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”We should think globally but act locally!”

- Implementation Strategies for Environmental Education
in Kenya and Tanzania

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”LAU660”

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Abstract

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Title: "We should think globally but act locally!" – Implementation Strategies for Environmental Education in Kenya and Tanzania

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The LVCEEP (Lake Victoria Catchment Environmental Education Programme) is a Sida-funded programme carried out in Kenya, Tanzania and Uganda. Teachers at selected project schools have undergone a special training in Environmental Education. The aim of this study is to investigate how the teachers respond to this Environmental Education; what are their implementation strategies? This is a Minor Field Study, carried out at five project schools: two in Kenya and three in Tanzania, where teachers have been interviewed. As a complimentary method, observations have been used to contextualize the results from the interviews. Our main findings are that some teachers have been a bit reluctant, whereas others have embraced the new methodology proposed by the EE training completely. This methodology emphasizes participatory, child-centred, action-oriented teaching. The project schools have carried out a number of environmental projects on the school ground and also made efforts to involve the communities. The children are now recognized as carriers of knowledge and learning as sharing experiences and perspectives. However, large classes of up to 140 pupils, lack of materials due to poor funding are obstacles that prevent the teachers when implementing the participatory methods. The theoretical framework in this study stems from the concept of Education for Sustainable Development and the international strivings for societal change through education.

Foreword

This is a Minor Field Study funded by Sida and carried out in Kenya and Tanzania in October – December in 2006. Preparations and establishment of contacts began already in February the same year. The study aims at investigating the implementation of Environmental Education and has taken place within a prevalent WWF project.

Both authors have taken part equally in all aspects of the study - in Sweden as well as in Kenya and Tanzania. All the reference material has been read by both of us and all the text produced have been created together. Carrying out this study has meant spending a lot of time together; preparing the trip and the study, travelling for eight weeks in a very different culture and finally evaluating the experiences and new-gained knowledge and compile all this into an examination paper.

The most important aspect of this journey for us is the new perspectives of teaching and learning, which we gained while visiting the project schools. We found that we could relate to the teachers and had a lot in common despite the fact that we work under very different circumstances.

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Abbreviations

DEO- District Education Officer

EAC- East African Community

EE – Environmental Education

ESD- Education for Sustainable Development

LVCEEP- Lake Victoria Catchment Environmental Education Programme

LVDP-Lake Victoria Development Programme

LVI – Lake Victoria Initiative

NGO- Non Governmental Organization

Sida – Styrelsen för internationellt utvecklingssamarbete (Swedish International Development Cooperation Agency)

UD- Utrikesdepartementet (Ministry for Foreign Affairs)

UN- United Nations

WCK- Wildlife Clubs Kenya

WWF – World Wide Fund for Nature

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1. Introduction

1.1 Background

The last century has brought development and prosperity to a large number of people in the world. However, the wealth is unequally distributed between the countries and also within the countries. The search for a better quality of life and personal fortune has led to short-term perspectives and initiatives, but the emerging awareness of the long-term effects has brought attention to the need of a more sustainable development. A development in this direction is something that needs to be implemented at all levels of today's society.

At the United Nations World Summit on Sustainable Development held in Johannesburg in September 2002, the General Secretary Kofi Annan stated that "Our biggest challenge in this century is to take an idea that sounds abstract, sustainable development, and turn it into reality across the world"¹. At the summit it was also stressed that sustainable development shall cover the three dimensions of economic, social and ecological sustainability and be the focus of all future development efforts in different international and national bodies. In the end, it is the social and cultural values of those whose livelihoods are intimately linked with the surrounding environment that are a determining factor in achieving sustainability. Governmental organisations and NGO:s must realize that economics and politics alone cannot create a sustainable development. Rather, it is the will of the individual and the community that will shape the state of the environment. Therefore, it is crucial that concerned organisations recognize these people's interests and basic needs like food-security, shelter and economic gain. Finding the mechanisms of exploitation and introducing alternative livelihoods as a way of creating incentives to learn and act is thus crucial². In that spirit, the UN has acknowledged formal and non-formal education as the primary agent of societal change and for empowerment of people.

Few issues are so important but so elusive as sustainable development and there can be very few such issues indeed where the role of learning is so crucially important to our future. A sustainable society demands a changed perspective on learning, where learning and individual development is not reserved for childhood and school only, but something that should continue throughout life. The complex and challenging issue of changing the prevalent structures has been brought to our attention. How can teaching situations be organized in order to promote learners to adapt to the ideas of sustainability? What changes are needed regarding the structure of teaching and learning when the goal is to achieve life-long learning within a sustainable society?

To begin with, different approaches are needed in different societies. There is no universal concept on how to obtain a sustainable development; adjustment to the local needs and prerequisites is a key component in succeeding, or as the World Commission on Environment and Development state: "The way countries achieve sustainable development will vary among the many different political and economic systems around the world. Governments differ greatly in their capacity to monitor and evaluate sustainable development, and many will need assistance"³. In many parts of the world poverty and unsustainable use of resources are

¹ <http://www.proeurope-congress.com/PDF/Environmental%20Education.pdf> 03/01/2006 15.25

² Golder, Bronwen. *Building Capacity, Developing Agency: Women Don't Play Xylophones*. 2004:202 (Golder 2004)

³ Golder 2004:182

intimately linked. The delicate situation of combating acute poverty and at the same time reduce environmental degradation has different implications than for example changing consumption habits in the western world.

The universal call for a more sustainable development and the UN's long-lasting strive to combat poverty is the underlying concept of this study. Emphasis on education as an effective tool connected to these issues, is a focal point, where the main focus is change through formal education. The Lake Victoria Initiative, carried out in the East African countries Kenya, Uganda and Tanzania, is a project that regards these areas, trying to promote sustainable development through education. Project schools in these countries are selected to carry out an environmental education programme and teachers have undergone a special training. These teachers and this specific programme are the focal points of this study.

1.2. Purpose and Problem Areas

The purpose of this study is to investigate how the teachers respond to the education in Environmental Education (EE) that they have been given. How do they implement the EE?

In order to fulfil the purpose, the following questions constitute the problem areas:

- What is EE and why is it important?
- What kind of training have the teachers gone through?
- How do the teachers reflect upon the EE concept?
- What implementation strategies do they use?
- How do these implementation strategies correlate with the concept of and training in EE?

1.3. Disposition

This study is organized into five chapters. Chapter one contains a presentation of the background, purpose and problem areas and also the procedure of collecting data, where we also discuss the validity, reliability and objectivity of this study. The next chapter forms the theoretical framework and presents previous research that touches upon environmental education matters. Chapter three presents information about the countries and regions where the field study was carried out. This will hopefully help the reader contextualize the findings and results. The following chapter constitutes the results and the findings of this study, whereas chapter five contains analysis and discussion regarding the results and findings and suggestions for further research.

1.4. Method and Materials

Depending on what kind of research and what results are expected, the researcher chooses the method that he/she finds best suited for his/her specific project. There is a constant debate between those who prefer quantitative studies and those who prefer qualitative ones. Whereas quantitative research deals with a great number of material in order to be able to generalize the results to a greater population, qualitative research concentrates on few cases, where the researcher tries to get a perspective from the inside. When carrying out qualitative research, the aim is to understand or find patterns in modes of action⁴. The results are not supposed to lead to a generalization of a greater population, but can only represent those who are the subjects of each specific investigation.

Besides interviews, which will be presented below, this study is also based on earlier research and official documents, which constitute the theoretical framework and provide background information.

1.4.1. Choice of Method

The choice of method for this study is a qualitative one. The main focus is to understand what implementation strategies the teachers use. In order to find out how they implement sustainable development when teaching, two alternative/complementing ways are possible to use. Either, you can take part in the lessons and observe how the teacher acts and thereby try to find patterns and detect models for the implementation strategies, or you can make interviews with the teachers and let them explain how they plan to carry out the lessons and what makes them choose one way or another. However, if a combination of the two ways is possible, this is probably the best way to go. To both hear the teacher explain the strategies and also see him/her in action gives a more complete picture of what really takes place. A possible problem for such a research method is that a lot of different activities take place in schools and in order to fully understand what happens, quite a lot of time observing is required. This is true especially when not looking at teaching in general, but when trying to observe teaching methods for a specific area, in this case sustainable development. Our intention therefore was to spend time observing as a complement to the interviews which would be the main focus of the study. The purpose of observing in this case would be to reach the context in which the teaching takes place and better understand what has been said in the interviews. Observations can also work as a provider of new perspectives and thoughts, leading to possible follow-up questions for the interviews⁵.

1.4.2. Selection

The selection of informants in a study like this one is not random, since the purpose is to study a specific phenomenon in a selected group of people. In this case it is about how teachers in Tanzania and Kenya, which have undergone a special kind of training implement sustainable development in their teaching. This is not a comparative study between the two countries.

⁴ Trost, Jan, *Kvalitative Intervjuer*. 1997:15pp

⁵ Fangen, Katrine. *Deltagande observation*. 2005:187pp

How many teachers were going to be interviewed was something that we discussed when planning the research. Kvale recommends interviewing as many people as necessary in order to find out what you want to know⁶. Esaiasson states that when you have a carefully selected group of informants, around ten people can be enough to make an interesting analysis⁷.

In this study, a total number of ten teachers have been interviewed in Tanzania and 17 in Kenya. Interviews have also been carried out with the teacher trainer Mr Edward Mwendwa, who is also the Education Officer at Wildlife Clubs of Kenya (WCK), The teacher and teacher trainer Mr Charles Ooko in Kisumu, Kenya, has also been interviewed, as well as Mr Enoch Chengulla, teacher trainer and project coordinator of Lake Victoria Catchment Environmental Education Programme (LVCEEP). He works for the World Wide Fund for Nature (WWF) Tanzania. The WCK and the WWF are the NGO:s carrying out the EE programme.

The schools that we visited are all part of the same programme. We did not pick the schools ourselves; this was made by Mr Edward Mwendwa and Mr Enoch Chengulla, mainly due to accessibility. In Kenya, representatives from the WCK were going to these schools anyway, so we could come along on the 1-2 hour journey up in the mountain region north-east of Kisumu. In Tanzania, Mr Chengulla picked the schools closest to public transport on the Musoma-Tarime road, so that we could travel on our own. One school, however, was very far out, and would have been impossible to visit if we had not been accompanied by the WWF.

1.4.3. Collection and Arrangement of Data

In total, two schools in Kenya and three schools in Tanzania have been involved in this study.

In Kenya, due to limited time and access to the schools, the interviews were carried out as focus group interviews. The first interview took place at Ndurio Primary School, where seven teachers participated. This interview was recorded. The second interview took place at the next door Ndurio Secondary School, and was made in a less formal way in a circle outdoor, with ten teachers participating from this school, but also from another secondary school in the project close by. Due to the circumstances, this interview was not recorded, but we took notes during the conversation.

At these schools, we arrived as surprise guests, when the WCK was going there to hand over a water tank to the secondary school, another surprise for the school. We were introduced as guests handing over the gift, which in a way gave us the role of possible financial contributors. However, Mr Edward Mwendwa introduced why we were there and what we wanted to achieve and we were very well taken care of. We were also introduced to the pupils and some of them showed us around the school ground. At the end of the day, after carrying out the interviews and participating in some lessons, one primary school class gave us a bag of avocados from their school garden.

In Tanzania three schools in Tarime and Musoma districts took part in the study. Here the interviews were carried out with one or two teachers at a time and these interviews were all recorded. The reason for sometimes interviewing two teachers at the same time was language

⁶ Kvale, Steinar (ed.) *Den kvalitative forskningsintervjun*. 1997:97

⁷ Esaiasson, Peter (ed.). *Metodpraktikan*. 2002:287

difficulties. Some teachers felt that they needed a colleague to sometimes translate from Kiswahili into English. All interviews were carried out in English. Due to some difficulties concerning language we sometimes had to simplify the questions. Therefore in the appendix, there are two different interview questionnaires, besides the one used for the coordinator/teacher trainer interviews.

Before starting the study in Tanzania, we went on an introductory visit to each school and also met responsible officials in the two regions, such as the District Officers and School Inspectors to introduce ourselves and get their permission to carry out the study. Next time, when starting the study, the teachers were already aware of what our study was about and they had had time to get prepared for our visit. This helped both in making teachers available for interviews, and also for them to collect material and prepare themselves for an interview in English.

Before interviewing, we were taken around the schools and were shown the environmental initiatives, the classrooms, the offices etc. This made the understanding easier when carrying out the interviews. At all three schools in Tanzania, the head teacher, (which has the administrative role of a principal, but is also teaching), were interviewed, besides a number of teachers of different subjects. Both male and female teachers participated and their ages varied between the early 20s up to the age of retirement. At each school three or four teachers were interviewed. The participation was voluntarily – this was the easiest way, since we chose not to involve an interpreter. When doing the introductory visit we asked the head teachers to ask teachers that could take part in the interviews.

The interviews took place at one of the school offices, usually the head teacher's office or the teachers' lounge. A microphone was placed on the table between us and the teacher and a mini-disc recorder was used. We explained carefully to the teachers that the recording was only meant for us and we guaranteed anonymity. The interviews felt relaxed and were more conversations than pure question-and-answer. We did not stick strictly to the interview questionnaire; depending on what the teachers told us the questions were asked in a different order every time, to make the interview flow. This meant that we also allowed ourselves to make follow-up questions. We also allowed time for them to ask us about Sweden for example. We often felt that the teachers lectured us on various environmental issues, which to us meant that the teachers felt confident in the situation. However, arriving at the schools with representatives from the WWF and coming from Sweden, a big donor, we were looked upon as possible sources of aid. It felt like the teachers were eager to tell the good things about the project – success stories – but also wanted to point out further needs for their school with an unspoken urge that we could help them. We tried to make them see us as colleagues, rather than official representatives, but this, however, was hard. Sometimes language difficulties posed a problem since we did not speak Kiswahili or use an interpreter and the English skills of the teachers varied.

All the recorded interviews have been transcribed. One of us listened and the other one typed. After transcribing the interviews, we collected all the quotes and topics that we could possibly want to use and put these in a separate document. The next step was to code this document and separate the quotes into different categories that rose from the material; these categories later formed the topics of the result presentation.

1.4.4. Validity, Reliability, Objectivity

Validity in this study has been secured by interviewing a number of teachers and teacher trainers in the LVCEEP, asking them the same questions. We have also visited all the project schools intended, where we have been able to compare the findings from the interviews with our own observations. The areas covered in the interviews are broader than the actual purpose and problem areas of this study, in order to get a fuller understanding. Most of the time, around eight weeks, we have been accompanied by people from the WCK and the WWF, which has allowed us to sort out uncertainties and fill in information gaps when needed.

In qualitative studies, the reliability is complex, due to the selected number of people interviewed. It is highly unlikely that the same people will be interviewed again under the same circumstances. We are fully aware of the risk that the teachers could leave out certain information and underpin other. There is a risk that the teachers give explanations that are in accordance with official educational documents or what they think we expect or want to hear. It is unlikely that the teachers would share information that they believe could harm them or the schools. However, the number of teachers interviewed and the similarity in the results leave us with little doubt that our results are not reliable. The teachers have also been promised anonymity, which can contribute to more open answers. All the quotes in this study are literal, except for a few minor grammatical changes, when absolutely needed for correct understanding. All the interviews, except the interview at the Ndurio Secondary School, have been recorded and the mini-discs are saved.

Claiming to be objective seem somewhat presumptuous, but our aim has naturally been to stay as objective as possible. Carrying out this field study in a completely unfamiliar culture, meant that we relied on local representatives from the organizations that we cooperated with. Both organizations were aware of the aim of our study and did not try to steer us in other directions, but were trying to facilitate our investigation in every way possible. The objectivity aim also meant trying to be honest about our pre-understandings.

1.4.5. Ethical Considerations

A study like this one relies upon the voluntary participation of individuals. It is therefore important to consider the interests of these participants. The research must in no way harm or put the participants at risk in any way. This is especially important when carrying out research on sensitive issues.⁸

The focus of this study may not be considered sensitive in general; however, from the participant's point of view, sharing their personal experiences and understandings can be sensitive enough. Therefore, all teachers participating have been promised anonymity. They have also been informed about the aim of this study and that their participation is voluntarily. Further on, all participants have been promised a copy of the final report.

⁸ Esaiasson, Peter (ed.). *Metodpraktikan*. 2002:442pp

2. Sustainable Development and Education/Theoretical Framework

2.1. Sustainable Development: Definition and Background

The definition of sustainable development was first introduced in the final report of the Brundtland Commission in 1987. The report *Our Common Future* states that: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”⁹. Further on the report states that sustainable development is a process of change with the future in mind and “a process where the exploitation, the orientation of technological development and institutional change, are made consistent with future as well as present needs”¹⁰.

However, it was the UN conference in Rio in 1992 that made sustainable development a ubiquitous concept, always referred to when discussing environmental issues. Sustainable development extends further than national perspectives of environmental protection, such as littering or preservation, regulated in national legislation, and instead takes a clear international perspective, appealing to all people at all levels of life in all parts of the world and has to do with our common future¹¹.

Sustainable development is a comprehensive concept; however, it is widely agreed upon to at least regard economical, social and ecological dimensions as part of the concept and to focus on how these three areas are intimately related. Despite this, sustainable development still is comprehensive. It is possible for people to define quite different types of action- either small ones or quite radical ones- as steps towards a more sustainable development. Some people believe that it is possible to achieve sustainable development within the growth-based market economy, whereas others believe that different consumption habits are required as well as a new kind of global resource distribution. A common critic to definitions that “touches upon everything, and is the concern of all people, is [that they are] in danger of not having any influence at all because nobody feels that it is their personal responsibility to act”¹². Therefore it is of great importance for all people to develop knowledge and an awareness of sustainable development, to make it visible both in people’s daily life and in the public debate.

The UN Conference on Environment and Development held in Rio de Janeiro in 1992, also known as the Earth Summit, resulted in a comprehensive plan of action, Agenda 21, with global, as well as national and local perspectives. It was adopted by 179 countries along with the Rio Declaration on Environment and Development. The action-plan highlights education as “critical for promoting sustainable development and improving the capacity of the people to address environment and development issues”¹³. The UN has declared 2005-2015 to be the Decade of Education for Sustainable Development and stated that “[...] education is the primary agent of transformation towards sustainable development, increasing people’s capacities to transform their visions for society into reality”¹⁴.

⁹ http://www.are.admin.ch/are/en/nachhaltig/international_uno/unterseite02330/1/3/2007_10.22

¹⁰ Ed. Scott, William & Stephen Gough. *Sustainable Development and Learning: Framing the issues*. 2003:xiii (Scott /Gough 2003)

¹¹ Sandell, Klas et al .*Education for Sustainable Development*. 2005:50 (Sandell et al 2005)

¹² Ibid 2005:60

¹³ <http://earthwatch.unep.net/agenda21/contents.php>: 20/09/2006. 15.18

¹⁴ WWF project description of Lake Victoria Catchment Environmental Programme: 27

2.2 Approaches to Environmental Teaching

Thus, there will be no sustainable future if learning does not take place; Sustainable Development is a learning process through which humans can learn to organize and take part in a more sustainable society¹⁵. With the words of Sandell et al:

[...] the way in which we relate to environmental- and developmental issues – from the points of view of knowledge, environmental ethics and politics – is something which we can learn. In other words, the way we relate to the natural world and social development, as both individuals and members of society, can be directly linked to the way we are educated¹⁶.

The United Nations along with the European Union, national governments and various NGO:s state that learning is seen as a key component of innovation and development, since it is an important way to bring about social change. Thus institutions of all kinds are now recognizing the need for “[i] new ways of conceiving and operationalising learning with shifts in curriculum, pedagogy, and institutional management practice; and [ii] novel approaches to the professional development of teachers, trainers and non-formal educators across the field”¹⁷.

2.3. Three Approaches to Environmental Education

However, teaching regarding the environment is not new, it has only changed form. Education for Sustainable Development (ESD) was developed in the 1990s in connection to the Rio Conference and the movement linked to Agenda 21. Before the introduction of this concept, environmental education was often carried out either as fact-based teaching or norm-based teaching.

Fact-based Environmental Education is education *about* the environment and basically regards questions of ecology and has the viewpoint that science will solve all problems in this area. This perspective emphasises facts, concepts and generalisations about environmental patterns and problems and it promotes beliefs that humans control nature. Thus, environmental problems can be resolved by research made by scientist without regard to social contexts or political aspects of environmental decision making¹⁸. Teaching within this discipline is usually carried out within the school’s traditional subjects and is mainly teacher-led, where students are expected to react upon scientific facts. The goal is that this kind of teaching will lead to an improved understanding of environmental problems¹⁹.

Norm-based Environmental Education is education *for* the environment and deals with environmental problems as questions of value, where scientists should advise and direct people how to approach environmental issues and what values should be adopted. The education is mainly carried out within the natural sciences, but social science also plays a major role. The goal for students is to develop environmental friendly values and behaviour.

¹⁵ Scott/Gough 2003:14

¹⁶ Sandell et al 2003:15

¹⁷ Scott/Gough 2003:14

¹⁸ Fien, John. *Education for the Environment: Critical Curriculum Theorizing and Environmental education*. 1993:96pp

¹⁹ Sandell et al 2005:174

Practical skills and first-hand experiences, for example achieved in field trips, are important. The work is often performed in groups and students take part in lesson planning²⁰.

These two perspectives on Environmental Education still exist and should not be altogether disregarded. Today's teachers must be flexible and variation in teaching is one of the main recommendations for being a successful teacher. All children are different and teachers need to recognize each pupil's desires and prerequisites and let them demonstrate their knowledge in the way best suited for each and everyone²¹. However, ESD, which has been influenced by the globalisation of the economy, takes a broader perspective than the perspectives presented above, both in space, time and content; ESD regards the dimensions local-regional-global (dimensions of space) as well as the past, the present and the future (dimensions of time). The environmental theme is "linked to the whole spectrum of social development"²², and the environmental concept is thereby replaced by sustainable development, which includes ecological, economic and social sustainability. More or less all sectors of society are concerned (dimensions of content)²³. Environment- and development issues are regarded as conflicting issues between different human interests and therefore moral aspects cannot be disregarded. Science is recognized as a provider of facts, but is not regarded as an ultimate source of guidance. It is important that students can get hold of knowledge from various points of view in order to "actively and critically evaluate different perspectives of environmental and developmental issues"²⁴. To realize that different people and groups see environmental problems in different ways is something that the education must reflect upon. For example, that the tolerances for what environmental hazards are acceptable to live with and where actions need to be taken, vary between who you ask and what their interests are.

The democratic process is in focus in ESD, where opinions and values of all people should be regarded as equally important and each alternative should be examined critically. To discuss various viewpoints and also conflicts within a certain viewpoint are important. When teaching ESD, students plan lessons and realize them. Sandell et al state that ESD is an education *in* democracy rather than an education *about* democracy. The perspective of sustainable development should not be treated separately as a certain subject or a special theme that appears only once, but instead be integrated in all subjects constantly. Two main functions of environmental education are 1) to encourage future generations to feel inclined to actively participate in the social debates on environmental- and developmental issues and 2) to ensure democracy in schools; students must participate in decision-making²⁵.

Even though ESD has contributed with a new perspective, the old approaches still remain as parts of every-day-teaching. The concept of ESD has not been completely adopted. Teaching regarding environmental issues is still referred to as Environmental Education, even when it contains social, economical and political dimensions. This can be somewhat confusing; however, in the LVCEEP the term EE is used, but it is widely accepted that the striving of ESD is incorporated in this concept. It is simply a matter of terminology. To simplify the reading and understanding of this study we will therefore use the term EE instead of ESD.

²⁰ Ibid

²¹ Korp, Helena. *Kunskapsbedömning –hur, vad och varför*. 2003:134

²² Sandell et al 2005:164

²³ Öhman, Johan et al. *Hållbar utveckling i praktiken*. 2004:14

²⁴ Sandell et al 2005:164

²⁵ Sandell et al 2005:176

2.4. Teaching EE

Teaching EE requires teacher competence of different kinds. Knowledge of environmental problems, theoretical knowledge of teaching and learning and practical knowledge and teaching skills/experience are equally important. Theoretical knowledge is necessary when deciding and choosing between different alternatives, whereas practical knowledge will “enable the teacher to e.g. individualise the teaching – to ensure that all the students, depending on their own abilities and backgrounds, are offered the optimum conditions for learning”²⁶. Competence lies in the ability to integrate this knowledge and skills when planning and teaching. To develop these competences are crucial, since the locally-based teacher is the one formulating as well as mediating concepts of EE to the pupils, because: “there can never be a fixed connection between sustainability and development, hence the concept of ESD must be formed in relation to the local cultural, geographical, social and historical circumstances in which the education is to be put into practice”²⁷.

Sandell et al propose three important basic considerations to regard before teaching EE, that touch upon the purpose of the education as well as the content and the approach used by the teachers. First of all, teachers need to justify underlying motives for education in general and also the motivating factors for a specific subject, in this case EE. This perspective also incorporates the goals and purpose that school serves in society, where two oppositional opinions usually compete. One has the objective of education as to preserve values, norms and knowledge; whereas another view states that the function of education is to create change in society. After motivating the need for education and certain topics, the next aspect of teaching to consider is the content. What aspects should be taught and on what grounds has a specific content been chosen? This is a matter of priorities: what is being taught and what is being left out? The choice of teaching material is also part of this question. It is important for the pupils and the teachers to discuss various opinions and derive facts from numerous sources. It is also important to address real problems “which are relevant to students’ lives and the society in which they live, and preferably problems that the group has some influence over or can affect in some way”²⁸. When the teacher has decided upon why and what to teach, the focus shifts to means of teaching. How is a chosen topic and material best delivered? The method must be related to the actual aim of the education and the teaching method must be approached with an understanding that the process of learning takes place in the encounter between the student and the teaching material. A central question is: “how can students effectively develop and achieve the goals which have been established in the curriculum?”²⁹. The question includes understanding of the learning process, such as awareness of the fact that some students are active and knowledge-seeking whereas others are passive receivers. Democracy in the learning process is another crucial issue: to what degree are students allowed to participate in planning and realisation of the studies? To what extent are all the participants able to bring their knowledge and thoughts to the table for common discussion? In connection to this it is important to recognize the local context and actual environmental issues where learning takes place³⁰.

²⁶ Ibid:11

²⁷ Sandell et al 2005:11

²⁸ Ibid:198

²⁹ Ibid:158

³⁰ Ibid:158 pp

2.5. Two models for Environmental Education

There are two dominating models for organizing environmental education within the education system: Interdisciplinary Model and Multidisciplinary Model³¹.

The Interdisciplinary Model implies that components from various disciplines are brought together to form one single unit, a special course or a subject. This model is easy to implement because teachers are able to organize knowledge, concepts and principals systematically. Evaluation is easy, especially when examinations are used as instruments of measurement. Also, higher status is given to separate subjects, both from teachers and learners. On the other hand, demerits are that the necessary focus on local aspects may be lost in a centrally established subject. Moreover, a subject approach to Environmental Education fragments learners' experience and knowledge and deprives them the opportunity to link one subject with another and apply their knowledge as a holistic unit. Structural criticism includes overcrowded timetables and also that the teachers of EE face difficulties when incorporating purpose, content and approach from a number of subjects of various disciplines³².

The Multidisciplinary model is when environmental education is infused into already existing subjects – mainstreaming - through paragraphs in the curriculum and/or syllabus. This means that environmental aspects would be given special attention without being isolated from the rest of the curriculum. One of the merits of this model is that it is flexible and adaptable because it allows overlaps between subjects and permits broad coverage across disciplines. What is taught can easily be adapted to local settings and in that way meaningful and relevant to the pupils. Moreover, it does not demand more room in the curriculum and teachers are allowed to further specialize and deepen their competence as well as cooperation with fellow teachers. On the other hand, it requires well-trained teachers with skills in linking components of knowledge from various disciplines and subject teachers may not incorporate environmental issues if it means extra work on their part. Also, considering the organization of the formal education system, if EE aspects are not included in the examinations of different subjects, it is likely to be regarded as having little importance³³.

3. Case Study

3.1. Country and Project Information

3.1.1. Tanzania

Tanzania has an agreement on development cooperation with Sweden ever since the country became independent in 1961. It is not only one of the oldest partnership countries, but also one of the countries that receive the highest amount of development aid distributed from Sweden. Tanzania suffers from severe poverty problems; about 50% of the population of 35 millions are living below \$1 a day. Only about 5% of the children above 11 years old enrol secondary school and the adult literacy rate is 68%. More than half the population is under the age of 18. The overall objective of the development aid is to help combat poverty. Three focal

³¹ *Environmental Education for Teacher Educators*. WWF Tanzania Programme Office, 2001:26pp

³² *Environmental Education for Teacher Educators*. WWF Tanzania Programme Office, 2001:26pp

³³ *Ibid*:26 pp

areas have been highlighted: growth that benefits the poor, human development and democratisation³⁴.

One of the most important ways to assist Tanzania out of poverty is through education, as stated by the Swedish Government³⁵. The Swedish policy for global development recognizes that all areas of development aid have a common overall objective – to contribute to an equitable and sustainable development³⁶.

3.1.2. Kenya

The Kenyan and Swedish development cooperation partnership started in the 1960s, and Kenya is thereby one of the first countries supported by Sweden. However, poor governance and corruption has hampered development cooperation at times. Kenya is one of the most socially unequal countries in the world. Half the population of 33 millions live on less than one dollar a day, whereas a small elite possesses great wealth. The most tangible problems in Kenya are political; poor governance and widespread corruption have caused serious damage to the economy and has widened the gap between rich and poor³⁷.

The primary objective of Swedish development cooperation with Kenya is to contribute to Kenyan efforts to reduce poverty. Sida's current strategy focuses on four programme areas. These are economic growth to the benefit of the poor, social development, sustainable development of natural resources and democratisation³⁸.

The adult literacy rate in Kenya is 74 %. Since 2003 primary education in Kenya is free. This has resulted in a rise of primary school enrolment³⁹.

3.1.3. The Lake Victoria Basin

Tanzania, Kenya and Uganda constitute, together with the new members Rwanda and Burundi, the East African Community (EAC). These countries border the shores and/or constitute the catchment area of Lake Victoria, which is the second largest freshwater body in the world. Tanzania has the greatest share of the shoreline, followed by Uganda and Kenya. The lake is vital for weather and climate modulation and is an important provider of fish, hydropower generation, water for domestic agricultural and industrial use, transportation and so on⁴⁰.

About one third of the total population in East Africa lives in this region, making it one of the most densely populated areas in Africa. The main source of income in the region is small-scale agriculture and livestock keeping. Crops such as maize, sugarcane, tea and coffee are

³⁴ http://www.sida.se/sida/jsp/sida.jsp?d=401&a=1338&language=en_US 20/09/2006 15.03

³⁵ UD. *Country Strategy for Development Cooperation – Tanzania, 2001-2005*

³⁶ www.milleniemalen.se. 20/09/2006 16:26

³⁷ http://www.sida.se/sida/jsp/sida.jsp?d=281&a=995&language=en_US 07/12-2006 08.32

³⁸ Ibid

³⁹ www.sweden.gov.se/content/1/06/03/96/37/da1a087a.pdf 09/12-2006 14.41

⁴⁰ www.sida.se/?d=479&a=1467&language=en_US 10/12-2006 10.35

produced. More than 80 % of the population are in one way or another engaged in agricultural production. Fishery, forestry, mining and small-scale cotton industries are other sources of income⁴¹. In Kenya and Tanzania the regions around the lake are among the poorest in these countries, whereas the economic centre in Uganda is located along the shoreline, making it one of the more prosperous regions in the country⁴².

A constantly growing population puts high pressure on the environment, such as rising levels of human waste and increased need for charcoal which leads to deforestation which causes soil erosion and forces enormous quantities of soil into the lake. HIV/AIDS is another serious threat to the development of this region. Further on, urban runoff, unsustainable utilization of wetlands, poor agricultural practises and discharging of chemicals and pesticides in the rivers and in the lake, all contribute to the severe imbalance in the lake. Other problems are the Nile perch, which has altered the fauna in the lake by leading to extinction of many indigenous species and the water hyacinth, which around year 2000 covered 90% of the shoreline of Lake Victoria. However, intense commitment to cleaning up water hyacinths has stopped the spreading of the plant and it is no longer regarded as a serious threat to the lake⁴³.

3.1.4. Initiatives Regarding Lake Victoria

Tanzania, Kenya and Uganda united behind a programme, the East African Community's LVDP (Lake Victoria Development Programme) in 2003 for the development of the lake basin and the surrounding region. The main goal is to establish prosperity for the population in a healthy and sustainable way, offering equal benefits and opportunities to all. Sida has committed to a 20 year long support to assist the different stakeholders across the basin financially as well as providing other assistance such as knowledge-sharing⁴⁴.

Five broad, interlinked policy areas have been addressed in order to formulate sustainable development strategies for the lake basin. These are 1) ecosystems, natural resources and environment, 2) production and income generation, 3) living conditions and quality of life, 4) population and demography and 5) governance, institutions and policies. The programme can be seen as a follow-up of the Johannesburg World Summit on Sustainable Development in 2002, when the EAC heads of state and government, together with the Swedish prime minister, pledged their continued commitment to sustainable development in this region⁴⁵.

In 2004, the Swedish Government adopted a new strategy for development cooperation in this region: *Strategy for Swedish Support for Poverty Reduction and Sustainable Development in the Lake Victoria Basin*. The over-all goal is to contribute to poverty reduction within a sustainable development framework. The programme is coordinated by the Lake Victoria Initiative (LVI) based at the Swedish Embassy in Nairobi, Kenya. Priority areas adopted by the LVI are as follows: 1) capacity building for a sustainable development, 2) empowering communities and individuals, 3) a sound environment and sustainable use of natural resources, 4) combating HIV/AIDS and 5) private sector development for economic growth⁴⁶.

⁴¹ www.sida.se/sida/jsp?d=479&a=1469&language=en_US 11/12-2006 11.35

⁴² www.sida.se/sida/jsp?d=479&a=1471&language=en_US 10/12-2006 10.37

⁴³ www.sida.se/?d=479&a=1467&language=en_US 10/12-2006 10.35

⁴⁴ http://www.sida.se/?d=480&a=1475&language=en_US 10/12-2006 10.40

⁴⁵ www.sida.se/lakevictoria 11/12-2006 13.22

⁴⁶ www.sida.se/sida/jsp/sida.jsp?d=481&a=1471&language=en_US 10/12-2006 10.45

One of the organizations involved in the programme for Sustainable Development in the Lake Victoria region is the WWF. At the moment they are operating the LVCEEP within the LVI and the programme is implemented in specific model sites within the catchment basin, focusing particularly on river catchment sites. The river systems targeted first are Mara in Tanzania and Kenya and Katonga in Uganda.

The catchment areas face many problems, such as low levels of education and environmental awareness, high and increasing population pressures and increased levels of poverty, which all contribute to a deterioration of the environment. Deforestation, declination of indigenous fish species, dumping of waste in the rivers, poor land management and unsustainable agricultural practises are serious threats to the environment that need to be enlightened in order to steer the path of the future towards a sustainable way of living. The LVCEEP addresses these problems and aims at changing “the attitude and behaviour of the catchment and riparian populations to actively participate in sustainable development and environmental conservation”⁴⁷. Environmental Education (EE) has been identified as the most effective way of creating long-lasting behavioural change in people with respect to the environment. EE is defined as “a lifelong process that encourages people to explore, raise questions, investigate issues and seek solutions regarding the environment and related social problems”⁴⁸.

The project objectives are as follows⁴⁹:

- To educate school children about the environment and natural resources through environmental education programmes infused in school curriculum
- Mobilize local communities into environmental action through environmental education and educational programmes

The project outputs are expected to be:

- Capacity building to deliver Environmental Education
- Development of materials to support EE
- EE enhanced in the school curriculum
- Riparian and catchment communities trained to manage their own environmental management programmes at a local level

3.2. School Profiles

This section contains a short presentation of the project schools involved in this study. The school grounds are important focal areas when implementing the EE programme and therefore need to be outlined in order to contextualise the findings and results of this study.

⁴⁷ WWF project description of LVCEEP, page 2

⁴⁸ *Training of trainers on environmental education and school curriculum. Workshop proceedings.* WCK-KISUMO August 2005

⁴⁹ *Training of trainers on environmental education and school curriculum. Workshop proceedings.* WCK-KISUMO August 2005 and WWF project description of LVCEEP, page 8

3.2.1. Buhemba Primary School, Tarime District, Mara Region, Tanzania

The school, which also has a nursery, consists of 23 teachers and 942 students from grade 1 up to grade 8. In March 2004, the first EE training was conducted. The school buildings are one-storied houses mostly made of bricks and mud, whereas some new ones are built of concrete. The buildings are situated around an open quadrangular space with grass and some trees and flowers and connected through pathways covered with pebbles. There is a tree nursery on the school premises and the school court yard has some plantations of flowers and other plants and there are flowers surrounding the houses. Also, there is a school garden and a tree lot with indigenous trees as well as fruit trees. The classrooms all have roofs but no glass-windows and only one has electricity. In the classrooms, there are not enough desks; some of the pupils have to sit as many as five by one desk.

The school supplies the pupils with drinking water from a bucket with a tap, which has been boiled by one of the teachers. That way the pupils don't have to put a used mug into the bucket, with the risk of contaminating the water. No lunch is being served. The school has organized waste management to collect and differentiate waste. The pupils are responsible for collecting the waste and emptying it in the right pits every day - one for compost to be used as fertilizers in the school garden and one for waste that cannot be composted.

3.2.2. Pemba Primary School, Tarime District, Mara Region, Tanzania

The school consists of 11 teachers and 710 pupils from grade 1 to 8. The EE training was introduced in 2003 and implemented the year after. Just as in Buhemba, the buildings are one-storied houses mostly made of bricks and located around a quadrangular area. There are pebbled pathways with grass- and flowerbeds in between.

In the classrooms the students sit four by each desk and there are around 70 pupils in the same classroom. There is no electricity and the classrooms are dark and without glass-windows, but all roofed. Boiled water is provided for drinking, which is kept in a similar bucket as in Buhemba. No lunch is served in school, so the pupils go home for lunch. The school has a garden where they grow vegetables, coffee and fruit. Trees have also been planted to help the water stay in the ground, but there is not yet a tree nursery. Waste management is organized in the same way as in Buhemba.

3.2.3. Kirumi Primary School, Musoma District, Mara Region, Tanzania

The school has 13 teachers and 678 pupils from grade 1 to 8 and also has a nursery. The classes are very big; some consist of up to almost 140 pupils. The school has tried to solve this problem by dividing grade 1 and 2 into two sessions. Some pupils have classes in the morning and others in the afternoon. The school attended the EE training in 2004.

Just as Buhemba and Pemba, the school buildings are one-storied houses located around an open quadrangular area with some grass, trees and flowers. They have no electricity and no glass-windows, some classrooms do not even have roofs. The buildings are connected with pathways made of pebbles with some medicinal plants planted along the houses. There is also an open, sandy area where the pupils gather for assembly. There are not enough desks for all the pupils; some classrooms don't have desks at all so the pupils sit on the floor or on some

home made seats made out of branches. Lunch is not served and since the school is situated in a very rural area some of the students come from far away and can't go home for lunch. There is a school garden where they plant crops and vegetables like cassava, beans and maize. The school has planted over 40 000 trees and has a tree nursery. Waste management is organized in different pits, just as in Buhemba and Pemba. The Malihai club (a national environmental club for youths) has more than 120 pupils from the school as registered members.

3.2.4. Ndurio Primary and Secondary School, Kisumu Region, Kenya

The schools are located next to each other in a mountainous area. The secondary school consists of 160 pupils and 17 teachers, whereas the primary school has 7 teachers. Primary school pupils enrol from grade 1 to 8 and secondary pupils from grade 9 to 12. The school buildings are one-storied houses mostly made of bricks and mud and some constructed of concrete. The school ground has grass and trees, but no pathways. Electricity is not available.

The primary school has a tree-nursery and a school garden with maize and avocado trees whereas the secondary pupils have planted trees and are responsible for nurturing their individual tree.

3.3. *Environmental Education in the Tanzanian Curriculum*

Whereas Kenya has not yet incorporated Environmental Education into the national curriculum, Tanzania has. In the syllabus for primary schools, one of the objectives of education in Tanzania is “[t]o enable rational use, management and conservation of the environment”⁵⁰.

Environmental matters are emphasized to a large extent in certain subjects, such as Social Studies and Science and less in others, like Maths. For example, Social Studies shall enable pupils to “[a]ppreciate the interdependence between human being and the environment” and “[p]romote and abide to the use of proper conservation, proper care of property, equipment, buildings, environment and sustaining the heritable environment”⁵¹. Pupils are expected to learn to “[u]nderstand how human being and the environment relate to each other and also how to manage and conserve the environment for development”⁵².

Regarding teaching methodology it is stated that:

A teacher should use a variety of teaching methods while paying attention to goals of education and the subject: school and classroom environment and the total state of pupils. While teaching, the teacher should avoid the use of lecture method. Instead one should use adequate efforts and initiative in employing those practical methods and resources that promote pupils participation. Any technique which will be used should aim at promoting in each pupil thinking abilities, inquiry skills, ability to evaluate and make rational decisions. Always, the teacher will guide, advice, and encourage each pupil to read books and establish a culture of self-advancement⁵³.

⁵⁰ *Syllabus for Primary Schools*. United Republic of Tanzania, Ministry of Education and Culture, 1996

⁵¹ Ibid

⁵² Ibid

⁵³ Ibid

4. Results and Findings from Interviews and Observations

In this chapter, the results of the study are presented. The interviews were carried out as group interviews in Kenya and often in Tanzania with one or two teachers at a time. Due to these circumstances and also to secure anonymity for the teachers we have chosen not to present the originators of individual quotes. Therefore the material has been coded in the following way: Teacher from Kenya (K) and teacher from Tanzania (T). The teacher trainers are official representatives of the EE programme and anonymity is not an issue. However, we have chosen to code the Kenyan teacher trainers as (TT.K1) and (TT.K2), and the teacher trainer in Tanzania is referred to as (TT.T), for aesthetic reasons.

The results and findings are organized in the following way. First the training is outlined, divided into two main aspects of the EE training: to build knowledge and provide tools. The next section regards the implementation of the EE, followed by teaching strategies used in the schools. After this, we present reflections and thoughts from the teachers and teacher trainers regarding on the one hand difficulties and challenges and on the other possibilities and advantages. Finally the goals and the visions for the EE expressed by the teachers and teacher trainers are in focus.

4.1. The Training

4.1.1. Building Knowledge

In order to understand what kind of training the teachers have gone through, our approach was to ask both the teacher trainers and the teachers basically the same questions. The following section includes perspectives from these stakeholders on the organization of the EE-training.

The LVCEEP addresses schools, teacher training colleges and community representatives in the mentioned targeted areas and aims at building capacity through continuous training. Our focus has been on the training conducted for the teachers at the target schools. The training has been organized in different steps and the first training has had the vision of a “whole-school-approach”. This means that the aim has been to educate all the teachers at the selected schools. The point of this approach is to include all the teachers and in that way create a shared responsibility and a common awareness. One of the teacher trainers in Kenya says that:

[...] there has been a change in approach towards teaching EE because all the teachers at the schools have done the same training. [...] Before maybe one teacher was involved in EE, it was considered his or her problem. Now all the teachers at the project schools are trained and involved (TT.K1).

This first set of training has been carried out by representatives from the WWF in Tanzania and the WCK in Kenya and was conducted during a three or four-day workshop and is considered as a basic introductory training. When finishing the training the teachers were supposed to go back to their schools and implement what they had learnt. This meant that during the next set of training the teachers could discuss and share their personal practical experiences. The whole-school-approach vision has been modified during the programme, due to financial constraints and therefore a selected number of teachers have been chosen to undergo the second set of training. Thereby, it has been the responsibility of these teachers to forward the new knowledge to their fellow teachers. After these trainings continuous follow-

ups are conducted to let the teachers share knowledge and experience and also to allow for the teacher trainers to recognize needs and gaps in the training. One of the teacher trainers in Kenya explains that on the one hand he wants to see what the teachers are doing in their schools, but also if they take action in their communities.

The initial aim of the EE-training is to build capacity among teachers to carry out environmental education as a way of promoting sustainable development. This aim requires basic knowledge about the environment in order for the teachers to deliver environmental messages as an integral part of their everyday-teaching. The training promotes a multi-disciplinary approach in the existing school curriculum:

People can always say that there are already so many subjects in the curriculum, but if the teacher is trained to be aware of issues he can bring out these aspects. More importantly the area of environmental action learning – if schools can be enabled to put that into practise so that the normal activities are used as avenues for passing EE-information (TT.K2).

The first training included an introduction to environmental issues and EE and also a definition of what the environment is and then linking these perspectives to the local area. The teacher trainer in Tanzania defines the first training in the following way:

Basically first of all we wanted them to know what EE is all about. Sometimes when you talk about EE people confuse it with conservation education, when you teach people about the food chain like the buffalos eat grass and then they are eaten by a predator. They think that is all (TT.T).

This narrow definition is also expressed by one of the Tanzanian teachers:

In fact, on our side when we heard about the EE, we thought that it was about cleanliness, when most of them talk about EE they think it is a matter of cleanliness of the compound, but when we got into the subject matter, we discovered that the EE is more than cleanliness (T)

Thus, the basic training covered a broad perspective on the definition of EE that included issues regarding political dimensions such as production policies, economical dimensions such as financial sustainability as well as social dimensions such as the effects of poverty on the environment. The Tanzanian teacher trainer puts it this way:

This is just knowledge for understanding. So we said for EE we are touching some conservation issues, we are also touching some cultural and social issues and also some economical and political aspects of the conservation. [...] Secondly we wanted them to know what the environmental problems are, as far as our region is concerned. [...] When you are talking about the invasion of the water hyacinth, problems of the Nile perch in the lake, pollution issues, economically to them it might not be clicking somehow, but these are ecological issues, which are very much linked to economic and social issues and we have been trying to explain those. So we have also been trying to help them with the global issues and how locally if you have some activities which are not well planned and sustainable it will contribute to global problems (TT.T).

One of the Tanzanian teachers describes these new out-looks as follows:

On our side here, we came to know that poverty also is one of the major destructors of the environment, because when man fails to earn a living from other sources, he relies on natural resources like land, water and air to earn a living. One can at least earn a living from maybe cutting trees and making charcoal so he can sell charcoal and earn a living. He can use maybe

poisonous chemicals in fishing, so by so doing he earns a living, but at the same time he destroys the environment (T).

Although much of the content was new information for the participants; some knowledge was already there. The teachers emphasize the importance of recognizing their previous knowledge and experience and how the training is based on their contributions. From their starting-point they can then broaden their perspectives:

The way the EE was introduced here, it doesn't mean that we had totally nothing, but when this EE programme came in, in fact we had something to add and they had something to add upon what we had. [...]It was new, in one way or another we came to learn from some subjects when teaching, but the way they posted it, when you learn it in school, it is quite different, you don't feel the weight of the destruction (T).

The training has emphasized a local environmental agenda; in tune with the Agenda 21 parole "Think globally – act locally!", and how to take appropriate action. The global perspective has been introduced and linked to the local environmental problems as well as the possible solutions and actions. The starting-point was naturally the urging local environmental problems that the teachers themselves face everyday and therefore can relate to easily, such as soil erosion, access to clean drinking water and food insecurity. The need for solving these problems are acute both on an individual level, as professionals and community members which serves as incentives for taking appropriate action. The Tanzanian teacher trainer explains regarding the practice of swidden cultivation:

We should [...] think globally, but act locally. So when we say no firing, they should know that it is affecting the environment, it is affecting the wildlife, but it is also contributing to the global problems. So we have a list of global issues like the global warming, acid rains, ozone layer depletion- all these have been taught and they should know how to relate them to our way of life and how can we try to overcome these situations (TT.T).

4.1.2. Tools

To enable the teachers to carry out Environmental Education, the programme contains two different approaches. The first one, as stated above, is to build knowledge about the environment and the international agenda on environmental issues. The second approach regards giving the teachers appropriate tools to transmit this knowledge to their pupils. This part contains both didactic strategies, which will be discussed further in the next section, and an action-plan for the schools. This action-plan is supposed to help the teachers and the pupils to promote environmental integrity in their surroundings. The teachers are given examples on how to improve the school ground such as planting trees in order to prevent soil erosion, waste management, the importance of boiling water to improve health among the students and so on. The practical knowledge on how to carry out different actions is always linked to the socio-economic aspects as well as the environmental benefits of these actions. For example, teachers have been taught how to build energy-conserving stoves, which benefits both private economy and reduces deforestation, and the teachers in their turn are passing on this knowledge to the pupils and villagers.

The actual content of the education was not the only thing that contained new knowledge. Also, the teaching method promoted was a new way of thinking about the purpose and process of education and learning. Combining theoretical knowledge with action-oriented

learning is part of what the teacher trainers as well as the teachers call a paradigm shift. A Tanzanian teacher says:

In older methodology we encouraged the teachers as the-know-it-all [...], he thought that those pupils knew nothing, so the teacher had to impart knowledge to the pupils [...] they were there to receive, they were like empty vessels [...]. But after getting this education we encouraged participatory methods. In participatory methods the teacher is not the know-all, the learner also has got something (T).

The new methodology introduced is child-centred and aims at including the pupils in the learning process already from the beginning. The participatory method recognises that each and everyone have knowledge that should be shared and incorporated into the common learning situation. This means that the pupils' experiences counts, just as much as those of the teacher and they should therefore be involved and recognized as transmitters of knowledge. Participatory methodology implies less teacher-led lessons and instead focuses on communication. The teacher's role is to guide the pupil's contributions to theoretical aspects and how to take action:

All children know about soil erosion – they see it everyday – but maybe not on an academic level. The teachers must let the children identify environmental problems and issues in their immediate surrounding [...]. The teacher should then guide them to answers, academic knowledge and practical skills [...]. The teachers must relate the theory of soil erosion to what happens just outside the door (TT.K1).

This way of identifying environmental problems and linking them to theory was also how the teacher training was carried out. The participants were introduced to and exposed to the participatory method all through the training; group-discussions, field-trips, films, knowledge sharing, sitting in circles are all examples of how the training was carried out. The expected outcome of the training can be expressed in one simple word: action. The teachers are supposed to impart the environmental issues in their normal teaching, but also make the important link between change and action. To transform theory into practice is one of the key components of the new methodology. One of the Kenyan teacher trainers states:

Whatever you do at the end of it all, there is the component of action. What are they doing about it? We give them encounters and situations where they see the problems and then they discuss what is the best way forward and what actions are they going to take. So action is what is most important, that is what will they do for the environment. So EE that doesn't end in action is not going to help. So the focus of the training at the end of it all they can take action for the environment, individually, as a school, as a community member or as a community (TT.K2).

To summarize, the training aims at broadening the teachers' theoretical knowledge, changing their way of teaching into including the pupils in the learning process and also how to take local environmental action in their immediate surrounding. How the EE is implemented is the issue in the next section.

4.2. Implementation

The main aspect and goal of the EE is to create actual change in the school and its surroundings. Taking part of the programme therefore requires action, both from teachers and pupils. All teaching regarding EE is two-folded; on the one hand children learn by doing while gaining practical skills as well as the theoretical understanding, on the other hand they contribute to actual change in the school and the nearby society. Involving the pupils in practical activities in the school also aims at introducing this new knowledge in their homes. One teacher puts it in this way: “The students are getting benefits, since they can take all the things which are shown here in the school to their homes in order to continue using it” (T). However, this is not without difficulties. The pupils often come from rural homes with strong traditional beliefs, which sometimes contradict some of the environmental messages. We will discuss this further when presenting problems involved in EE.

One of the first steps in training has been to identify the most urgent local environmental issues. All the schools involved that we have visited, have huge problems with soil erosion. Due to deforestation and heavy rains the top layer of the soil is washed away. Erosion eventually renders eroded land infertile and the eroded soil may be deposited into rivers and eventually reaches Lake Victoria causing siltation. Preventing eroding forces has been expressed as one of the major interests at the schools. Before the EE training these schools did not have plantations on the school ground, which meant that the area in front of the schools needed to be swept every day, which contributed to the soil erosion. During the rainy seasons, it was muddy and some classrooms were flooded: “Before there was only dust and sand and the pupils had to sweep the ground and take away dead seeds. Now when we have stones it is clean. It prevents soil erosion” (T). Another teacher says: “Before EE the landscape was higher and sloppier. Heavy rains flooded the area into the classrooms. We were taught how to do terracing to prevent soil erosion” (T).

Parts of the implementation are the efforts to change the school compound. Making pathways of pebbles and arranging plantations have improved the eroding situation, but also had other positive side effects. For example in Pemba Primary School, most of the pupils now have shoes in order to be able to walk without difficulties. This means better hygiene, especially when using the toilets. Another example is the effort to beautifying the school compound, turning the school into a cosy, clean and shady area, which both teachers and pupils enjoy and care for. All schools have put a lot of effort into planting trees and starting tree nurseries. The trees have different purposes; providing firewood, charcoal and constructing material, producing fruit, preventing soil erosion, providing shade and eventually attracting more rain to the region.

Another benefit for the schools also involves the community. The seedlings from the tree-nurseries can be distributed to the homes of the pupils and to members of the villages nearby. One teacher explains:

In fact we have a tree-nursery that is part of the project so that we distribute trees and seedlings to the community at a subsidized price, maybe two schillings. So we sell this to them and they can plant it at home, we even go and plant for the community and in the village around. That is to encourage them to see the benefits of environmental conservation (K).

Involving the community is not just about taking environmental action, but also transmitting knowledge and trying to establish cooperation between all members of the society, in order to

create long-term change. The cooperative part is emphasized by one of the teacher trainers in the following way:

So a very important link is to connect the schools with the community. How can they learn from each other and how can they help each other promoting environmental conservation. In other words what can the schools do in the community and what can the community learn from the schools, for example the students can plant trees in the community or clean the environment. And the community can visit the school projects and then the school becomes an area where knowledge is transferred (TT.K2).

The teachers have incorporated this message of spreading knowledge. The understanding of the learning process has widened. Who will learn and what is the purpose of learning, are questions that have been risen during the EE-training. The fact that pupils are not just passive recipients, but can also be powerful distributors of knowledge, has been highlighted. One teacher explains:

Students now have time to make something with their activities and they have learnt many, many things, like how to make the cooking stove and to plant seedlings in their homes, that education have they got from the school and from the teachers. This was the way which has simplified to educate the society which is surrounding the school. We use the pupils to bring knowledge to their parents and then we have special times to call the parents to come to school and to tell them about the progress and how to protect the environment. And after seedling our nursery, we got some trees to give the pupils to plant in their homes (T).

Surrounding villages and schools have shown interest in the changes taking place at the project schools and representatives have come to visit. Also, teachers at the project schools have visited other schools and villages, explaining about the EE.

Making people see the benefits of these new modes of action, by for example providing alternative livelihoods like bee-keeping and agro-forestry is crucial to succeeding in achieving long-term change, since poverty is one of the main contributors to the continuous environmental degradation. The issue of creating alternative livelihoods is part of the challenge. The project is facing the paradox of poor people depending on natural resources and at the same time not using these in a sustainable way. If action is not taken, these natural resources, such as forests and clean water, will be used up. But in order for people to change their behaviour, they need reasonable alternatives with obvious benefits. One of the teacher trainers puts it like this:

[...] but as long as these people don't have alternatives, they don't have alternative livelihoods, they cut trees and they make charcoal, they sell it and get some money and they survive, they can send their kids to schools and to the dispensaries.[...] So we are now trying to help the teachers and the communities to see what could be alternative activities so that they have some alternative livelihood as opposed to the traditional ones (TT.T).

To summarize, implementation involves teachers, pupils and villagers. The project has managed to establish a link between the schools and the communities and the teachers play a crucial role in transmitting environmental messages, which hopefully will lead to long-term change. The teachers have the function of hubs. First of all they are the link between the teacher trainers and the success of the programme completely lies in the teachers' involvement and ability to carry out the EE. Further on, they are the transmitters of knowledge to the pupils, who in turn bring new knowledge home. How the teachers actually do this; what kind of teaching strategies they use, will be discussed below.

4.3. Teaching Strategies

As stated above, the EE programme relies on the teachers in order to transmit new knowledge, which hopefully eventually will lead to new behavioural patterns among the pupils, their parents and the community at large. Every teacher, be it in Tanzania or Sweden, needs to find his or her personal way to approach the pupils. There is no uniform model that works for every situation. Teachers must get to know their pupils and adapt the teaching to the needs and requirements of each specific group of pupils.

However; even if teachers use different approaches, there are key components or main strategies, that can be expressed, and the variation between teachers lie within these strategies. One of the key components in the EE programme is that the teaching is supposed to be child-centred and participatory. Interactive learning is emphasized. These aspects have been discussed previously. In this paragraph we will show how the teachers actually use these strategies that were taught in the EE training. Besides child-centred and participatory approach, interactive learning, multidisciplinary approach, theory versus practical teaching and teaching content will be discussed. The first strategy that needs some attention is the multidisciplinary approach.

As stated in the paragraph discussing the Environmental Education in the Tanzanian curriculum, the national approach to EE is multidisciplinary. In Kenya, this is also how they do it, even though EE is not part of the Kenyan curriculum. Multidisciplinary approach means that environmental issues are infused in the normal teaching and all subjects should therefore incorporate environmental messages. One teacher says:

We teach EE in different subjects, for example in English we can construct sentences about environmental issues, from science we can learn about plants, in mathematics we can introduce for class 1 for example when you need to count, you can count your trees in the area in order to understand. That is one way environmental issues can help us understand (T).

Another teacher gives the example that in maths, an assignment can be how many cattle you can keep in one compound. The related environmental message is what environmental problems too many cattle in one compound causes.

In Tanzania all teachers are supposed to present their annual teaching plan in a scheme of work. This scheme is presented for the school's academic teacher (who functions as a didactic leader appointed by the principal) as well as the head teacher to be evaluated and even more importantly by the school inspectors. In the scheme of work, the teachers present what topics and subtopics will be taught and when, teaching strategies, what material to use and the pupils' activities. The EE programme has introduced a new column in the scheme of work: the cross-cutting column, where the environmental messages are presented. These cover a broad perspective, such as health, poverty, security, environmental awareness, traditional beliefs and so on.

In Kenya the cross-cutting column has not been introduced, but the teachers testify to the same approach, incorporating environmental issues in all subjects:

So in almost all of these subjects EE has been incorporated, like in social studies they for example teach about the importance of forests, conservation of soil, the importance of trees, even in subjects like English the students write essays about the environment. So by expressing themselves they get knowledge (K).

One important strategy when teaching EE is to let the pupils share knowledge. They can explore questions and possible answers together. The pupils are active contributors and transmitters of knowledge and share their experiences, just like the teacher does. Group work is recommended by both the teacher trainers and the teachers interviewed. One teacher explains the procedure:

If you allow them to work in groups, in fact they do much better when they are in groups. A group encourages collective learning and collective learning encourages pupils to be confident. Whatever you do in groups, you should give them time and then you allow each group to present what they have seen. For these small kids, you can ask a simple question: “What do you think has caused this kind of erosion? Give two reasons or more”. And then they go and present in front of the class and they listen and if you have something to add, then the teacher adds something (T).

Thus, the teacher’s role is that of a guide, who first introduces a topic and allows the pupils to discuss, explore and associate to the topic. Then all views are brought to the table for common discussion and the teacher tries to organize the shared knowledge. By using this type of method, the pupils are getting new knowledge, both from the teacher and their fellow pupils. This also helps the teacher to get information about what the pupils already know, what they need to learn and how to structure the following lessons.

In fact, this new way of including the pupils has enriched the access of knowledge of the teachers and the school. One teacher tells us about one encounter that served as an eye-opener for him:

I do remember just recently I was teaching about safety in the environment in science, but I thought they knew nothing about road signs, so what I told them was “have you seen road signs?”, “Yes of course, there are some of them along the road. We do see them”. “Now tomorrow, I want when you come here, I’m providing you with papers, you will draw the road signs that you know. How many of them can you draw?” And one of them raised his hand and said I will draw one hundred. I wondered how did he come to know that. I realised that knowledge come from various sources. That boy, at home they have a computer, and in that computer there are some road sign programmes (T).

Another teacher says that the interactive teaching method has improved the communication between teachers and pupils. Also, the results of the national examinations have improved immensely, which shows that these new strategies serve as more efficient transmitters of knowledge, than older methodology. A teacher trainer in Kenya describes the importance of including the pupils, already at a young age: “Even this young child, there are some things he knows. Give that child a chance” (TT.K1). The same strategy, to learn from each other, is also used among the teachers:

We are a teaching team, so when the reason [topic/argument, authors’ note] is difficult for one teacher, they concern another teacher, who will come and teach. Also, we will go there together to reason how the one teacher has taught in that classroom (T).

Besides interactive learning, another critical component of EE is action-oriented teaching. Since teaching EE is not just about broadening perspectives and awakening awareness, but at the end of it all resulting in action for the environment as well as improving quality of life, developing necessary skills is a key issue. A useful strategy is to begin teaching a new topic by sensory experiences and immediate exposure. The idea is to put their day to day encounters with environmental problems and their understandings of these in a new light. The

pupils are already familiar with certain environmental phenomena, but through education these will be discussed at another level. One teacher explains the procedure:

The first thing, you take the pupils to the place which is eroded and ask them what they can see. You just take them out and allow them to explore, you don't tell them, you just take them there. You walk around and ask them and guide them through the questioning: "What has caused this?". In fact they know something. They will say maybe heavy rains, when water falls on the ground, some of the particles are taken away by the forces of water and eventually erosion is formed. So from there you can, after they have at least explored, then you can now guide by putting forward where you want them to go. And from there you can now guide them by questioning and through discussions and allow them to discuss about the causes and forces of erosion, like air and water and cattle (T).

This strategy to first expose the pupils to actual environmental degradation before going through theory in the classroom is one way to do it. Other teachers do it the other way around; they start in the classroom to explain the theoretical aspects and then they go out to look at the issues taught and also take action. The teachers show somewhat different approaches to the connection between theory and practise; some of them say that the biggest part of teaching is theoretical, whereas others emphasize the practical part:

Both are important, because when you teach here in theory, and then let the pupils go to the practical, they do well, because you have already explained here how to make it and when you move to the practical they do well (T).

By starting with theory the purpose is to give the pupils some basic knowledge before taking action, whereas starting outside exposing the pupils to certain environmental issues, the purpose is to let them investigate and research, whereby the pupils themselves can define problems for further academic exploration. Some teachers explain that they start with both approaches, depending on the topic and situation. Another approach is to focus on spreading the knowledge and the action component outside the school:

We teach the students first of all and do it practically in the school before moving out in the community so they get basic knowledge first in school and then practical skills. So usually when they come out from the classroom they already know how to plant the trees (K).

The action-oriented approach stems from the Agenda 21 parole "Think globally, act locally!" and this has been incorporated into the EE programme. Exposing the pupils to environmental problems is very much focused on changing the local environment. These issues, however, can be related to regional, national and global perspectives, at least on a theoretical level. By starting with how individuals and communities affect not only the surrounding area, but also the neighbouring, the regional as well as the global environment, the highlighted local-regional-global perspective in Sustainable Development is covered. One teacher says:

In general in this school we teach local environmental problems in the village. After that when we see that the community has changed, I think that we will also expand that knowledge to the issues of Lake Victoria, but now we will begin in the area where we are. We begin to teach the pupils that when they destroy water resources, Lake Victoria will be empty. I think that when we are teaching them, we are also concerned with Lake Victoria issues (T).

Regional aspects are, as we can see, incorporated and dealt with. However, the teachers also show that they are aware of global environmental issues, even if they mostly focus on local perspectives. Some teachers in Kenya express this on a "what-we-can-do-here-basis", which shows that the global awareness is there, but also the understanding of the need for immediate

local environmental action and the possibilities for each individual to create actual change: “We have been encouraged to act locally, but we believe that we think globally. We believe that the global community will benefit from what we do” (K).

The next section will further discuss the difficulties and challenges that the teachers express when teaching and implementing EE.

4.4. Difficulties and Challenges

During the interviews the teachers and the teacher trainers have expressed difficulties and challenges they face when teaching and also for the implementation of the EE as a whole. We have categorized these into four different subtopics: lack of finance and material, knowledge gap, attitude and curriculum deficits. These categories rose in the material when analyzing the interviews and are formulated by the authors. Their purpose is to organize this section and they serve as tools for analyzing the interviews.

4.4.1. Lack of Finance and Material

All the schools that are part of this study are situated in poor, rural areas and the schools are no exceptions from this poverty. The physical environment of the schools has already been described in the school profiles. Here, the poverty related challenges and difficulties in the teaching situation will be discussed.

Two basic resources of teaching and learning are the teachers and the teaching material. The teaching material have many purposes, for example transmitting knowledge, providing different perspectives, allow the pupils to explore, investigate and be creative. Using different teaching material is also a way to create variations in teaching and learning situations. However, these possibilities are very limited at the project schools, due to poor financing. One teacher describes the daily experiences for teachers in the following way:

For example sometimes you must give them papers in order to allow them to write something or to explore, but there are times because of poor funding, there are times when we miss even these papers. So you cannot conduct effectively the participatory methods. You know sometimes you need that one should have his own book to read, so that he can at least read and reflect, but if you have got ten books the pupil book ratio is one to ten. That already is a hindrance (T).

Lack of papers and books for pupils are brought to our attention by all the teachers interviewed. Another related problem is limited access to information and reference books, both for pupils and teachers. There are no libraries and no internet. Most schools even lack electricity, which means that there is no modern equipment like TV:s and VCR:s. This especially causes problems when teaching about issues outside the nearby area and region:

[...] but other things are difficult because it is not seen in the area. So we have lack of apparatus and some materials like books and other news that talks about the environment [...] It is well and very simple to teach in our area, in our district and in our region, but when you move out to the country and East Africa and the world in general, it is very difficult. We need a lot of books and films. Films for our students is very, very important, because it is a stimulator, they can see

the activities; they can record in their heads what is made in that film and he can make his own way to take action (T).

Lack of finance also limits cooperation between schools and communities. The idea in the EE programme is for the knowledge to spread through action and knowledge sharing, but a prerequisite to this is that stakeholders can actually meet and visit places where change has taken place. Some teachers express that it would be advantageous both for them as professionals and for the school and community at large.

4.4.2. Knowledge gap

The competence of the teachers is crucial for an effective transmission of knowledge. Building competence is even more important when introducing new teaching methods and new approaches to the concept of learning, as has been the case in the EE programme. Involving all the teachers at the project schools has been a key component. However, the whole-school-approach has not been prevalent all the way. Providing all teachers with basic EE training as well as further training and follow-ups requires that all teachers gather for a workshop during several days. This has been problematic. The teacher trainer in Tanzania says: “If we were able to control the school time-table, we wanted to do a whole-school-approach, but it was not possible. The DEO’s were a bit concerned closing down the school for five days” (TT:T). Later he explains that the idea to further educate teachers on holidays, for example when summer vacation has started, has been impossible due to the costs involved.

However, the teachers are eager to learn more and to level out the knowledge gap between teachers. They think that the implementation and success of EE depends upon the capability of all teachers to deliver the environmental messages:

Another problem is knowledge, the knowledge is not satisfying, because as the head teacher said, the staff got the training just once, but for the following trainings there were only 3 or 4 teachers, so the rest of the teachers as well as to the pupils if it is possible, it could be better, if all teachers has to get enough knowledge about the environment (T).

One of the teachers who have been selected for further education describes that selecting a few teachers creates problems between colleagues, where those selected are considered as responsible for the implementation of the EE and that the others can rest their case:

So long as this knowledge should be continued in the sense that those who received the basic training that the way I have noted when you have selected a few, there is a kind of leaving the job to those who selected few, the rest “now this is now their duty, let them do it” and they know when they go there is some funding, some small money that can get into their pockets, so that also... “those who have gone there should be in the fore front” (T).

The teacher quoted above refers both to the aspect of the knowledge gap between the teachers, but also to the small payments to cover expenses received by the participants of the workshops.

4.4.3. Attitude

The problems and difficulties associated with attitude stem from different sources. We have identified two major concerns: the professional role of the teachers and traditional beliefs in the villages.

One aspect concerning the teachers is what both teacher trainers and some teachers interviewed refer to as a paradigm shift in teaching methodology. The participatory method that has been introduced is new territory for most teachers, especially for those teachers that did their teaching training some 20 or 30 years ago. Some of them have been reluctant, while others have embraced this new method completely:

Some teachers have not shifted totally, they have shifted partially. The total shift should be done by providing more seminars. Some don't use much because of lack of competence in using those techniques, so if you lack the techniques of methodology, you will not prefer them or you may use them, but not in an effective way (T).

Other problems related to using this new method are partly caused by lack of material and teaching aids, but has also to do with attitude. During the interviews some teachers expressed how colleagues objected to the participatory method as too time-consuming. Another explanation for the reluctance is that people do not always like changes. A third aspect of the attitude dilemma is that some teachers interpret the EE methodology as a criticism against old methodology and also their professionalism.

Another challenge is the clash between traditional beliefs and the new environmental messages. One thing is to make the pupils adapt to new habits at school, another is to challenge the habits and beliefs that are prevalent in their homes. Some of these habits and beliefs derive from poor education; others from strong traditional customs:

Attitude change is a very big problem. Our people here, some of them, are not educated at all, our pupils come from some families that are not educated at all. So it is a problem when you teach a pupil about environmental conservation or about cleanliness; some of the pupils come from families who don't have toilets. So we do two jobs; to change him from his usual attitude from home and teach him these new attitudes (T).

The teachers need to work at different levels. First they must make the pupils question the behaviour they are accustomed to and see the benefits of a different attitude. Then they must help the pupils to incorporate new behavioural patterns in school and also try to establish permanent change. Even more importantly the pupils need to bring these new habits to their homes and influence their families and the community. Some teachers talk about the paradox how pupils act in one way at school and in another way at home.

4.4.4. Curriculum Deficits

The last category of difficulties and challenges in implementing EE regards the organization of the education system. This is where the differences between Kenya and Tanzania are most visible. Whereas the Tanzanian government has highlighted the need for environmental education, the Kenyan has not. This means that the Kenyan teachers in the project schools have no support for what they do in the curriculum or the syllabuses of the different subjects. Both teachers and teacher trainers in Kenya express an urge for the establishment of EE as a

separate subject: "The teachers now try to fit EE into all the different subjects because it is not its own subject in Kenya. Here it needs to be its own subject so it can be examined – the education in Kenya focuses very much on exams" (TT.K1).

The Kenyan teachers say that EE as a separate subject is desirable since it implies that a large group would be reached straight away. However, they wish that this subject would be more practically oriented and also examined practically. They say that a problem right now is that pupils, who answer environmental questions in tests well, get good grades and not the pupils who improve the environment.

A problem expressed on the Tanzanian side is the organization of the representatives of the education system. Every district has a District Education Officer (DEO), who is appointed by the District Council, and School Inspectors who work for the central government. In order for the EE programme to work, both the DEO:s and the School Inspectors have to be trained in EE methodologies. The Tanzanian teacher trainer expressed some difficulties with the school inspectors, regarding the introduction of the cross-cutting-column and participatory teaching. If the inspectors still evaluate the teachers and the schools by using old standards, incorporating EE will be difficult. A related problem is the frequent transfers of the DEO:s: "[...]sometimes you work with the DEO and you have already established good relationships and they are very cooperative working with you, but when they are transferred then there will be a new DEO and you have to start up fresh" (TT.T). Well established contacts facilitate the implementation of the EE programme.

4.5. Possibilities and Advantages

The teachers and the teacher trainers have not only expressed difficulties and challenges, but also some possibilities and advantages with the implementation of the EE programme. We have organized their answers in two major categories: educational advantages and societal possibilities. These categories are formulated by the authors to organize the material and did not exist prior to the interviews.

4.5.1. Educational Advantages

One of the major changes expressed by almost all the teachers interviewed is the difference in teaching approach after going through the training. Previously the teachers carried out their lessons in the classrooms in an old-fashion way, where the teachers taught and the pupils listened. The teacher was the sole carrier of knowledge and the pupils were there to be filled with knowledge. There was practically no consideration taken to the pupils' experiences and previous knowledge. When going through the EE training, the teachers were exposed to the benefits of and need for child-centred approach and participatory strategies. By changing not only the way of teaching, but also the perception of knowledge, major changes among the pupils have occurred. The pupils are more eager to learn and more independent. Also, the results of the national examinations have improved. One teacher describes the change in the pupils: "In fact, it made the pupils feel that they are now capable, they have something, they felt much more confident, when using participatory methods. They became more curious" (T).

The teachers also find that the pupils seem to enjoy these methods, because they can see the benefits of learning, since the EE training is translated and adapted into their day-to-day-life. The learning content is not focused on a distant future, but on how to improve life right now. For example the pupils have learnt how to make energy conserving stoves, which they have brought home. These have helped the families financially, when requiring less charcoal, and health-wise, through less emissions. The pupils are also good transmitters of knowledge; they are eager to pass on things they have learnt and they have adopted the environmental messages easily, at least in school: "The pupils are easy to change, because they are here and they do things practically" (T).

In the same spirit, the teacher trainer in Tanzania expresses how the education has contributed with something else, slightly more diffuse than the more tangible advantages expressed above. The EE education strives for the establishment of a democratic society, where the citizens are involved in decision-making and are able to take part in discussions and development efforts. Old teaching methodology did not contain incentives for independent thinking and action, but rather passing exams and repeating what the teacher said:

This is the only way to make education meaningful, otherwise it's just learning and memorising what the teacher is saying. When they finish and graduate form four, form six and even in the university you find they can't do anything on their own. They don't think for themselves and can't plan things, they are always waiting to see what the government says and what do my teachers say (TT.T).

What has been described as a paradigm shift was not easily carried out, as was discussed previously, and needed to be carefully introduced. The teacher trainers introduce it as development, not as a criticism against the teacher or old methodologies, and say that this is the only sensible way forward. Before implementing the EE programme, the advantages of using participatory methods were researched and found beneficial in various parts of the world. The Tanzanian teacher trainer says that different examples of participatory teaching show that it makes an impact on the pupils' lives and helps them overcome obstacles even after graduating:

So we are not blaming it on the traditional teaching, because it was right then. But now a new light has come to us, we know there are other people who are doing the way we are proposing; the participatory teaching. And they have been very successful, the kids are always happy, they find this is a meaningful teaching, they can also use that knowledge when they have graduated. (TT.T)

Another educational advantage is the material distribution to the schools from the WWF and other NGO:s involved in the programme. In Tanzania, eight environmental educational books have been produced on different subjects like air, water and so on. They have served as valuable references for the teachers when implementing the EE. Kenya is in the process of producing similar books and other reference material. The schools have also received some basic tools for gardening, devises for collecting rain water and strategies to organise tree nurseries and to improve the school environment.

Moreover, the programme has resulted in a continuous organisation of the benefits and deficits experienced during the project in the schools. Lessons learnt and valuable new knowledge is not the possession of certain individuals but is looked upon as a property of the school. A headmaster in one of the Tanzanian schools describes this organisation as follows:

After getting this education the head teacher has a file of EE, so it will benefit anyone who will manage this school. After leaving this school, there is a file with all the issues about the environment. I think anyone who will come, it will be easy to continue to teach environmental issues (T).

4.5.2. Societal Possibilities

Another advantage of the project expressed by the teachers is the possibility to make actual change. First of all the school surroundings have developed. Some teachers say that you can no longer recognize the school, compared to how it used to be. Tree-plantations, new buildings, new desks for the kids, a more useful and attractive school ground, new toilets, are all visible changes that have taken place after the EE. One teacher says: “[y]ou know, if we are telling you without the seeing you can think that I am lying, but when you see the change you can see that what I am telling is true” (T). The possibilities of implementing the EE programme successfully for the schools in general and the teachers more specifically are to a large extent depending on the involvement and cooperation with the communities. The involvement of the communities is in turn largely dependent on obvious and immediate benefits from changed habits and customs. Some teachers have pointed out that the improvements at the schools have awakened interest among community members. A positive attitude from the community stems from the teachers ability to show actual change and transmit this new-gained knowledge beyond the school and at the same time emphasize that this is something that can take place here and now and not in a distant future.

An important aspect of taking part of a programme such as this one, are the participants’ personal and professional justifications. This incorporates the question of purpose. What are the goals and what are my visions? This will be discussed below.

4.6. Goals and Visions

The underlying agenda, why EE is important and what are the goals at hand, are themes that keep popping up in the interviews. Both the teachers and the teacher trainers have formulated their own answers to these questions. In order to teach EE and do it in an engaged manner, the teachers must see the importance of arising environmental awareness. One teacher describes why he finds EE justifiable: “So the main objective of teaching EE is to enable the learners or the users of these natural resources to use the environment in such a way that it becomes sustainable and beneficial to man” (T). Similarly a Kenyan teacher says:

I think the most important thing is for the learners to know that if you don’t conserve the environment, even if they are not directly affected now, they will in the future be affected. Like now they are cutting down trees will lead us to going to distant places in order to fetch water. So they are now aware that we have to conserve, so they don’t suffer tomorrow or even the generations to come (K).

Here, the perspective of creating a sustainable future is connected to the immediate improvements that the EE can result in. Thus, these visions are also related to concrete goals, such as how to transmit knowledge to others, besides the pupils. This is also connected to the need for visible changes; if these changes are seen, the benefits might not need to be explained. Such a goal is expressed by one teacher in the following way: “To have a talking compound [...] which will reflect EE, that is our hope. For example when you come here,

nobody should tell you about soil erosion conservation, you should witness just by looking at the compound” (T).

Transmission of knowledge is emphasized as an important objective of the EE programme. The long-term vision of transmitting environmental messages beyond the project and target schools and communities is another task at hand. One of the teacher trainers in Kenya says:

The short-term goals have been to give the students knowledge and skills because it will eventually contribute to the environmental integrity of the whole region. The success does not only depend upon individual action, even though that is important, but how many more people that can be reached. So the success of this project is basically what has been done and how many more people that can be reached. We need to find the mechanism of how to expand the targeted small group’s knowledge to the whole community to make a real impact on the environment (TT.K2).

This is also discussed by some teachers involved in the project, whose experience show that the visible improvements around the school attract attention from other schools. The teachers are eager to spread and share their knowledge through communicating and exchanging experiences with other teachers. One teacher hopes for and envisions the future as follows:

That this programme will continue and more changes and that other NGOs can come here and we can tell them to help us. The changes are not just for us, because other schools come here and they learn about what we are doing here. Then we take the knowledge to their schools. There are some teachers that come here to see what we are doing and they come to ask us what we have been doing. In this division our school is a centre and now the schools surrounding this division are willing to come here to learn what is going on here and how to make in order to modify the environment in the school and how to get success from this education (T).

Despite the fact that the Kenyan teachers find the disregard of the importance of incorporating EE in the national curriculum as a hindrance, they have similar visions as the Tanzanian teachers. Even though their absolute main goal is the establishment of EE as its own subject, they visualize how the project can expand and develop in the existing form: “You know we are a project school in this area, so we need to see how this project will expand to the whole district. Those are our plans. So our plan is to ensure that it extends throughout the district” (K).

5. Analysis and Final Discussion

The purpose of this study has been to investigate how the teachers respond to the EE training that they have undergone and derive what implementation strategies they use. The focus of the programme is to enhance the teachers' competence to teach EE by broadening their knowledge of the environment and teaching methodology, but also by highlighting necessary skills and practical knowledge. Three basic considerations outlined by Sandell et al, presented in the theoretical framework of this study are content, approach and purpose. The results and findings will be discussed in relation to these considerations.

Regarding content, we have found that the teachers have adopted the perspectives of social, economic and political dimensions and try to teach the whole perspective from local to global, even if the focal area is on local environmental issues. Regional and global issues are explained as harder tasks, much due to lack of visual aids, such as books, TV's and so on. However, even if the training and the implementation in these aspects correlates with strivings for a sustainable development, there are other focal points, which have not yet been achieved. One such aspect is the question of democracy. Developing critical thinking is a necessary aspect in order to build democracy; It is important for the pupils to discover various viewpoints and have access to a number of different sources when learning. These are matters, which the teachers did not bring up during the interviews. We assume that in these poor, rural areas, it is very difficult to get hold of different sources of information. Lack of reference books and poor access to internet are mentioned by the teachers several times as constraints to implement EE. According to the teacher trainers, the EE strives at educating the pupils in such a way that they in the future can take an active part in democratic decision-making. The teachers are trying to involve the pupils, but in order to make the education *in* democracy, the structure of the education system needs to be reformed. As the situation in these schools is today, we think that it would be simply too much to require the teachers to allow the pupils to plan lessons and realize them. When teaching more than one hundred pupils at the same time, each and every one cannot be recognized in each lesson. However, there are extra-curricular activities carried out in a democratic spirit, where pupils join environmental clubs, such as the Malihai Club, in which they are completely in charge of issues of involvement and how to take action. These small-scale activities outside the classroom could perhaps be emphasized even more, in order to enhance the democratic aspects in EE, or why not let the pupils use this concept within the normal teaching as well?

Teaching methodology, thoroughly discusses both by the teachers and the teacher trainers, touches upon both content and approach and is as a key component in implementing EE successfully. The means of teaching, i.e. how to approach a specific content chosen and how to effectively transmit knowledge, must be regarded. This can be investigated at two different levels – at a structural level and at a practical level. To begin with the structural aspect, the Kenyan and Tanzanian education systems are in focus. They both use a Multidisciplinary model to the EE, but Kenya is striving for an Interdisciplinary model. The Kenyan teachers and teacher trainers believe that this is the way to reach more people and to get more status for the EE subject. Their conclusion derives from the fact that they find the Kenyan school system to be very exam oriented and therefore EE needs to be examinable to make a real impact. However, the Tanzanian school system has incorporated environmental messages into the curriculum, stating that all subjects must consider such aspects. Both models have merits and demerits but our conclusion is that the multidisciplinary model is preferable.

We believe that EE is such a comprehensive field that it is impossible to fit all aspects into one single subject. This is why a Multidisciplinary approach, serves the purposes of the EE programme better, because this model allows teachers to infuse environmental messages in each subject of their profession. In other words, EE involves too many different aspects for one teacher to comprehend and should therefore be taught by teachers from various disciplines, with support in the curriculum and in the syllabuses for each subject.

The consideration of approach also includes the practical implementation strategies of the teachers and is part of investigating how the teachers have responded to the EE training. How is a chosen topic and material best delivered? The training has emphasized concepts such as child-centred approach, action-oriented learning and participatory methodology. Our interviews and observations show that the teachers have adopted these strategies in favour of “old” methodology. Some teachers have embraced it completely, whereas others are a bit more reluctant. The teachers refer to these methods as new, despite the fact that it has been present in the Tanzanian curriculum at least since 1996, which make us conclude that training in these strategies is required if the paragraph is not to be just empty words. We have observed some examples of the incorporation of the new methodologies, such as group-work, action-oriented lessons, where pupils plant trees, and pupils and teachers sharing knowledge. The teachers call this a paradigm-shift; we rather see it as a striving in that direction. Difficulties in changing teaching methodology, as we see it, are twofold. One aspect is what we identify as internal motivation; for the teachers to fully embrace this methodology they need to recognize the advantages and gains at an early stage. The other aspect regards physical prerequisites like the number of pupils per teacher, the organization of the classroom and access to teaching aids. We find that the teachers at the project schools do their best in order to carry out participatory, child-centred, action-oriented teaching, but poor conditions at these schools put serious constraints on the teachers’ ability to do so. Group-work or participatory knowledge sharing in classes of 140 pupils with only one teacher, leaves very little time for guiding the groups or for each pupil to take an active part.

Another conclusion that we came across while transcribing the interviews, is that all the schools seem to implement the training in a very conform way – they all plant trees, make pebbled pathways and use the same methods for health improvements, such as the buckets with taps used for pupils’ drinking water. This made us look for unique initiatives and alternative solutions in the material, but we found very few examples. Our material does not allow us to say whether this is due to material constraints or if the programme is too new for the teachers to have developed their own solutions. A more serious conclusion could be that the motivating factor is external, rather than internal; the project schools receive financial aid from the NGO:s involved, and this could serve as the major incentive for implementing EE. After meeting a number of teachers, we feel that the degree of internal motivation varies between those who implement the EE half-heartedly and those who truly embrace the whole concept. This conclusion does not imply that we question the teachers’ expressed need for more teaching aids, like books and electronic equipment, but we suggest that beyond the basic need for teaching material, successful teaching is about the teachers’ ability to present the topics at hand and engage the pupils on a personal level. Personal engagement is a key factor in creating incentives for lifelong learning.

We find that the teachers have recognized the striving of the EE programme to spread the knowledge to the surrounding communities. The interviews show that the teachers find ignorance as a big hindrance for implementing EE and therefore the schools try to involve and educate the community members. One way of doing this is to let the pupils bring knowledge

and practical skills to their homes; another way is to invite parents to the schools to see the progress and to help develop the school ground, for example constructing new buildings. In order for the EE programme to have long-term positive effects, the involvement of the community is crucial. However, this goes beyond the focus and purpose of this study.

Our last finding, but really the first consideration for everybody working with education, regards the motivation for, or the justifying aspect of teaching a certain topic, in this case EE. The EE programme strives for societal change, rather than preserving prevalent values and norms. This is also stressed by the teachers, who express a vision of a more sustainable future for their region. Short-term goals are often expressed, such as continuing developing the schools and assisting the communities, whereas long-term goals include visions of poverty reduction, spreading knowledge beyond the project schools and extending the programme to other schools and regions. The project schools have achieved considerable changes, managing to prevent soil erosion, improving health among their pupils and improving the study results. However, whether this is the beginning of a positive long-lasting change, is too early to tell. When visiting the schools, it was obvious to us that even though the schools have achieved environmental progress, the surrounding areas need to go through the same changes in order to make a real impact on the environment.

To summarize, in these countries where poverty is abundant and the schools are poorly funded, the education system to a high degree relies upon the teachers to mediate knowledge and create productive learning situations. The overall vision of the LVCEEP is to promote an attitude and behavioural change in the Lake Victoria catchment area for a sustainable future. The findings of this study show that the teachers interviewed have responded positively to the EE training. It seems as if the teachers have implemented the material aspects, such as tree planting, waste management and health improvements, according to the intentions, whereas we feel that the didactical aspects have been implemented to a certain extent, but still need to develop. We let one of the Kenyan teachers interviewed summarize our findings in a simplified, but effective conclusion: “Still many things remain to be done, but at least we are moving in the right direction”.

This study has only focused on the teaching aspect of EE. A suggestion for further research would be to look at the learner’s perspective and investigate how the pupils and communities respond to the EE. Also, it would be interesting to carry out a similar study when the project has been running for a longer period of time. Uganda has been left out in this study and could also be in focus for further research.

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7. Appendices

Appendix I

Interview questionnaire 1 (for teachers)

- ☒ What subjects do you teach?
- ☒ What ages?
- ☒ For how long have you been a teacher?
- ☒ For how long have you been working at this school?

The training:

- ☒ When did you start the EE training?
- ☒ How did you feel about it before you started?
- ☒ How do you feel now?
- ☒ Can you tell us about the training – how it was carried out and what the content has been?
- ☒ Do you feel that the training is adjusted to the local needs? Describe in what way?
- ☒ What topics have been taught in the training?
- ☒ Has the training contributed to the development of the school? In what way?
- ☒ Does the training guide you on how to implement EE?
- ☒ Have you been given any material?
If yes, does it help you? What is good/bad/is something missing? Are you given examples of how the material could be used?

Teaching:

- ☒ Do you feel that it is important to teach EE? If yes, why?
- ☒ What do you think are the most important local needs – what do you feel the students need to learn?
- ☒ What are your strategies for implementing EE – how do you organize the education? (work in groups, discussions, field trips...)
- ☒ What have you tried so far? Did it work/not work? What would you like to try?
- ☒ What sources of information do you use?
- ☒ How has your teaching been received by the students?
- ☒ Do you cooperate with other teachers, parents, schools?
- ☒ Have you had any problems/difficulties? What can be better?
- ☒ What do you feel that the training has contributed with to your teaching in general?
- ☒ Should EE be a separate subject?
- ☒ What is the main goal for you in teaching EE (short-term and long-term)?

Appendix II

Interview questionnaire 2 (for teachers; revised edition)

- ☒ When did you get the EE-training?
- ☒ What did you expect/want from the training?
- ☒ What do you think about the training – is something missing?

- ☒ Has the training helped you as a teacher – how?

- ☒ You have been given some books and other material.
 - Have they helped?
 - Is something missing?
 - How do you use the material?

- ☒ Is teaching EE important? If yes, why?

- ☒ What environmental issues are important here?
 - How do you teach that (what teaching methods do you use?)
 - What has worked?
 - Have you had any problems?
 - Can you get advise/help from somewhere?

- ☒ What is difficult in teaching EE?
 - What is easy?

- ☒ What is the main goal/objective in teaching EE? (question for the teachers)

- ☒ What are the short-term and long-term goals in teaching EE? (question for the school leaders)

Appendix III

Interview questionnaire 3 (for teacher trainers from the WCK and the WWF)

- ☒ Can you tell us about how Wildlife Clubs of Kenya got involved in this project? (Kenya only)
- ☒ How many schools and teachers are involved at the moment?
- ☒ How were these schools selected?
- ☒ Can you tell us about the training the teachers have undergone?
 - Content?
 - Organization?
 - Material?
 - Have the teachers been given examples of how to implement EE in their teaching?
- ☒ Do you feel that there is something missing at the moment? What could be improved?
- ☒ Have there been any problems?
- ☒ How has the training been received?
- ☒ You call it EE (Environmental Education), not ESD (Education for Sustainable Development). What is the difference?
- ☒ What is the main goal in teaching EE? Long-term and short-term?
- ☒ How will you proceed now?