas, sharing experience, or getting new perspectives; getting connected, common understanding, and input, support or joint effort as discussed below.

Exchange of ideas or resources, sharing experience, getting new perspectives

The teachers explained that working together could be valuable for exchange of ideas and resources, e.g. Shem, head of Geography Kola, said, "Sharing and exchanging whatever is available for EE." Shem also added that working together could be an opportunity to share experiences, e.g. "It could be a great opportunity to share experiences and teaching plans for EE." Two teachers thought working with other people could help the implementation of EE and enable them to get new perspectives and skills, e.g. Emma, Head of Biology Singe, said, "It could facilitate the implementation of EE," while Lina said, "It is good to get new perspectives and skills."

Getting connected

One teacher thought that working together would help to get people connected, e.g. Ringo said, "Get connected to people who know much about EE."

Common understanding

The teachers thought that working together would lead to common understanding of EE among people, e.g. Ringo said, "Different people have different interpretations of what EE is all about. Common understanding is necessary for successful implementation of EE."

Input, support

Some teachers thought that solving the major problems facing the country would need involvement of many people, e.g. Shem said, "… Another thing is that our environment is too polluted, addressing this problem needs input from many people," and Sera also said, "You would like to help but it is obvious that you will need other supports."

4.5.1.2. Challenges of working together

Teachers were also asked to identify challenges in relation to working together (question 5c). Analysis of this question indicated two points raised by teachers as discussed below.

The majority of the teachers (6/10 responses) mentioned participation and commitment in their descriptions, e.g. Emma, head of a Biology department said, "Working together requires participation and commitment." Emma further emphasised that participation requires a good relationships between people saying, "The teaching would be successful if we could improve the interaction between people e.g. children-parent, parent-teachers, parents-administrators, etc." This suggests a school-based participation management, as the literature indicated that, with positive relationships, working together, a shared commitment to the school organisation coupled with open and ongoing communication, so that teaching could

be more effective (Foster & Hilaire, 2003; Khaparde, Srivastava, & Meganathan, 2005).

Time and funds

Some teachers (4/10) mentioned time and lack of funding as other challenges for getting people to work together, e.g. Anna said, "Would like to work together but need time." Shem also pointed out that, "Time and commitment and if you would like to meet people somewhere else you need to be financially ok."

4.5.1.3 Summary of teachers' views of collaboration

The data indicated that teachers are interested in associating, working and interacting with other interested parties provided they have time and are supported. This may be important for a new curriculum area like EE in Tanzania (Fullan, 1991, 2001).

4.5.2. School leaders' views of collaboration

School leaders were asked if they had worked with other people, e.g. NGOs, government agencies, EE agencies, and community in relation to EE and what they had found as the impact of that interaction and to explain any challenge identified (question 6). The school leaders illustrated that they had been working with teachers in the facilitation of school programs e.g. encouraging cleanliness at school. They also indicated that they had worked with the Ministry of Education, e.g. "We work with the Ministry in several matters for instance curriculum review and evaluation…." They also mentioned that, as leaders of the school, they had interacted with NGOs, community or parents in different ways for different purposes, e.g. Temba said, "We contact parents and ask if they can assist with funds for some school projects", and Ruta said, "We write and ask for support whenever we have problem."

4.5.2.1Relevance of working together

The responses on what the school leaders found important in working together included as a means of collective thought, for the achievement of goals, and for the improvement of students' learning.

Collective thought

The school leaders explained that working together could help with the implementation of EE, e.g. Temba said, "I think is a means of development of collective thought on how to implement teaching of EE." Mchovu also said, "Talk to each other, know what others are doing, get feedback of your thought, gain new knowledge."

Achievement of goals

The school leaders also thought achievement of goals was one of the outcomes of working together e.g. Mchovu, an academic dean in Singe school said, "It could enhance achievement of school's goals," and Ruta said, "It is also important for school success". He emphasised, for example, "In order to reach our mission we need to interact with other people who have experience in that matter."

Improvement of students' learning

Some school leaders thought working together could help in improvement of student learning, e.g. Chao, an academic dean in Kola school said, "Improve student learning at school, some parents are so supportive," Mchovu also said, "Help to encourage the students to study hard."

4.5.2.2 Perceived challenges of collaboration

In responding to a question on the challenges or the perceived barriers of collaboration in relation to the implementation of EE, the school leaders mentioned commitment, responsibility and accountability, two-way input, and sustainability.

Commitment, responsibility and accountability

The school leaders talked about commitment, e.g. Temba said, "Unless peoples involved are committed, there won't be impact at all." The school leaders also emphasised responsibility and accountability in collaboration, e.g. Temba elaborated that, "We work as a team but…but we also talk of accountability in order to accomplish our responsibilities."

Input

The school leaders also mentioned a two-way input as necessary in collaboration and explained that there is a problem when the contribution is only coming from one part, e.g. Temba noted, "We ask support from the parents or NGOs to run some school activities, the only problem is that they don't get our inputs." This implies that collaboration needs to aim for mutual benefit (Ballantyne, Fien & Packer, 2001; Rao, Arcury & Quandt, 2004).

Sustainability

Other school leaders thought the challenge of collaboration is how to make it sustainable, e.g. Temba, head at Singe school said, "You can't make it once and say it is done, you have to make a follow up. It is a process which has to be sustained."

4.5.2.3 Summary of school leaders views of collaboration

The school leaders generally thought that working together could help with the teaching and learning of EE. However, they considered collaboration as a process that needs to be balanced and maintained, therefore, the interested parties need to dedicate their time and resources for mutual benefit.

4.5.3. Government leaders' views of collaboration

To understand government leaders' views of collaboration, they were asked whether in their working position they had ever worked with other people in activities related to development of EE in Tanzania and to explain what were the impact and or challenges. The government leaders explained that they had been working with other government sectors, private sectors, NGOs, and communities in various activities related to EE.

Curriculum review

The government leaders mentioned that they had been working with other interested parties in the curriculum review, development and trial of EE materials e.g. Obed said:

> Yes, Working with NGOs, TIE, teachers, University people, environment education clubs, EE volunteers in the curriculum review for incorporation of EE, preparation of instructional manual and workshop programs, trial of EE materials, evaluation of the workshop program and many other activities related. (Obedi, MoEC)

Training

The government leaders mentioned that they had been working with other related parties in the training of teachers, e.g. Juma, from NEMC said, "We have been working collaboratively with MoEC, TIE and other EE agencies/NGOs on training of teachers." Njau also said:

> EE is one of the crosscutting issues; it is now infused in every subject. It is supposed to be implemented in 2006/2007 and we, in collaboration with MoEC and other related parties are now running workshop for teachers on how to integrate EE in each subject. (Njau, TIE)

Projects

The government leaders also mentioned that they had been involved with other people in different activities or projects related to EE e.g.:

> We are also working with Nile Basin Initiatives; those surround Nile River for EE management, we required cooperation. We also register NGOs, up to this time we have registered up to 200 NGOs. We are also working with Ministers and Prime Ministers for awareness courses and we give them EE dose. (Juma, NEMC)

The development of EE strategy

The government leaders also cited some of the results of collaborative activities, e.g.:

> We worked with NGOs and MoEC for the development of EE strategies; we are involved in training of teachers for this curriculum to be implemented in 2006/2007. In the light of collaboration, there is an organised workshop which is supposed to take place 28th /2 /06 which will involve various stakeholders. In the workshop each participants is requested to prepare a summary on how they implement EE. The brief report will be discussed and summarised to form part of Tanzania national report. (Juma, NEMC)

4.5.3.1. Relevance of working together

Joint effort

In explaining the advantages of working together, the government leaders mentioned that it has been and could be a means of joint effort, e.g.

> For example we have been working with other stakeholders to facilitate workshop for teachers and inspectors. And in the preparation of EE strategy 2005-2009 it has been a joint effort between the Ministry for Environment, Ministry of Education and other stakeholders. (Juma, NEMC)

Through joint effort the government leaders explained that they had a plan for capacity building, professional development of teachers and other related activities that would help in the development of EE in Tanzania, e.g. Njau, from the curriculum development unit (TIE) said, "We had a plan to work collaboratively with Ministries, NGOs, community, local council, schools, business and industries in professional development of teachers to enhance teaching of EE in schools."

Cooperation

The government leaders talked about cooperation in collaboration, e.g. Juma said, "Yeah, co-operation and sharing resources in addressing environmental challenges." They also mentioned that working together could be a means of sharing experiences, expertise and resources, e.g. Obedi, from MoEC, saidi "Sharing experience, expertise, and resources." Juma , also from NEMC pointed out that:

> We have another very important thing, this is: National EE committee, it is headed by the NEMC and its aim is to strength EE national strategies. It is an opportunity for professionals to work together to develop expertise and exchange of experiences. (Juma, NEMC)

The government leaders pointed out that, through collaboration the interested parties in EE might contribute their resources e.g. Juma, from NEMC said, "NGOs and Ministries, they contributed financial and material resources which made preparation of this strategy a reality." Utilisation of resources was also indicated as one of the

advantages of collaboration, e.g. Njau from TIE said, "For effective utilization of available resources." The government leaders also pointed out that through collaboration and cooperation people would complement their responsibilities and thus avoid competition, e.g. Njau said, "Complementing of responsibilities rather than competing."

Development of EE clubs/common understanding

The government leaders mentioned that working together could be a means of developing common understanding, e.g.:

> We have a plan to form EE clubs where we would meet sometimes to talk about EE Programs and how they are going on. The objective is to know one other, and to develop common understanding. We encourage schools to form EE clubs and to involve with other clubs as well. (Njau, TIE)

4.5.3.2 Perceived challenges

When asked what were the perceived challenges and their suggestions for ways the collaborative system could be maintained, the government leaders mentioned coordination, leadership, responsibility and an active role.

Coordination

The government leaders mentioned coordination as one of the challenges to the development of EE in Tanzania, e.g.:

> Another challenge is lack of coordination, as I have said there are at least 200 NGOs registered, all dealing with EE. It is not easy to judge who is doing what, their success or failure, due to lack of coordination. (Juma, NEMC)

In elaborating this point Juma also said:

> But one thing is that because of many players dealing with EE issues everybody wants to make it as a deal! If they get some funds they then proceed. We need to have coordination or an understanding of what one has been doing, what is needed is to see what has been done and what has not been done, what has been left aside so as to fill the gaps. Who is

> responsible for what is a problem which has not yet been resolved. (Juma, NEMC)

The government leaders explained that the lack of coordination has been the challenge to the development of EE in Tanzania and therefore thought that collaboration could be a means of coordinating EE activities, e.g.:

> There are more than 200 NGOs dealing with EE, no we did not have such interaction, NEMC is well informed of all NGOs. There is a move nowadays where we/all stakeholders are planning to sit together to know and understand who is where and what they are doing. (Njau, TIE)

The lack of coordination indicated how different people do different things depending on their interest and opportunity. The government leaders mentioned leadership as one of the challenges in collaboration and explained that the leadership should play an active role, e.g. Obedi said, "There has to be strong leadership for collaboration in each stakeholder concerned," and Juma emphasised the an active role in leading collaborative work as he said, "We have been playing active role in various collaborative activities."

Shortage of resources

The government leaders pointed out limited resources as a challenge to curriculum implementation, e.g. Obedi, MoEC said, "Lack of resource also affects curriculum implementation." In discussing their suggestions to this problem Obedi said, "There is a need of linkage, or what we call partnership, among stakeholders such as MoEC, TIE, communities, business and industry parties and NGOs. Yes, this can help in provision of teaching and learning materials, facilities, and training of teachers".

Communication

The government leaders pointed out the importance of communication between schools and parents, e.g. Njau said, "If they [the children] learn something at school it should also be known at home otherwise it would be difficult to be accepted at home." This seems to be logical since parents have different expectations of their children to the expectations of the school, and that EE is an area which has not been

familiar to parents, means it is relevant for parents to be informed and get involved with the schools' programs related to EE.

4.5.3.3 Summary of government leaders' views of collaboration

The data from the government leaders indicated that coordination can enhance or inhibit collaboration activities. The data thus suggested that through coordination of skills, experiences, expertises, funding and resources different stakeholders can work jointly for provide effective implementation of EE in Tanzania.

4.5.4. EE agencies' views of collaboration

The EE agencies' officials were asked whether or not their activities or Programs had involved working with other people e.g. teachers, parents, Ministry staff etc., and explain what they felt was the impacts of this interaction. The responses indicated they had been involved in various activities in formal as well as in non-formal sectors.

Facilitated EE activities in formal sector

> We have been working with NGOs, other environmental clubs, and schools in environment conservation. We have been invited in some schools to provide lectures on environment conservation and we have been conducting various seminars for teachers and community. We also organised environmental education Programs, school visits to reserves and school competitions. (Judy, WCST)

The EE agencies further emphasised that they had participated in development of environment strategy, e.g. Judy said:

> As I pointed earlier, we participated in the development of environment strategy (National Environment Strategy) working with ministries in planning strategies for incorporation of EE in formal and non-formal sectors. (Judy, WCST)

The EE agency respondents mentioned that they had worked with other NGOs and schools to facilitate action-oriented activities related to EE, e.g.:

> We collaborate with teachers and other NGOs in tree planting with EE supervisors. The school had a club responsible for it although it is emphasised that the whole school be responsible for it. (Shuma, JEMA)

Facilitate EE activities in non-formal sectors

The EE agency respondents also mentioned that they had been working with some interested parties to sponsor some activities that helped to raise public awareness of the environmental issues, e.g.:

> We worked with some NGOs to sponsor environmental week to raise public awareness of the environmental issues, yeah, they sponsored but cannot meet all costs like lunch and drinks for school children. They can sponsor t-shirts, flyers, and or dustbins. Yeah, sometimes they say they have so many requests. (Shuma, JEMA)

4.5.4.1 Advantages of working together

Establish clubs

In responding to a question asking to identify advantages of working together (question 5) the EE agency respondents further elaborated that working together could be a means of engaging people in discussion, e.g. as also mentioned by government leaders, Judy said, "My suggestion is to establish environment clubs to discuss issues of environment conservation."

Support

The EE agency respondents also mentioned support as one of the advantages of working together e.g. Shuma indicated that there was a problem with empty bottles littering the university campus and so the concerned companies had been consulted to help with the problem:

> Oh yes, we have been working closely with water bottle companies, because the whole University was worse of the bottle and we faced them and ask for their support for environment. What they did was to sponsor the provision of dustbins and other related for recycling. (Shuma, JEMA)

Conflicting interests

The EE agency respondents identified that difference in interests among people is one of the main challenges in the development of EE. As also identified by the government leaders, there was an indication of the need for complementation of ideas, resources and action between government and private sectors. The EE agency respondents also talked about the issues of interaction, contribution and responsibility, e.g.:

> My view, every sector has to be responsible in one hand or another on environmental issues. Our theme this year is *Protect the environment to serve the world from draught and hunger*. It is impressive our president is serious about EE. There should be interaction between different sectors and every one have to be responsible, they can set fund for activities, particularly for EE. (Shuma, JEMA)

4.5.4.3 Summary of EE agency views of collaboration

The data from the EE agency respondents suggested that contribution, responsibility and complementation of interest, ideas and actions could enhance collaboration of stakeholders in enhancing activities related to EE in Tanzania.

4.5.5. Parents' views of collaboration

In order to explore parents' ideas about collaboration they were asked whether or not they would like to be involved with their children's learning at school and if yes what they would like to be involved with (question 12).

Table 4.23. Parent involvement with their children's learning

	% of parents (n = 56)		
Like to be involved	91	not like to be involved	9

Almost all the parents (51/56, 91%) indicated that they would like to be involved with their children's learning. In explaining the reasons for their interest in involvement, the parents pointed out that it would enable them to know more about the progress of their children, e.g. "Make a follow up to understand their progress in

terms of academic and behaviour." The parents also explained how they would be involved, e.g. "Visit in schools and talk to teacher about his/her progress." They also mentioned the issue of support, e.g. "If necessary I will buy extra books related to his/her subjects." Other parents mentioned paying school fees as one of their responsibilities and supporting with other costs, e.g. "Pay school fees and meet all costs related to provision of education." Interestingly, only one parent mentioned organising students for action, e.g. "Create a special group of pupils who will pioneers in the action of environmental conservation, hence motivate others." However, the parents talked about communication as necessary for them to get involved, e.g. "I am interested provided I'm provided with proper orientation of what is going on at school," or "I have to be informed of the school program so can get involved." For those who indicated no interest to be involved with their children's learning (5/56, 9%) they provided their reasons and which included lack of time and other commitments, e.g. "I am interested but I have got other commitments".

4.5.5.1 Summary of the parents' views of collaboration

From the data it can be seen that although most parents (91%) indicated interest in involvement with their children, their involvement was limited to understanding the progress of study and behaviour of their children and other responsibilities such as paying school fees and buying books for EE. There were no indications of the involvement of parents in decision-making about school Programs. Only one parent thought about involving children in action-oriented activities. However, the parents pointed out that they should be provided with information on what is taking place at schools in order for them to get involved. Lack of time or other commitments were mentioned by those who showed no interest with involvement. This shows that parents need to be encouraged and engaged in advanced school Programs and other curricular decisions (Epstein, 1996; Pang, 2004; Tal, 2004).

4.5.6. Summary of stakeholders' views of collaboration

The data indicated that although a collaboration tradition was not very extensive in Tanzania, there were considerable ideas on its potential. These included joint effort, collective thought, common understanding, share experience, resources and expertise,

exchange of ideas, get new perspectives, get connected, input, support, achievement of goals, improve student learning, coordination, contribution, utilization of resources, support, and responsibility. Literature identifies these aspects as collaborative activity, attributes or essential elements for collaboration (Montiel, 2005). The challenges in collaboration identified included involvement, responsibility and commitment, accountability, contribution, communication, human interaction, differing interest, coordination, leadership, sustainability, time, funding, and resources. The literature regards these as contextual factors or characteristics of successful collaboration or enabling or inhibiting factors for collaboration (see Khong & Ng, 2005; Montiel, 2005).

Generally, respondents indicated their willingness to collaborate. The teachers indicated interest in collaboration provided they have time and are support. The data from school leaders indicated that collaboration should be considered as a continuous process to be sustained and needing the dedication and devotion of interested parties. Coordination and complementation of ideas, resources, actions and related, were suggested by the government leaders as well as the EE agencies' respondents as necessary conditions for collaboration. The data from the parents indicated the need for engagement and communication of people in collaboration. Table 4.24 summarises these ideas.

Table 4.24 Summary of stakeholders' views of collaboration

	Evidence	Advantages	Challenges
Teachers	Rarely work with other people, Work with NGOs to Set up tree nurseries	Exchange of ides experience and resources; Get connected; Common understanding; Input, support.	Participation and commitment; Human interaction; Time and fund.
School Leaders	Work with teachers in facilitating school Programs; Work with Ministry in curriculum review; Seek support from NGOs and parents.	Collective thought; School success; Achievement of goals; Improve students, learning.	Commitment, responsibility and accountability; Leadership; Sustainability.
Government leaders	Work with both private and government sectors in facilitating professional development Facilitate EE activities and projects	Joint effort; Share experience, expertise and resources; Cooperation, contribution; Utilization of available resources; Shared understanding.	Communication; Coordination; Shortage of resources.
EE agencies	Facilitate EE activities in Formal and non formal sectors; Participate in development of EE strategies; Form EE clubs; Teach EE; Trips and tours with children; Seminars, awareness programs to society; Tree planting.	Discussion about EE issues; Support, sponsor.	Conflicting of interests; Lack of coordination.
Parents	Make a follow up about study and behaviour of children; Buy books; Pay school fees.	Understand progress in study and behaviour.	Communication.

4.6. Summary of chapter

This chapter has presented the data derived from this study based on the research questions. It started with the presentation of stakeholders' views of EE. This was followed by the views of their roles, involvement and participation in EE, then their views on collaboration. The data indicated that the majority of the stakeholders (63%) considered EE as education, studies or programs for the development of literacy about the environment or issues. In terms of their roles, the stakeholders indicated a range of ways in which they had played or could play a part in the development of EE. Teaching of EE in schools was identified as one of the roles. There was a narrow view on the ways in which they would participate or engage children in decision-making. Some mention of action-oriented activities included picking-up rubbish, planting trees and gardening. Few thought that EE could be a means of helping individuals to change their habits and become involved in solving local problems like pollution or eradicating diseases.

The need for teacher support in terms of training, resources, encouragement and funding were mentioned by the majority of the respondents. However, it has been suggested that the teachers would need to change their teaching styles to fulfil the objectives of EE, work with other colleagues for exchange of ideas, resources and also play apart in their professional development. The school leaders were identified as the key players in providing a supportive atmosphere for teaching and encouraging environmentally friendly activities at school as well as initiating and facilitating a collaborative atmosphere in the school and outside networks so that other stakeholders could be involved.

Stakeholders considered that collaboration relationships can be a means of support as they can enable collaborators to contribute their ideas, experiences, resources and expertises, for achievement of EE goals. Factors for consideration for effective

collaboration were identified and these included participation and commitment of collaborators, leadership, and resources in terms of time, funding, and people. The main points derived from the data and discussed further in chapter five were:

- Limited understanding of EE, the main emphasis was on education *about* the environment or issues, less on education *in* and *for* the environment;
- Inconsistency in the views of EE, a gap between government leaders' views and curriculum implementers' views of EE;
- Emphasis was on developing literacy about the environment or issues; there was narrow view on participation in action and/or decision making;
- Teaching of EE was mainly based on a traditional model, with less involvement of children in learning, discussion, problem-solving activities, field trips, projects or community-based participatory research;
- Stakeholders' involvement was limited in activities for making the environment to look good, less action-oriented and problem-solving. However, there were understandings of the advantages from those activities e.g. reduce rubbish, eradicate or avoid diseases, reduce soil degradation or erosion, get oxygen or fresh air, increase the amount of rainfall, etc.;
- Teacher support and collaboration are crucial for effective implementation of EE;
- Parents involvements in schools and their children's learning and behaviour;
- The need of cooperation and participation of government sectors and NGOs for EE initiatives;
- School-based participation management and establishment of linkages in executing EE programs.

CHAPTER 5
DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

5.1. Overview of the chapter

This chapter discusses the main findings of this study. The discussion is focused on the research questions and it links the research findings and the literature. This is followed by a discussion on the conclusions reached from the findings. The implications, recommendations for consideration and suggestions for possible areas for future research are given in the last sections.

5.2. Discussion of the findings

The three research questions in this study related to stakeholders' views on EE and its relevance in Tanzania; stakeholders' perception of their roles and involvement in EE; and stakeholders' perception of collaboration in the implementation and development of EE in schools in Tanzania. This section discusses the main points derived from this study.

5.2.1 Views of EE

There are different interpretations of EE and therefore different ways of how it is practiced (Barker & Rogers, 2004; Daudi & Heimlich, 2002). According to Daudi and Heimlich (2002), the different meanings for people depends on their continuum of understanding and their school of thought which may have been influenced by their experiences, professional and social backgrounds, academic level, and learning achievements. The literature suggests that when discussing definitions of EE it is helpful to consider its historical trend (Daudi & Heimlich, 2002; Gough, 1993; Gough, 1997; Hargreaves, 1996) because of the nature and the change in emphasis in EE which historically has developed over the last thirty years (Gough, 1997). The

five categories of EE objectives based on the *Tbilisi Declaration,* which are the basis for most government polices on EE (as outlined in Chapter 2, p.11) are identified as awareness and sensitivity, knowledge and understanding, attitudes and values, skills and participation, and action. Literature suggests that to address these five objectives, the teaching of EE should comprise three dimensions: education *about* the environment, education *in* the environment, and education *for* the environment (Lucas, 1993; Tilbury, 1995)[6].

The present study sought to understand the Tanzanian stakeholders' views of EE and how they are related to their views on participation and collaboration in EE in schools. In an effort to present the stakeholders' views of EE, data were analysed based on these five objectives and three dimensions of EE. This data is now discussed within the three dimensions but also acknowledging the aims of EE. The research findings reported in Chapter 4 revealed congruencies, but also some discrepancies in the views of EE held by different groups of stakeholders in Tanzania. Interestingly, some of these views are similar to those reported in the literature for studies in other countries (Barker & Rogers, 2004; Bolstad et al, 2004; Brown, 2003; McLean, 2003).

*Education **about** the environment*

The findings indicated that the majority of the stakeholders in Tanzania, especially the students, teachers and school leaders, located their descriptions of EE on education *about* the environment, less on education *in* and *for* the environment. These findings corroborate findings from other studies in New Zealand (see Barker, 1997; Brown, 2003; MacLean, 2003). The main concern of the stakeholders was for Tanzanian people to develop environment literacy, for example, the main reason for teaching EE in schools as identified from teachers' responses was to help students acquire knowledge and understanding of the environment and its associated problems. Some local problems mentioned included diseases, pollution soil erosion, and draught. Students mentioned that through EE they would acquire knowledge for solving local problems like the spread of Malaria. A comment from one of the leaders from the government agencies also agreed with the students' views that there is a lot of

[6] Please refer to Chapter 2 for the description of *in*, *about* and *for* the environment

pollution in Tanzania and that if the children understand about its effect, they would help in keeping the surroundings clean. Similarly, parents pointed out that if the children have knowledge about the importance of the environment, they will not pollute it.

Although this had been the earlier focus of EE, with the assumption that increasing knowledge of the natural environment will lead to actions that will prevent further deterioration of the environment, literature suggests that this will not alone achieve the goals of changing societal actions (Gough, 1997; Jensen & Schnack, 1997; Lucas, 1993). It has been suggested that the awareness, knowledge and understanding aspects should enhance students concern towards the environment and resolution of environmental issues (Tilbury, 1995).

More recent perceptions of EE have reflected an emerging social, political, economic perspective of 'environment' (Barker, 1997), and the current definitions of EE include critical thinking skills (Volk & Cheak, 2003), in which an individual must be able to weigh the sides of an issue and make informed responsible decisions, and develop action-oriented perspectives (Jensen & Schnack, 1997), in which individuals actively participate in addressing environmental issues. This call to widen the scope of EE has been implied in the international declarations and agreements such as the *Tbilisi Declaration* in 1977 (UNCED, 1978), the *Brundtland Report* in 1987 (World Commission on Environment and Development (WCED), 1987), and *Agenda 21* in 1992 (UNCED, 1992). Therefore, a school curriculum should give children the opportunity to acquire knowledge, skills, and attitudes that will lead them to form their own opinions about what is environmentally sound, and take effective action, encourage students to think critically about environmental issues and give them skills and confidence to be actively involved in local environmental issues (Hargreaves, 1996).

However, it has been realised that most ideas and concepts that underpin EE have been developed outside the school education system and were closely tied to international developments, and NGOs, which have been largely based on their

awareness raising programs, political agenda and advocacies (Disinger, 2005; Irma & Downie, 1999; Johnson-Pynn & Johnson, 2005; Slingsby & Barker, 2005). This might have influenced the Tanzanian stakeholders' views of EE, bearing in mind that EE is still at its infant stage in Tanzania. The institutionalised practices of many schools, with knowledge transfer methodology, also run counter to the interdisciplinary values, problem-solving and action orientation of EE (Fien, 1993). Criticism of this dominant behaviourist approach to EE has been noted (Fien, 1993; Gough, 2002; Jensen & Schnack, 1997), and points out that if the major purpose of EE is to encourage students to develop beliefs and action which help preserve the earth for future generations, then the focus needs to be on action. However, before people can actively participate, acquisition of relevant knowledge and skills in EE as well as change of attitudes does play a major role (Ballantyne & Parker, 1996). In summary in their view of EE, most groups in this study emphasised education about the environment, indicating a lack of understanding across all groups of EE, and suggesting the need of support for people in Tanzania to widen their scope and understanding of EE.

*Education **in** the environment*

Relating the criticism of the objective view of EE with the behavioural didactic approach, Linke (1993) suggests that it is also important in discussing the effective objectives of EE to examine the methods for achieving these objectives. As discussed in Chapter 2, effective teaching of EE would need to depart from the behavioural didactic approach (Osaki, 1995). Theories such as experiential learning involve the learners actively in the learning process (Eames et al., 2006; Kolb, 1984; Law, 2003; Rogers, 1969). Education *in* the environment offers such an opportunity as it allows learners experience beyond the classroom, and often in the natural environment. It can be in the form of projects, camps, field trips, litter-pick ups and activities utilising the school environment (McLean, 2003). The data in this study indicated that only a few stakeholders located their descriptions of EE on *in* the environment. Taking students out for field trips, as mentioned by few, was meant for studying the environment; only one teacher mentioned the issue of interaction of students with nature. However, there was no indication of how the student would be facilitated.

Data from the students, however, indicated the need of emphasis of field trips as they thought that visiting some places would help them to be aware of issues around them, learn about land features, different weather and climate, and increase their understanding and care of the environment. The parents held similar views to the students that in field trips the students would see the actual environment/ecosystem, and could learn from experience. The parents also believed that in a trip there is potential for a lot of learning and it is good for sociability.

It can be seen that some of the these comments are consistent with the *Tbilisi Declaration* adopted at the UNESCO conference in 1978, which stipulated that through EE people would gain an understanding of how their individual actions affect the environment, acquire skills that they can use to weigh various sides of the issues, and become better equipped to make informed decisions and participate in the resolution of these issues. Research in EE supports this assertion and points out that it is important for children to have opportunities to experience both their impact on the environment and the impact of the environment on them (Bolstad et al., 2004).

It is suggested that education *in* the environment would help children to develop skills such as data gathering, investigation and analysis of issues and evaluation (McLean, 2003). Despite these potentials, the findings from this study indicated that this kind of learning experience was under-emphasised in Tanzanian schools and pointed to the need for encouragement of it for effective learning and development of EE in Tanzanian schools. However, although some teachers seem to agree with this suggestion, they mentioned issues such as time and lack of funds as constraints to such initiatives. However, the study by Tal (2004) suggests that in order to reduce costs, some field work programs can be scheduled to happen within a walking distance, except for specialised visits such as to a museum, where the parents can be asked to provide support. According to Tal (2004), parents can be involved in aspects such as planning activities, guiding the field trips and mentoring teams of students. Schools in Tanzania need to see the importance of facilitating the involvement of parents in school programs. Parents also need to develop an understanding of the relevance of their involvements.

*Education **for** the environment*

The lack of emphasis on helping students develop problem-solving skills, as revealed in this study, is contrary to the recommendations for EE objectives obtained in International Agreements (Gough, 1993). It has been argued that it is not sufficient for students to learn about the environmental problems or the causes and consequences of environmental problems, or to be worried or concerned about environmental problems, or to accumulate skills that might help them to identify the causes and possible solutions of environmental problems in the future. One can quite conceivably be aware of a problem and even potentially possess skills to solve the problem, and still never actually take any action towards solving that problem (Bolstad et al., 2004). The Tbilisi goal of empowering social groups and individuals towards resolution of environmental problems has already been noted (UNESCO, 1978). The intention of the goal was to change people's world view as well as to encourage them to take part in making decisions and taking relevant actions in resolution of environmental problems surrounding them (Gough, 1993). Despite many environmental problems facing the country (Johnson-Pynn & Johnson, 2005; URT, 1997), it can be seen that only a small percentage of the respondents in this study considered that EE in Tanzania would help individuals to develop skills which would enable them to participate in addressing local problems. The comments of some teachers, for example, indicated the limitations of involving students in decision-making and action-oriented activities in Tanzania. Similar views were noted from parents, yet government leaders saw it as important.

The trend towards action taking by the students has been noted to be under-emphasised in formal schools (Brown, 2003; Cowie et al., 2004; McLean, 2003). The reasons for such curriculum problems of the rhetoric-reality gap in environmental education have been explained in a number of ways, through teacher organisations and transmission of knowledge, and structural organisation of schools (Fien, 1993). For example, the complex nature of EE means that teachers need to be competent environmental educators employing participative pedagogies in engaging children in

action-oriented activities; however, this has not been always the case (McKenzie, 2006; McLean, 2003). Many explanations that focus on teachers' views see teachers as lacking the expertise, or will, to actively engage students in environmental issues (Fien, 1993). The report of the survey in New Zealand schools also concluded that teachers lack the time to plan and take action with their students, and sometimes lack the equipment and resources to facilitate student action-oriented activities such as creating gardens or planting trees (Bolstad et al., 2004). Suggestions for professional development of teachers especially *for* the environment have been noted (Brown, 2003; McLean, 2003).

Summary of the views of EE

The development of knowledge of the environment and issues associated with it is a worthwhile goal, but individuals need to be engaged in investigation and analysis of issues, and participate actively in resolution of issues. The data indicated limited views of EE, which suggested a perceived need of support for people in Tanzania to widen their scope of understanding of EE and to change how educational programs were being offered in Tanzanian schools, so that teaching and learning of EE would involve *in*, *about* and *for* the environment.

5.2.2. Involvements with EE

Regarding the second research question, the study investigated the nature of involvement of stakeholders by asking about roles in relation to EE, responsibilities and/or support for EE. Analysis of data showed that there were some similarities as well as some variation in the descriptions of the patterns of involvement of stakeholders in EE. The data also indicated the limited view of stakeholders on their roles and relevance of involvement with EE.

Teaching

Teaching of EE was mentioned as one of the ways some stakeholders have been or would be involved in the development of EE in Tanzania, for example, the main role as mentioned by teachers was to teach about the environment. This corresponded to

what the majority in this study viewed as the meaning of EE, while the school leaders indicated that they would make sure teaching of EE is done. Apart from involvement with projects and awareness programs with the community, the EE agencies' respondents also mentioned that they had participated in teaching about the environment in schools. Analysis of teachers' as well as students' responses on how the teaching had been effected showed that this was mainly based on a traditional teaching and learning model, with little involvement of children in discussion, problem-solving activities, field trips, projects or community-based participatory research. Research questions the effectiveness of such an instructional context (Palmer, 1998; Volk & Cheak, 2003). This is because, with the traditional transmission method, the students become passive and do not get an opportunity to participate actively in the lesson and exploit their own experience and develop a positive impact towards the environment (Eames et al., 2006; Law, 2005; Osaki, 1995).

According to Osaki (1995), learning happens when students play an active role in the learning process. This is because children build their confidence and feel good that they are part to the learning process. Indeed, active involvement develops the child mentally, socially, and emotionally (Herbert, 1995). The nature of EE calls for change in the role of teachers from instructor, in which knowledge is transferred, to facilitator, for learning to take place. That is, to involve learners in the learning process, give them the chance to explore by themselves, and encouraging them to participate actively in group discussion and problem-solving activities (Eames et al., 2006; Osaki, 1995; Willson-Hill, 2003). This concurs with what the government leaders in this study suggested, that teachers in Tanzania could use the school and local environment in teaching EE, encourage students to play an active role in learning, and work with others to facilitate EE. In this sense, teachers can use experiential learning methods and encourage pupils to take action towards the environment (Eames et al., 2006; Law, 2005).

Teacher support

The challenges with respect to the teaching of EE mentioned by teachers in this study, as with other studies (see Bolstad et al., 2004; Brown, 2003, McLean, 2003) were limited instructional materials e.g. textbooks, and lack of training on how to include EE in lessons. Fien (1993) reports the result of some studies which found that many teachers feel quite unqualified to teach EE and that they believe they lack logistical support in terms of resources, time and suitable class size. As the data indicated, the common concern for all stakeholders in this study was teachers support. Training of teachers has been noted as an important prerequisite for effective curriculum implementation (Fullan, 1991). This has been recognised as relevant in promoting EE, (Fien, 1993; Fien & Corcoran, 1996). This is because EE is considered as a new area in the curriculum, and many teachers had received their education and pre-service training long before interdisciplinary EE were developed (Fien, 1993). McLean (2003) reports factors helping teachers to implement environmental education especially *for* the environment in Otago primary schools, NZ, that teachers implementing environmental education had undergone professional development. She noted that the amount of EE teacher education had related directly to the amount of quality education *for* the environment that teachers implemented. There is a need for teachers to be supported both within and outside school and in professional development for successful implementation of environmental education in schools.

The data indicated that the government and EE agencies' respondents had been involved in training of teachers; however, lack of funds was identified as the major cause of a limited number of EE trained teachers in Tanzania. The lack of funding has lead to a minority of teachers being trained, it was certainly what teachers and school leaders claimed for in this study, and thus suggests that all stakeholders should become involved in facilitating the professional development of teachers.

Environment action

As the data indicated, the involvements of the majority of the stakeholders were limited to activities such as cleanliness, planting trees and gardening. The stakeholders mentioned some advantages from these activities e.g. reduce rubbish, eradicate or avoid diseases, reduce soil degradation or erosion, get oxygen or fresh air, increase the amount of rainfall, etc. However, there was an indication that the students were involved with these kinds of activities when organised by external agencies.

According to Jensen and Schnack, (1997) involving students in clean up or planting trees might help the environment, but the question is, does it help them to take worthwhile actions for the environment in the future? Involvement of the students in activities such as those also raises the question of whether or not the students understand the reason behind involvement, or made a decision to be involved (Hart, 1997). For example, if an outside agency initiated tree planting and students are not involved in the decision-making process, this is considered as an activity, rather than an action (McLean, 2003). One of the criteria required for action as suggested in the literature (Hart, 1997; McLean, 2003) requires the students' involvement in the decision-making process. However, as noted by some teachers and parents in this study, children in Tanzania were considered as still too young to be involved in decision-making. As the data indicated, involving students in decision-making was only mentioned by the government leaders.

Jensen and Schnack (1997) also remind us to differentiate activities and actions. For example, the activity may involve students in decision-making, but it might address the symptoms rather than the cause of the environmental issue. Research has found that EE which focuses on teaching students about the causes and severity of the world's environmental problems can leave them feeling hopeless and despairing about the future (Hicks & Bord, 2001) and actually discourage them from taking action, because they feel they cannot make a difference. Thus schools should help students to take actions which address the root causes of environmental issues (Breiting & Mogensen, 1999). For students to participate, they need to be supported,

helped to identify real problems, determine possible solutions and to participate in some kind of meaningful course of action that they have helped to determine (Breiting & Mogensen, 1999). In doing so, students would develop skills and knowledge e.g. how to seek out information and resources, how to approach people in the community for advice or support, or how to take into account different peoples' needs and perspectives on an issue relating to the environment (Bolstad, 2003). Students need to study the root causes of environmental problems within their local area (McLean, 2003).

Hart (1997) described people-centred approach to development where he stresses the fact that through community research and action, children will develop a sense of shared responsibility and skills that will enable them to continue to participate as adults and to recognise the importance of their participation in local, national, and even global environmental decisions. Hart (1997) suggests creating programs based in the community, with action research as the dominant methodology, which involve children's participation in the environment of their communities. A study by Rao, Arcury and Quandt (2004) involved students in planning, data collection, analysis and reporting of results. The results indicated that community benefited from the students' involvement, while enhancing the development of the students.

Similarly, the Volk and Cheak's (2003) study which evaluated the impact of EE programs on students, parents and the community involved learners in participating in trying to solve local issues. The findings showed not only the program was successful in enhancing students' cognitive skills and critical thinking skills, but also benefited the community. In terms of participation, the data indicated that the students appeared to have a feeling of competence with taking action, e.g. in recycling, writing editorials for local newspapers, testifying at the state capital etc., and encouraging other community members to take action as well. This suggests that there could be such mutual benefit when the students in Tanzania participate in community-oriented activities such as those revealed in these studies

Environment behaviour

Although the findings of this study showed that only a few respondents described the relevance of EE in terms of helping individuals to change their habits and be involved in solving local problems like pollution, encouraging behaviour change towards the environment was mentioned as one of the ways in which the stakeholders could play a part. Their ideas agree with research findings on interpersonal relationships which indicated an important role the parents, friends, families, or other adults can play in stimulating environmental behaviour (Palmer & Birch, 2005). This is particularly important in EE where environmental behaviour is relevant to environmental concern, sensitivity responsibility, and where knowledge can be translated into action (Ballantyne & Packer, 1996).

It is suggested that effective learning in EE involves not only a change in understanding, but also a willingness to depart from previously held attitudes and beliefs and to make commitments to new ways of interacting with the world (Ballantyne & Packer, 1996). Individual change in behaviour is particularly important in Tanzania as there are many problems which seem to be as a result of individual actions (Johnson-Pynn & Johnson, 2005). Ballantyne and Packer (1996) report the result of a study which analysed school students' perceptions of pollution and environmental problems. Of the three main findings reported, two parallel behavioural change. These included the 'personalistic view' which indicated that environmental problems are mostly physical problems that are a direct result of individual polluting behaviour and subject to individual control, and the 'politicised view', that environmental problems are global issues representing problems of conflicting interests, choices, and values that can be addressed only by change of lifestyle.

Literature suggests how environmental behaviour might be developed. Hungerford and Volk (1990) emphasised instructions that focus on students' ownership and empowerment. They suggest involving learners in in-depth education, and providing support for them to take an active part in identification, investigation and resolution of current environmental issues. Another way is exposure to an object or

environmental issue e.g. outdoor experiences that provide students with an opportunity to observe and discuss what they like, dislike, and would like to improve in their environment (Ballantyne & Packer, 1996). The parents in this study expressed a similar view when commenting on why their children should be involved in field trips feeling that they would be encouraged through their experience of the environment. Other studies indicated that involving the parents encouraging them to discuss ideas with their children is contributing greatly to enhancement of EE learning (Ballantyne & Packer, 1996). However, according to Ballantyne and Packer (1996), children need to be supported to develop basic ecological knowledge, which would support informed behaviour. Teachers in Tanzania are advised to use strategies that recognise the interrelatedness of environmental knowledge and behaviour.

Summary of the views of involvement with EE

This section presented a discussion on the views of stakeholders in Tanzania on their involvement in the implementation and development of EE in schools. The data indicated a range of activities the stakeholders had been or would like to be involved in, and these were grouped into four major activities: teaching, supporting teachers, environment action, and encouraging environment behaviour among individuals.

5.2.3. Perceptions of collaboration

The third research question explored the perception of Tanzanian stakeholders of collaboration in EE. As mentioned in chapter 2, there is a range of meaning given to collaboration. For that reason, it is no wonder that collaboration in EE was described in different ways by the respondents in this study. Generally, the data indicated that collaborative endeavours described in this study were far from what the literature referred to as full collaboration (Montiel, 2005). However, some mentions of the potential as well as the key factors for successful collaboration were revealed in this study.

Curriculum development and teachers' professional development

The idea that collaboration can bring about an outcome that could not have come about through individual efforts was revealed in this study (Hargreaves & Fullan, 1998; Montiel, 2005). The stakeholders outlined activities that resulted from their joint efforts such as govermrnt agencies working with NGOs and other stakeholders to develop EE strategies and train teachers. However, as discussed elsewhere in this chapter, the stakeholders noted the limited of funding as the main reason for a limited number of trained teachers and this indicated the need of involvement of all stakeholders.

Fien (1993) supports the notion that professional development in environmental education should be participatory and practice-based. He argues that it should be collaborative, because working collaboratively with other colleagues makes it easier to achieve transformative practice in EE. He added that collective action is usually more productive than individual effort in controlling the influences that act against improvement in environmental education. Current literature on professional development also emphasises the shift from individualised forms to more collaborative forms of professional development programs (Fullan & Hargreaves, 1992; Fullan, 2001). Fien (1993) also supports the view that professional development should involve teachers in addressing the relationships between their personal beliefs, social and educational ideologies and false consciousness, and between their educational intentions and institutional influences.

It has been suggested that when teachers work actively with other practitioners it can help in resolving the tensions and contradictions between personal beliefs and professional practices and provide the personal reflection necessary for meaningful changes in professional practices in environmental education (Fien, 1993). Teachers in Tanzania can work with other colleagues to enhance the teaching of EE. This is what it is referred to as collegial support (Fullan & Hargreaves, 1992). Collegiality among teachers breaks up isolation and allows teachers to share ideas, skills and expertise and develop professionally. Some teacher respondents in this study recognised this potential. Literature maintains that educational change or

complexities arising within the existing curriculum are challenging, therefore, teaching is more successful when teachers collaborate (Fullan, 2001; 2005; Fullan & Hargreaves, 1992). Teacher collaboration can take place inside or outside the classroom, depending on the nature or purpose of the activity. Inside the classroom, teachers can collaborate in different ways e.g. in classroom observation, or team teaching, and outside the classroom they can collaborate through field trips, or action research (Tal. 2004).

Formation of EE clubs

Literature suggests that in collaboration individuals come together to share their expertise and ideas (Montiel, 2005). This idea couples with the notion of formation of clubs as suggested by some stakeholders in this study. The stakeholders thought that the formation of environment clubs could be one of the ways of engaging people to meet and discuss issues related to the environment in Tanzania. This idea of initiation of environment school clubs was also one of the teachers' suggestions for how the school leaders in Tanzania could encourage the development of EE in schools. Such collaboration can also be a means of helping schools to initiate school projects and inviting other stakeholders to be involved. This could help to address some problems identified in this study such as lack of funding or resources e.g. in responding to a question on what the parents could help with, both the school leaders and the government leaders thought the parents could help with funding.

Studies showed that schools can be empowered to become a centre of environmental learning, understanding and action in their communities (Keown, 1999), and they can be a centre of resources management (Tal, 2004). For example, in the study by Johnson-Pynn and Johnson (2005), collaboration between community members and school clubs was evident. It involved students, school leaders, local officials, advocacy groups in club events e.g. club conservation initiatives, and it had a major impact on the participants. However, the challenges identified were a lack of parental and community support, poor communication between members of the club, funding to support clubs, and lack of materials. Formation of the clubs is one of the ways in which schools can also communicate with the community. School/students can

communicate with the community through projects, publications of the experience, interest, or presentation at workshops, etc. (Robottom & Hart, 1993).

Keown (1999) reports the result of the project was that it had strengthened EE in the school, impacted on students' thinking, e.g. the range and quality of ideas on how to improve the environment, it was effective for school change e.g. waste management, improving the physical environment, it helped to raise students' and teachers' awareness, knowledge and attitudes, and students appeared to have developed a stronger view of the need for societal concern and action on the environment. The study suggests teaching of EE focusing on issues. The author realised that the establishment of a special committee to provide a forum for discussion across a number of schools and linkages to community agencies is a distinct advantage in developing EE in schools and was one of the strengths which facilitated the positive outcomes of the project. Research suggests that strong leadership and support may be required to support the development of clubs in schools (Hicks & Bord, 2001; Keown, 1999; Khaparde et al., 2004).

Local issues

A contemporary objective of EE seeks to involve the community in planning, decision-making and participation in education while improving the quality of the environment (Hart, 2003). In this way, EE provides a suitable educational approach that bridges informal and formal aspects and brings together students and adults in order to make some contribution to a better community life and environment quality (Tal, 2004). Findings from this study indicated that school-community collaboration to address local problems was far from reality. Few respondents thought EE should be a means of engaging people to solve local environment problems. It can be considered that the situation in Tanzania was different from what Tal (2004) described from Israel perspectives (see Chapter 2) which suggests school-community collaboration and an issue-based approach in EE. Collaboration between schools and the community in Tanzania is invited so that the local community issues could be integrated and addressed in the school curriculum.

5.2.3.1. Factors for effective collaboration

Some issues concerning the process of collaboration were identified from this study such as participation, resources, and leadership. The stakeholders in this study mentioned participation and commitment of individuals as important for collaboration. This finding agrees with the findings in the study by Volk and Cheak (2003) and Rao, Arcury and Quandt (2004) that the success of the program depended on positive relationship, commitment of individual, engagement, involvement, time, and a forum for discussion. In this study, participants particularly teachers considered that the teaching would be successful if the interaction between people could be improved e.g. children-parents, parents-teachers, parents-administrators. Research illustrates that when a positive relationship exists between the partners, the partnership is built on solid foundations and the partners are genuinely committed to the goals of partnership (Eames et al., 2006).

Participants in this study also mentioned resources as one of the challenges of collaboration. Keown (1999) reports the result of the project which involved community groups, local government agencies and educationalists all working together with three volunteer schools in New Zealand in an attempt to develop a model program for school-based environmental education within urban community settings. The study identified, among other challenges, lack of time to implement the program, lack of quality resources and materials to enable easy implementation of the programs, and lack of money to support resourcing. The study makes some suggestions to assist schools based on the experiences of the project, such as strong and well resourced community support.

The stakeholders in this study, particularly the school leaders also considered the process of collaboration as a challenging one that needs to be sustained. This is particularly relevant as among the areas of expertise expected from the principal or school leader is the initiation and encouragement of a collaborative culture in schools (Fullan, 1991, 2005; Hargreaves & Fullan, 1998; Weal, 2004). The principal is considered in the middle of the relationship between teachers and external ideas and people. They are not only the key to change but the centre, especially to change the

culture of the school (Fullan, 2005). It has been noted that heads of schools can have a major impact on the degree of implementation of a particular innovation (Fullan, 1991). Several studies (Bolstad et al., 2004; Eames et al., 2006; Keown, 1999; Weal, 2004) provide a detailed conclusion that the success of EE programs resulted from the positive leadership support. However, it has been realised that being middle managers, principals or school leaders face an organisational dilemma, e.g. many principals are asked to facilitate the implementation of change without any support given to them (Fullan, 1991). The principals would need professional development and support to facilitate the implementation of EE programs.

Summary of views of collaboration

Collaboration of stakeholders can enhance initiatives and/or developments of EE activities such as those related to teacher developments, children learning and behaviour, and community issues and developments. The success of the collaborative initiatives depends on the participation and commitment of the individuals, resources as well as leadership support.

5.3. Conclusions

This section sets out the conclusions reached from the findings in this study.

Views of EE

It is apparent in this study that in providing descriptions of EE, the majority of the stakeholders in Tanzania emphasised education *about* the environment and the views held by the majority of teaching of EE were based on knowledge acquisition. The concepts of participation and involving children in decision-making and action-oriented or problem-solving activities were less emphasised by the majority of participants. It is important to note that EE is a new field in Tanzania. This coupled with the traditional transmissive teaching style which dominates the majority of classrooms in Tanzania might have influenced the views of EE of the majority of respondents in this study. The literature also has revealed the tendency of the majority of classroom EE practice in most parts of the world to be focussed on education *about* the environment. The government and EE agencies' respondents indicated a

wider understanding of EE, and this might be due to their exposure or involvement with EE initiatives such as curriculum planning and development. One general conclusion that has to be considered is that a gap in the views of EE at the implementation level between policy advocates and teachers can lead to a vision that Tanzania would be unlikely to achieve the *in*, *about* and *for* the environment objectives. This points to the need for support for stakeholders in Tanzania, particularly those who are involved in curriculum implementation, to develop an understanding of the contemporary focus of EE, and to change the ways in which EE is practiced.

Environment action

Action-oriented activities identified in this study include cleanliness, planting trees and gardening. It is important that the stakeholders understand the benefits of those activities, which might help to address some problems facing the country. However, only a few stakeholders indicated that they had been involved in these activities. There were indications that students were mainly involved with these kinds of activities when organised by external agencies, and were less involved through their schools. The study also indicated a limited view of involving Tanzanian children in decision-making and other action - oriented activities such as research, writing letters or submissions. Much of the contemporary environmental education literature emphasises involving children in decision-making, as an underlying requirement for children to be able to develop action competence. Underpinning this development of action competence are a range of pedagogical approaches that can be successful in promoting its development, such as experiential learning, cooperative learning and problem solving strategies. This study demonstrated that these strategies were not prevalent in Tanzania. A need for support for teachers so that they can be able to involve children in decision-making, while supporting them in identifying issues and helping them to take worthwhile actions which address the root causes of environmental problems in their local community was evident.

The need for cooperation and coordination

This study has demonstrated similar findings from research in other parts of the world e.g. in New Zealand (Bolstad et al., 2004; Brown, 2003; McLean, 2003) about the concerns with respect to teaching of EE, namely teacher support and the availability of EE resources. Although the government leaders and the EE agency respondents, for example, claimed to have been involved in training of teachers, this study indicated that only a few teachers seem to have benefited from this collaborative activity due to limited funds. The issue of lack of funding is widespread, and not surprising for a developing country like Tanzania. There are a number of ways the issue could be addressed. One strategy could be cooperation and coordination of all stakeholders in provision of resources, funding and expertise, as suggested by some respondents in this study. It can be concluded that in order that more teachers could be supported with resources and professional development, the stakeholders in education in Tanzania work jointly and contribute their resources, in terms of funding and expertise. The formation of EE clubs was also identified as one of the ways in which different interested parties can meet and discuss issues about EE. It was perceived that such clubs could also be centres of resource management and a means of inviting other people to provide their help and support for schools. There is a need to encourage formation of environmental clubs in schools in Tanzania.

Environmental behaviour

The findings of this study concurs with the literature that environmental behaviour is relevant to environmental concern, sensitivity and responsibility, and it is where knowledge can be translated into action. Change in behaviour is particularly relevant in Tanzania as the major cause of environmental problems has been associated with individual actions and practices. It is believed that taking action involves willingness to depart from previously held perceptions and attitudes. This study suggests that people can participate in different ways to encourage behaviour change among individuals in Tanzania towards protecting and preserving the environment. There appears to be a need for parents, family members, teachers and school leaders to change their behaviour so that they can be role models for children. The schools are

also encouraged to design programs that encourage children to discuss issues with their parents and/or involve them in solving issues that affect their lives.

Collegial support

Literature identifies collegial support as one of the ways of help for teachers who are engaged in implementing change. Research in environmental education, as in other fields, also supports this kind of educational opportunity for teachers. In general terms, the views held by a few stakeholders in this study, for example, teachers and school leaders also indicated that collegial collaboration could be a means of exchanging and sharing of resources, experience, expertise, and thoughts. However, teachers in this study, although they were positive about working together, felt that this kind of initiative requires time and support. This study concludes that teachers be supported to recognize the opportunity of working with colleagues, and also work collaboratively with other interested people beyond the school for extensive and continuous support for their personal and professional development in EE.

School-community collaboration

Tanzania is one of the developing countries which have been affected by environmental issues such as pollution, land degradation, soil erosion, deforestation, etc. There are diseases like malaria, sleeping sickness, dysentry, schistosomia, etc which have been related to these environmental problems. The idea behind inclusion of EE in the curriculum has been that it would help people in Tanzania get rid of such problems. There is support for this in the literature on what EE should entail and what it can achieve. For example, involving people in participating in resolving environmental problems facing them is one of the recent calls for EE. This type of focus for EE is thought to add relevance in the curriculum, in which issues and problems within the community are expected to provide the context for learning. This study suggests that only a few respondents had this kind of thought. However, it may be inappropriate to draw much conclusion about this finding because the number of respondents in this study was relatively low, and the fact that EE is still new in Tanzania, there is a possibility that its potential has not yet been realised by many people. Research in EE has shown that EE may prove to be a bridge between schools

and the community in the way that local issues can be integrated in the curriculum. This may be an attribute of emphasis in Tanzania; however, it has been identified that this would need a flexible curriculum. The need for collaboration between schools and their communities in Tanzania to address local issues has been indicated in this study.

School-based participation management

This study has identified that in order to encourage collaboration in EE, individual participation and commitment would be required. In addition, positive relationships need to be maintained among individuals. Generally the stakeholders felt that collaboration needs time, resources and support. The findings in this study also agree with both the literature and research in EE that school leaders can be key figures in the implementation of EE and initiation of a collaboration culture in the schools. It is suggested that the school leaders would need to understand the relevance of EE and actively support its implementation. They would need to know what participation is, and how it could be supported. However, it appeared that the school leaders themselves would need support to ensure school-based participation and EE collaborative initiatives are implemented in schools.

In brief, this study has identified how different stakeholders can participate in EE and some of the factors for consideration for their participation.

5.4. Implications for practice and future research

5.4.1. Implication for practice

The limited views of EE of the majority as revealed in this study leads to a recommendation that the stakeholders in Tanzania, particularly those who are involved with curriculum implementation, may require support to develop an understanding of the contemporary focus of EE, and to adopt an *in-about-for* the environment approach. Guidelines, which contain information about the teaching of EE, may facilitate this process.

Given that EE is an area requiring teachers to use student-centred practices, involving students in action, decision-making and problem solving activities, and that many teachers had yet to receive orientation to EE, it is likely that teachers in Tanzania would need support both in content knowledge and pedagogy to include EE in their classroom programs. This support needs resources, in terms of time, funding, people and materials. Expanded cooperation and participation by governmental, non-governmental organisations and the community to support professional development and school-based research and/or projects in EE may be needed.

Field trips may be effective in developing informed behaviour and environmental concern as a prerequisite for action-taking. Teachers may be required to change their teaching strategies to support this.

Parents, family members, school leaders and teachers in Tanzania can be role models for children's environmental behaviour. These groups may be required to change their behaviour and attitudes towards the environment so that they are able to support their children.

The community in Tanzania may benefit from the resolution of local issues if an issue-based approach is taken in the teaching of EE. The children may also benefit academically, socially and emotionally if given the opportunity to participate in community action-oriented activities. A flexible curriculum may be required to allow community environment issues to be part of children's learning in EE.

The implementation and development of EE in Tanzania may be effective if a school-based participatory and collaborative approach is taken. The school leaders can be the key figures in such initiatives. Support for school leaders may be needed to ensure EE collaborative initiatives are in place in schools.

Teachers in Tanzania may benefit both personally and professionally if working collaboratively with others both within and beyond the schools.

5.4.2. Future research:

This research was a small scale exploration of views of some stakeholders in Tanzania on their involvement and participation in EE in Tanzanian schools. It could be useful to undertake further research employing a large number of respondents to clarify the outcomes of this study. The research could also be done on:

- School-community collaboration in EE. Such research could include teacher support to take an issue-based, action-based approach, using experiential learning pedagogies;
- School leader support to find ways of initiating and maintaining collaborative cultures in schools;
- Teachers' professional growth through involvement in practice-based action research in EE; and
- Children's learning in EE, particularly with respect to education *for* the environment. Such research could focus on supporting children to develop basic environment knowledge which could support informed behaviour and action-oriented skills.

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APPENDIX A: INTERVIEW FOR TEACHERS

1. What is your understanding of environment education (EE), what do you consider as the relevance of EE in Tanzania?
2. What do you see as your role in relation to EE in your school?. What is your present involvement in EE?. What do you think students should learn in EE? How should they learn?
3. Do you involve students in community activities, projects, or action oriented activities, decision making?. How?
4. How often you invite speakers or visitors in schools?
5. In relation to your work, and EE in particular, do you work with other people within and from outside school? e.g. government agencies, NGOs, EE agencies, local government, community? What do you think are the impact to the implementation of EE?. What are the challenges?
6. Apart from teaching, curriculum implementation may involve activities such as analysis and interpretation of the curriculum document as well as selecting resources required for teaching specific unit. In relation to EE what kind of problems have you experienced in curriculum implementation? How and to whom do you communicate about your difficulties? Was there any support? What kind of additional support would you like to receive?
7. What do you think as responsibility of the school leader, government agencies, EE agencies, and community in implementation of EE in schools?.
8. From your experience what support would you like to receive from each of the following groups of people involved in education e.g. your fellow teachers or colleagues, school leaders, government agencies, EE agencies, and the community in the implementation of EE in schools? .
9. What do you see as challenge of EE in schools/Tanzania?
10. Is there any other comment you would like to make?

APPENDIX B: INTERVIEWS FOR SCHOOL LEADERS

1. What is your understanding of environmental education (EE)? What do you think as relevance of EE in Tanzania?
2. What do you think students should learn in EE? How should they learn? Do you think is important to involve students in decision-making about their environment? How?
3. What do you see as your role in the curriculum implementation in schools? What is your current involvement in EE?
4. What is your short term/long term plan for EE in your schools?
5. Do you have any contact with other people e.g. NGOs, EE agencies, community in relation to EE? What do you see as impact of/from this relationship/interaction?
6. What do you think as responsibility of teachers, parents, EE agencies in the development of EE in schools/TZ
7. What do you see as challenge of EE? What support would you like to receive for development of EE in your school?.
8. Is there any other comment you would like to make?

APPENDIX C: INTERVIEWS FOR GOVERNMENT LEADERS

1. What is your understanding of environmental education (EE)? What do you see as relevance of EE in Tanzania?
2. What do you think students should learn in EE? How should they learn? Do you think is important to involve students in decision-making about their environment? How?
3. How do you view your role in the implementation and development of EE in schools/TZ?.
4. In the curriculum implementation teachers may interpret and enact in light of what they know and can do, as well as what they believe they must do. How do you know that curriculum (e.g. for EE) is interpreted and enacted in the way is intended?
5. What is your short/long term plan for EE?
6. In what ways your activities support implementation of EE in schools?
7. In your working position have you ever worked with other people in activities related to development of EE in TZ? How? What are the merit/demerit of working together?.
8. What do you think as the responsibility of Teachers, school leaders, community, and other agencies in development of EE in schools?
9. What do you see as challenge for development of EE in Tanzania?
10. Is there any other comment you would like to make?

APPENDIX D: INTERVIEWS FOR EE AGENCIES

1. What is your understanding of environmental education (EE)? What do you see as relevance of EE in Tanzania?
2. What do you think students should learn in EE? How should they learn? Do you think is important to involve students in decision making about their environment? How?
3. What do you see as your role in relation to implementation of EE in schools? .
4. In what ways is your activities support development of environmental education in schools?
5. Does your activity or programs involve working with other people e.g. teachers, parents, government agencies etc, what do you see as impact of/from this interaction.
6. What do you see as the role of teachers, parents, government in the implementation of EE in schools?
7. What do you think is needed as support for the development of EE in schools?.
8. What do you think are the challenges for development of EE in Tanzania?
9. Is there any comment you would like to make?

APPENDIX E: QUESTIONNAIRES FOR COMMUNITY

1. Your gender **male** ☐ **female** ☐

2. Age 20 - 30 ☐ 31 – 40 ☐ 41 – 50 ☐

   51 – 60 ☐ 61 – 70 ☐ 70+ ☐

3. Your occupation……

4. What is your understanding of environmental education (EE)?…….

……..

……..

5. Do you think it is important for your child to study EE at school?

   Yes ☐ **No** ☐

   Why/why not?.....

……..

…….

6. What do you think your child should learn in EE in schools?.....

……..

……..

How should s/he learn?.....

……

……

7. Which of the following EE activities would you like your child to be involved? (Please chose response that most applies to you and give reasons for your choice).

   (i). Learning about environmental issues: e.g.

   (a). Picking up rubbish **Yes** ☐ **May be** ☐ **No** ☐

Please give reasons……..

…….

……...

(b). Recycling **Yes** ☐ **May be** ☐ **No** ☐

Please give reasons……..

…….

……..

(c). Planting trees and gardening **Yes** ☐ **May be** ☐ **No** ☐

Please give reasons…….

……

……

(ii). Go out of the school for field trips, camps and tours to learn about the environment **Yes** ☐ **May be** ☐ **No** ☐

Please give reasons……

……

……

(iii). Researching and presenting findings e.g. to regional council

Yes ☐ **May be** ☐ **No** ☐

Please give reasons…….

……

……

(iv). Submissions or writing letters to organisations e.g. Ministry for environment about pollution

Yes ☐ **May be** ☐ **No** ☐

Please give reasons……

……

……

8. Has your child ever talked to you about their EE at school?

Yes ☐ what was it about?.....

☐

No would you like your child to talk to you about their EE at school?

Why?.....

……..

……..

9. Have your child carried out any environmentally friendly activities at home after learning in environmental education at school?

Yes ☐

what was it about……..

……..

No ☐

10. Which of the following roles do you think schools should play in teaching your child?

Schools should help my child to:	**Yes**	**May be**	**No**
Understand our environment and the impact people have on it			
Be involved in solving environmental issues			
Learn respect and care for environment			
Develop critical thinking and decision making skills			
Develop positive values, attitudes and commitment for the environment			
Be empowered to take action for a better tomorrow			

11. Have you been involved in activities related to the environment?

Yes ☐ what kind of activities have you been involved?.....

……..

Would you like to be more involved? Why?……

……...

No ☐ would you like to be involved? Why/why not?……

…….

12. Would you like to be more involved with your child learning at school?

Yes ☐ **No** ☐

If yes what would you like to be involved?

……...

……

13. Is there any other comment you would like to make?.....

……..

……...

Thank you for taking time to complete this questionnaire

APPENDIX F: STUDENT QUESTIONNAIRES

1. Your gender **male** ☐ **female** ☐

2. Your age **13** ☐ **14** ☐ **15** ☐ **16** ☐ **17** ☐

3. What is your understanding of environmental education (EE)? ……...
   ……
   ……
4. Have you ever learnt any EE at school?

   Yes ☐ **No** ☐

   If yes, what have you learnt?.....
   ……..

5. Do you think is important for you to learn EE at school? Why? ……
   ….
   ……
   ……

6. Which of the following activity have you been involved in?

   (i). Learning about environmental issues: e.g.

   (a). Picking up rubbish **Yes** ☐ **No** ☐

   If yes, what have you learnt?…….....
   ……
   Would you like to be more involved in this activity……
   Yes ☐ **No** ☐
   Why/why not?.....
   …….

   (b). Recycling **Yes** ☐ **No** ☐

   Would you like to be more involved in this activity……
   Yes ☐ **No** ☐
   Why/why not?.....

…….

(c). Planting trees and gardening **Yes** ☐ **No** ☐

If yes, what have you learnt?…….....

……

Would you like to be more involved in this activity……

Yes ☐ **No** ☐

Why/why not?.....

…….

(ii). Go out of the school for field trips, camps and tours to learn about the environment **Yes** ☐ **No** ☐

If yes, what have you learnt?…….....

……

Would you like to be more involved in this activity……

Yes ☐ **No** ☐

Why/why not?.....

…….

(iii). Researching and presenting findings e.g. to regional council

Yes ☐ **No** ☐

If yes, what have you learnt?…….....

……

Would you like to be more involved in this activity……

Yes ☐ **No** ☐

Why/why not?.....

…….

(iv). Submissions or writing letters to organisations e.g. Ministry for environment about pollution

Yes ☐ **No** ☐

If yes, what have you learnt?…….....

……

Would you like to be more involved in this activity……

Yes ☐ **No** ☐

Why/why not?.....

……

(v). Is there any activity you have been or would like to be involved apart from the mentioned above?...please specify……

……

(vi). Others, please specify……

……..

7. Which of the following roles do you think schools should play in teaching you?

Schools should help me to:	**Yes**	**May be**	**No**
understand our environment and the impact people have on it			
be involved in solving environmental issues			
learn respect and care for environment			
develop critical thinking and decision making skills			
develop positive values, attitudes and commitment for the environment			
empowered to take action for a better tomorrow			

8. Have you ever talked to your parents about any EE you might have learnt at school?

Yes ☐ What was it about……

……

What were your parents' responses……

……

No ☐ Would you like to talk to your parents about what you have learnt about EE in schools? **Yes** ☐ **No** ☐

Why/why not?.....

……

9. Have you carried out environmental activities at home after doing any learning in EE at your school **Yes** ☐ **No** ☐
   If yes, what was it about……
   ……

10. Which of the following ways would you like to learn in EE in the future?

Ways of learning	**Yes**	**May be**	**No**	**Reasons**
Teacher tell what we need to know in EE				
Student active participation e.g. group work, discussion, presentation				
Going out into the environment i.e. field trips, camps, tours.				
Students decide on the EE topic				
Focus on specific EE issues				
Invite guest speakers, visitors into the classroom				
Students develop action plan for doing something for the environment				
Being involved in community activities or projects				

11. From your own thinking and understanding is there any thing that the following groups of people could do that would help you learn better EE in schools?

    Teachers ……
    ……..
    ……..
    School leaders
    ……..
    ……

    Parents……

…….
…….
Government agencies e.g. Ministry of Education…….
……..
……..
Other environmental agencies e.g. EE conservation clubs……..
……..
..……

12. Is there any other comment you would like to make…….
……..
……..

Thank you for taking time to complete this questionnaire