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## An Evaluation on the Implementation of Environmental Education Program at Mutare Teachers' College in Zimbabwe

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### **Abstract:**

*The study evaluated the infusion and implementation of Secondary Teacher Training Environmental Education Program (STTEEP) in the College curriculum of Mutare Teachers' College. The research sought to establish whether the stated objectives, teaching methods, assessment and activities related to Environmental Education (EE) have been incorporated and implemented in the College curriculum. The research used qualitative research, in particular a case study. Participant observation, interviews, focus groups and document analysis were used to collect information from EE stakeholders. The implementation of EE varied with subject areas and Lecturers concerned. Geography and Biology have infused and implemented EE content and assessment. National Strategic Studies have replaced some topics with environmental education related content, although silent on assessment. There was no change in content and assessment in History and Religious Studies to cater for EE. In the Languages the content remained the same, but participatory methods are used to teach poetry and literary criticism. Commercial subjects have their course aims and content adjusted to include environmental education. Technical subjects have incorporated teaching methods related to environmental education. The College has established a resource centre and projects in support of EE. The major challenges to full implementation of environmental education are lack of enthusiasm, conservatism, human and financial constraints and inadequate institutional support. It is recommended that human and financial support be given to staff and students in order to implement environmental education programmes. In-service training, workshops and environment education campaigns should be done to motivate the staff and students in implementing the programme. Environmental education should be incorporated and examined across the curriculum from pre- school up to University level.*

**Key words:** *Environmental education; infusion; implementation; evaluation; curriculum; programme*

### **1. Introduction**

The twentieth century worldwide has been burdened by numerous environmental problems such as land degradation, climatic change, pollution and global warming. Political problems such as wars have caused untold suffering of people, death and homelessness. Current social problems such as unemployment, poverty and HIV and AIDS have posed serious problems on the biophysical environment. It is against this background that environmental education has been discussed at various international, regional and local forums in order to respond to these environmental problems. Such international response to environmental problems include: United Nations (UN) Conference on Human Environment, 1972 in Stockholm, Sweden, which recommended Environmental Education (EE) to be interdisciplinary and encompassing all levels of education. In 1977 the Tbilisi Conference in Russia, listed the objectives and principles for environmental education and the Earth Summit in 1992, emphasized in education for sustainability.

The report of the Presidential Commission of Inquiry into Education Training (1999) in Zimbabwe, observed the need to train people about environmental issues and to integrate environmental education into examinable subjects. Various institutions such as University of Zimbabwe, National University of Science and Technology and Zimbabwe Open University offer environmental education in some of their courses. In Zimbabwe most educational programmes have been evaluated such as Better Environmental Science Teaching (BEST), Education with Production, ZIMSCIENCE and Polytechnic Education (Chikunda, 2007; Chivore, 1992). Environmental education has been the privilege of subjects like Sciences and Geography (Stapp, 1974). It has not been incorporated into subjects like the Humanities, Languages and Educational Foundations. In 2003 a programme called Secondary Teacher

Training Environmental Education Programme (STTEEP) was introduced in Zimbabwean three secondary training colleges. Its aim was to introduce environmental education across all subjects in these colleges. However, there has been no comprehensive evaluation on the implementation of STTEEP since its inception in 2003 at Mutare Teachers' College. It was unclear whether the intended aims and objectives of the Secondary Teacher Training Environmental Education Programme (STTEEP) were being implemented within the college curriculum. The main feedback in regard to the progress and activities of EE at the College has been through end of year reports, which did not cover what is going on in the classroom and getting the Lecturers views in regard to the implementation of

environmental education. The college facilitator's end of year report for 2004, for example, mainly gave a narrative of activities which have taken place over the year, namely EE induction for new students, syllabus review and Lecturers who were given scholarships to train in environmental education at Rhodes University and at Speciss College in Harare. A report on STTEEP, compiled by External Evaluators SADC-REEP researchers (Taylor, Mandikonza and Pesanayi, 2009) interviewed five EE steering committee members at the college without observing Lecturers teaching and interviewing them.

It was the purpose of this research to carry out a comprehensive evaluation of STTEEP since its inception. The evaluation was carried out against STTEEP stated aims and objectives. The research explored both classroom practice and outside classroom activities. It is assumed that the findings from this research will result in the effective implementation of environmental education in the college curricular. The College will improve on those areas that show some shortfalls or gaps and consolidate on those areas that are being effectively implemented.

## 2. Historical Setting of Environmental Education

Environmental education can be defined as the systematic study of the conditions, circumstances and influences surrounding and affecting the earth and its flora and fauna including humans. It takes a holistic approach and is designed to help learners of all ages to develop the concepts, skills, attitudes and values necessary to support sustainable living and environmental management (Ministry of Environment and Tourism, 2003). The definition shows that environmental education is concerned with both management of the natural environment as well as the contribution of man in the sustainable use of the environment. The human element in environmental education focusses on aspects such as culture, attitudes and values towards the environment.

There has been a paradigm shift in environmental education. The original focus was on nature study or natural environment, including flora, fauna, soil and water. The main aim was to develop an appreciation of nature and mainly to conserve the natural environment (SADC – IUCN, 1999; Stapp, 1974). The word environmental education was coined in the 1970's. Environmental education came as a result of various International Conferences. These included the United Nations Education, Scientific and Cultural Organization (UNESCO) and United Nations Environmental Program (UNEP). These have created three major declarations that have guided the course of environmental education. These are the Stockholm Declaration held from June 5-16, 1972. It aimed at inspiring and guiding the people of the world in the preservation of the environment. The Belgrade Charter held in 1975, defined an audience for EE which included the general public and the Tbilisi Declaration held from 14-26 October 1977 which outlined the goals, objectives and principles guiding environmental education [UNESCO, 1978]. The Brundtland Commission was constituted in 1983 in order to find a link between environmental issues and economic development. The concept of sustainable development was formalized. This is the development that allows present generations to meet their needs without compromising the ability of future generations to meet their own needs. (WCED, 1987). In 1992 the Earth Summit in Rio de Janeiro produced the Rio Principles Agenda 21. It gives an outline of actions to be carried out in order to achieve sustainable development at various scales (Chenje et al, 1998).

Since 1990 various conventions have been held in support of environmental education. These included the Convention on Climatic Change, the Biodiversity Convention, the Desertification Convention, the Montreal Protocol on ozone layer and the Convention on the International Trade of Endangered Species (CITES) which seeks to protect wildlife (Chenje et al, 1998).

Environmental education in the South African Development Community (SADC) has its roots in education for the conservation of the biophysical environment. However, in recent years, this approach shifted to education for sustainable living. There is now, an emphasis on providing education which promotes the good management of natural resources as well as empowering people in decision making that affects people's lives and contributes to sustainable development (SADC – IUNC, 1999). In a special report prepared in 1991 for the United National Convention on Environment and Development (UNCED), SADC member states committed themselves to integrating environmental issues into school curricula at all levels. The member states also agreed on expanding training at Tertiary institutions on environmental issues, (STTEEP Document, 2003). Zimbabwe has ratified some of the conventions on the environment. These include International Trade in Endangered Species (CITES) which seeks to conserve wild life, the Montreal Protocol that aims to protect the ozone layer and the Bamako Convention which prevents the importation of hazardous substances (Chenje, et al, 1998). The country has responded to environmental problems through various organizations or institutions. Some Government initiatives include the Environmental Management Bill, which seeks to harmonize environmental legislation presently scattered in more than six ministries (Chenje, et al, 1998). Report of the Presidential Commission of inquiry into education and training (1999), recommended that environmental education should be integrated and made examinable in those subject where it fits. The Zimbabwe environmental education consultative forum was also set up by the Ministry of Environment and Tourism in order to promote environmental education policy in Zimbabwe and to facilitate environmental education activities (Mono, 1993: 97).

Some aspects of environmental education in Zimbabwean primary schools are practised in environmental science which has replaced nature studies. Its main focus is however still on the biophysical aspects of the environment. The Better Environmental Science Teaching (BEST) attempts to provide a wider perspective to the teaching of environmental science. The aim of BEST is to improve teaching and learning in all subjects in primary schools through integration of environmental science with other subjects. It also aimed at enhancing sustainable management of the environment (Chikunda, 2007). In Zimbabwean secondary schools, environmental aspects are largely taught in selected subjects such as science, biology, geography and agriculture. Apart from the compulsory science subjects at 'O' level it is possible for a student to go through the secondary education without basic environmental education (STTEEP, 2003). In tertiary institutions, various programmes cover environmental issues. These include Institute of Environmental Studies at the University of Zimbabwe, Bachelor of Science programme in Environmental Health and Environmental Sciences at the University of Science and Technology and Bachelor of Science in Geography and Environmental Studies offered by the Zimbabwe Open

University. Although Zimbabwe has made great strides in teaching environmental issues, they do not relate much to the linkages between the biophysical and human aspects of the environment. The study of the environment is also much linked to the science subjects such as biology and geography giving the view that the environment has only the scientific aspect (STEEP, 2003).

In Zimbabwe educational programmes that have been evaluated include Better Environmental Science Teaching (BEST) by Chikunda (2007). Chivore (1992) evaluated Zimbabwe Science (ZIMSCIENCE), Education with Production and Zimbabwe National Teacher Education College (ZINTEC). Kethoilwe (2007) carried out a research in the implementation of environmental education in Botswana studying EE in the Primary schools. Imakondo (2004) studied through workshops and tree conservation projects the implementation of environmental education in Zambia. The success of EE was evaluated against the success or failure of conservation projects. B`o`hn (1997) studied environmental education (EE) in Germany, where it was implemented from grades 1 - 13. Each topic was introduced at each grade level in the subjects of biology and geography. He noted that biology and geography are the most important subjects in environmental education. Studies in environmental education were also carried out in Greece by Gravanis (1997). Environmental education was promoted at all levels from primary to tertiary education. Teachers were trained on EE and brochures were used to guide teachers in teaching EE. Environmental officers were appointed to monitor the implementation of EE. A National Centre was set up to monitor the implementation of EE in Germany. It is therefore interesting to find out the results of STTEEP at Mutare Teachers' College where the implementation of environmental education has been left to individuals and departments.

### **3. Principles of Environmental Education (EE)**

These are guidelines for the operations of EE. The principles of environmental education are important in that they help to provide a guideline on the content and processes of EE. They helped the researcher to focus on aspects to evaluate on the implementation of environmental education at Mutare Teachers' College. The extent which these principles are present in the curricula content, teaching methods and forms of assessment reflects the presence or non availability of EE in the areas under evaluation. The principles that guide EE have been shaped mainly by various Global initiatives. These are the Belgrade Charter of 1975 and the Tbilisi of 1977 and the Earth Summit in Rio de Janeiro in 1992 especially Agenda 21 and NGO Forum which outlined the guidelines and Principles for Environmental Education (SADC-IUCN, 1999; Chenje et al, 1998). The concept of sustainable development is paramount in EE. It is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Report, 1987). The definition shows that as economic development takes place concern should be placed on environmental conservation. Environmental education should therefore produce products that are committed and responsible such that their actions ensure that the environment is kept prosperous in the future. Another key feature of environmental education is that it should support a lifelong process that develops skills, attitudes and values that are necessary for appropriate environmental management and sustainable living. The curricular, developed for environmental education must be an ongoing process. Environmental education should therefore equip students with skills that allow them to solve environmental problems. Learning processes have to be action-oriented. An effective integration and implementation of EE involve the use of participatory and discovery methods (Janse Van Rensburg and Lotz, 1998). Environmental education is also characterized by the use of learner-centered methodologies. Participants in environmental education are both learners and educators. The teacher would recognize that he/she had much to learn from the experiences of each student and that the relationship with students is that of symmetrical and not asymmetrical dependence (Greig et al, 1989). Beel et al (2006) suggested that EE should make use of resource materials such as games, puzzles, quiz, storytelling, poetry, realia, models, field work and resource persons among others. Another important element of environmental education is its use of traditional knowledge systems. Environmental education (EE) appreciates all forms of knowledge. Totems are used for conservation of biodiversity for example; those who are of the elephant totem don't kill elephant for meat, thereby ensuring conservation of biodiversity (Shava, 2000). The last element of EE to be discussed is its holistic approach. Change cannot be perceived as a compartmentalized linear process but a process of dynamic interaction between all parties and interests (Greig et al, 1989). Environmental education focuses on the whole problem rather than solving bits and pieces of the problem.

### **4. Background to Secondary Teacher Training Environmental Education Programme (STTEEP)**

STTEEP stands for Secondary Teacher Training Environmental Education Programme. It is a partnership between Zimbabwe Ministry of Higher and Tertiary Education and VVOB (a Belgian Semi Governmental Organization). The Project started in 2003 with three Secondary Teacher Training Colleges namely Mutare, Belvedere and Hillside Teachers' Colleges (Jan Van Ongevale, 2004). STTEEP aims at integrating environmental education and to support EE activities. The overall aim is to reorganize education towards sustainable development and utilization of natural resources (STTEEP Project Document, 2003). STTEEP comes up as a follow up to the findings of the Presidential Commission into Education and Training (1999) and the Development of a National Environmental Education Policy in Zimbabwe in 2000 (Jan Van Ongevale, 2004). STTEEP uses a participatory approach in its programme and encourages learner-centered methodologies. It makes use of internal expertise such as lecturers to implement the project. The idea is that colleges develop locally owned EE curricular that suits their environment (Jan Van Ongevale, 2004).

### **5. STTEEP Expected Outcomes**

These are the products expected from the programme. The project outcomes as stated in the STTEEP Project Document (2003:3) are as follows:

- Content and processes of EE are established for secondary teacher training colleges.

- Lecturers implement EE into their work and get more involved in EE related extracurricular activities.
- EE relevant assessment techniques are introduced to students and lecturers.
- EE resource materials are produced.
- Organizational structure of the project is set up and EE activities practiced in each of the colleges.

These expected outcomes and aims of STTEEP form the basis of the research. The researcher evaluated the EE content infused in the subjects; the methods and processes being implemented; the involvement of staff and students in EE activities such as environmental clubs; the assessment techniques in use; environmental education resource materials at the college and the functionality of STEEP structures at the college.

## 6. The Organizational Structure of STTEEP

This constituted teams that are responsible for organizing and planning at various levels. At the apex is the National Project Management Team that consists of Ministry of Higher and Tertiary Education (MOHET), Ministry of Environment and Tourism (MOET), Ministry of Education Sports and Culture (MOESC), Department of Teacher Education at the University of Zimbabwe, Environmental Educational Coordinating Forum (ZEECF), Environmental Liaison Forum (ELF), VVOB (Belgian Non-Governmental Organizational), Principal or Vice Principal from each college and college based EE Coordinators (STEEP Project Document, 2003). The functions of the National Project Management Team included policy formulation, planning and management of the project (STEEP Project Document, 2003). The Operational Management team of STEEP is the next in the hierarchy. It consists of the two ministries of education representatives, college based coordinators and VVOB representative. Its role among others, include coordination of national project activities such as EE training courses and EE learning materials (STEEP Newsletter, 2003). At each of the three colleges, Belvedere, Hillside and Mutare Teachers' College, there are college based coordinators. Their functions include chairing meetings on EE issues at the college, and liaising with other committees on EE matters (Beel, 2006; STEEP Discussion Document, 2004).

## 7. Method of Study

Qualitative research and specifically the case study approach have been used in the study. A case study observes the characteristics of an individual unit such as a student or class in order to probe deeply and to analyze intensively with a view to establish generalizations about the wider population to which that unit belong (Cohen and Manion, 1994). A case study involves intensive study of a specific phenomenon in its natural settings (Gall, Borg and Gall, 1996). The purpose of a case study was to produce detailed descriptions of phenomena and to provide an explanation of the emerging patterns (Gall, Borg and Gall, 1996). The researcher aimed at producing comprehensive description and explanations so that decision makers and stakeholders can take appropriate action in the implementation of EE at Mutare Teachers' College. McMillan and Schumacher (1993) also outlined that case studies are used when the scope of the programme evaluation is broad, including strengths, weaknesses and when the evaluation is focusing on outcomes. This is relevant to the study since the research focused on evaluating the intended outcomes of STTEEP as outlined in the project document (STTEEP, 2003). Campbell (1974) cited in McMillan and Schumacher (1993) pointed out that case studies are convincing and informative and enables one to identify non-verbal features such as facial expressions.

Sampling was done in two stages involving stratified and random sampling. Stratified sampling was used to ensure that each department is represented in the study. This enabled the researcher to get views, opinions and assessment of the programme from a wide cross section of stakeholders in the EE programme. Staff and students' list were used to randomly select the respondents from each category using random number table. Data has been collected through participant observation as the lecturers delivered their lessons. This is when one observes the event or phenomena in action (Tuckman, 1988). In the study, the researcher attended some lectures, taking note of relationships between behaviours of various participants, motives or intentions behind the behaviour particularly on aspects related to environmental education. I took note of the content, methods of teaching and activities by students and the lecturer in order to assess the inclusion of EE in the lessons delivered. Gall, Borg and Gall (1996) support the use of observation since it provides a more complete description of phenomena. In addition, observation can be used to verify data obtained from interviews or other methods (triangulation). Content analysis of documents such as schemes of work, syllabuses, teaching programs, tests and assignments given to the students were used to assess the implementation of EE across the curricula. This gave the researcher a track record of what transpired before and during the implementation of environmental education.

Apart from document analysis and participant observation the researcher also collected data from interviews with students and lecturing staff. Information was collected through interviews from various EE stakeholders, namely students, lecturing staff, STTEEP college steering committee members, grounds staff and College administrators. Twenty (20) or 20% out of a staff complement of 100 lecturers from all departments were interviewed. The Lecturers included the Head of Departments and STTEEP steering committee chairperson. These were interviewed as they are responsible for infusing the content and teaching of EE. Dillon et al (1994) supports the use of individual interviews in that they uncover underlying motivations, prejudices, attitudes and personal feelings about phenomena such as STTEEP. Fifty (50) or 11 % of 450 students involving first years and finalists was engaged in focus group interviews in order to assess their understanding and involvement on EE activities and processes. Gall, Borg and Gall (1996) supports this approach when they pointed out that group interviews allowed participants to express their feelings, perceptions and beliefs that they would not express as individuals. The Head of grounds staff was interviewed in order to establish whether there was a change in behaviour, amongst staff and students in regard to waste management within the college campus since the implementation of the EE programme. One of the intended outcomes as outlined by the STTEEP (2003) was that lecturers and students get more involved in EE

related activities such as collecting litter from the school grounds. The researcher also held interviews with the environmental education club committee consisting of four (4) members in order to find out the extent in which they are implementing environmental education activities at the college. Participant review, repeated observations and pilot study of research instruments were used to improve on the reliability and validity of the information collected.

## 8. Study Area

Mutare Teachers' College is situated in the Eastern Highlands of Zimbabwe, in the city of Mutare along the Chimanimani road. It is a Government Secondary Teachers' Training College established in 1956. It is one of the three Secondary Teacher Training Colleges in Zimbabwe. It is an associate college of the University of Zimbabwe. It offers Diploma in Education in a wide range of areas including sciences, arts, commercials, and technical subjects. The college has embarked on the teaching of environmental education across the curricula since 2003.

## 9. Scope of the Study

The study focused on evaluating the implementation of Secondary Teachers Training Environmental Education Programme (STTEEP) at Mutare Teachers' College across the curricula from 2003 to 2012. The study evaluated the intended outcomes of the Secondary Teacher Training Environmental Education Programme (STTEEP) as outlined in the STTEEP Project Document (2003: 3). Environmental education strategies expected to be implemented as per STTEEP document include the use of learner – centered methods in teaching. More open ended and active, experiential learning processes are to be used in the teaching and learning process (STTEEP parameter task team, 2003). Environmental education activities, projects and facilities have been evaluated in the study. Environmental education is expected to use practical skills, games, quiz, poetry, field work and resource persons to help the learners acquire skills that solve environmental problems (Beel, 2006).

## 10. Results and Discussion

### 10.1. Summary of Results from Humanities

Lecturers in the Geography department agreed that there was a change in the syllabus in which the new syllabus emphasizes on environmental education. The new syllabus has got a section on environmental education. At the beginning of each year the new intake is introduced to environmental education consisting of the history, global conventions on the environment such as the Earth Summit and some of the responses to environmental problems.

One lecturer highlighted that:

*“We have always been teaching environmental education, except that we were not putting much thrust on environmental education.”*

The lecturers indicated that before infusing environmental education in the new syllabus currently in use, there was thrust on the biophysical environment only such as soil conservation.

The Geography lecturers expressed that they now have a specific assignment in the form of a mini- project that is field based. The assignment requires the students to select a topic related to the environmental issue problem or crisis. The student then writes about its causes, effects and probable solutions. This project constitutes one of the four major assignments on coursework that makes up the final coursework. This type of assignment was not there before the implementation of STTEEP. In addition to this mini-project each topic in Geography has an element of environmental education. One of the lecturers revealed that:

*“As we teach for example ground water, we end up teaching environmental problems related to ground water such as water pollution.”*

The lecturers agreed that the lecture method was still the dominant teaching method. One Lecturer has this to say:

*“The intention is to change methodology to one that is child-centered, but not much has been done.”*

These findings are confirmed by Salia-Bao (1987), who found that in Nigeria teachers who were teaching modern mathematics were suppose to use discovery approach, but continued to use expository methods. The lecturers also pointed out that the introduction of STTEEP has shown behavioural change among the students as shown by few breakages in the Geography room and less littering in the classroom and surrounding grounds. However, they were not sure whether the absence of litter on the college grounds was due to behaviour change among the students or due to the efforts by Grounds men and classroom cleaners.

The Geography lecturers pointed out some of the challenges they are facing in implementing environmental education. These problems include lack of equipment and transport problems to carry out field work. They also pointed out shortage of time and lack of motivation due to low remuneration.

Lecturers in the History department expressed that they have not changed the content they teach to cater for environmental education. The lecturers only teach about the environment if the topic has got environmental issues. A lecturer claimed that:

*“In history subject, teaching environmental education would be like watering down my history content.”*

The lecturers in history reported that they still give the traditional type of questions without reference to the environment. One lecturer argued that, out of the eight student teachers under his supervision only one student had a project related to environmental issues. The subject of National Strategic Studies (NSA) removed topics such as slavery and the slave trade in order to accommodate environmental issues on globalization, land reform and their impacts on the environment. There was no change on methodology and assessment.

Lecturers in Religious Education noted that there was nothing specific in the content, or assessment to cater for EE. One lecturer noted that:

*“If I am teaching EE, it is by accident and not as per plan”*

They argued that the subject content would be lost by teaching environmental education.

Lack of orientation to new staff on EE and failure to make a follow up in the departments were major challenges in the implementation of EE.

#### *10.2. Summary of Results from the Languages*

In the Languages the lecturers revealed that there was no change in subject content. The content covered includes aspects such as proverbs, language use and poetry. One of the lecturers has this to say:

*“There is not much change in subject content, except for methodology of teaching the subject”.*

The lecturers indicated that with the introduction of environmental education the student teachers are now being encouraged to make use of their environment when teaching. The lecturers revealed that there were some poetry, novels and folktales that they teach which have got a theme on the environment, and these are used as an opportunity to teach environmental issues.

The Language lecturers indicated that the current approach in teaching has a thrust on environmental education that involves asking students to work in groups in compiling proverbs related to the environment. The student teachers are asked to compile proverbs on plants, or animals in order to promote environmental education. The Language lecturers revealed that they also make use of indigenous knowledge systems. African cultures such as marriage vows, inheritance and polygamy are addressed as they teach literature and poetry. Elders from the community are occasionally invited to give lectures on certain aspects of culture. Traditional music is sometimes used as a teaching method, for example when introducing a lesson. The methods of teaching used by the Language lecturers varied with the nature of the content being taught. The main teaching method used for teaching poetry and literary criticism was class discussions and class presentations. The students are given an opportunity to read the textbooks and this is usually followed by questions from the lecturer. Students were given questions to research on and made presentations during the lessons. Participatory and discovery methods were therefore largely used in the teaching of poetry and literary criticism. The principle of using child-centered methodologies in environmental education has been achieved in the area of teaching poetry and literary criticism in the languages. The lecture method was largely used by those lecturers who were teaching proverbs and grammar. The lecturers argued that there was a need to explain how grammar is constructed step by step. The lecturers revealed that there was still a need to adjust the syllabus on assessment in order to capture environmental issues. They agreed that there were no items specifically set to cater for environmental issues. There were some challenges being faced in implementing environmental education in the Languages. The old and experienced lecturers do not want to change their old ways of teaching. There is also a shortage of teaching and learning aids to teach environmental education. Gravanis (1997) who carried out a research in Greece in order to assess the implementation of EE also noted that the implementation process faced problems such as insufficient school equipment and inefficient use of time.

#### *10.3. Summary of Results from Commercial Subjects*

In Business studies, they have changed some of the aims in order to infuse environmental education into the syllabus. They added topics such as social accounting that incorporates the impact of accounting on people, places and products. The lecturers argued that they infused their syllabus with EE mainly because of pressure from donors and college administration. They felt that concentrating on EE would be irrelevant to the content their students were going to teach in schools. One lecturer argued that:

*“Our secondary education is examination oriented such that the secondary school teacher does not spend much of his/her time teaching environmental issues which cannot be tested at the end.”*

The lecturers were of the view that it was irrelevant to spend time teaching EE to college students when they are not going to apply this knowledge in schools. This argument has been supported by Gatawa (1998), who noted that programmes such as HIV and AIDS did not receive attention in schools since they are not being examined. The lecturers felt that EE was more relevant in Geography and Sciences. There are no specific items tested on environmental education in the commercial subjects. The lecturers in the commercial section complained that the experienced members at the College were also no longer participating in environmental education issues despite acquiring Environmental Education Certificates with Rhodes University sponsored by STTEEP. The environmental education resource room was always locked such that members of staff and students fail to get access to the resources such as books, journals and computers.

#### *10.4. Summary of results from Technical Subjects*

In Physical education the lecturers, had the view that they make use of the environment to improvise sporting equipment and getting involved in outdoor activities. However, they reiterated that there were no specific items tested on environmental education.

In Fashion and Fabrics the general view was that they were now concentrating on processes rather than a full garment. The idea was to save cloth and materials which would finally protect the environment. There were no tests and assignments to cater for environmental education. The department, however, reported that they give open ended questions and portfolios as part of the assessment which was meant to stimulate critical thinking among the learners. The challenge in implementing an EE in the subject was the high staff turnover. More than 50% of the staff in the department of fashion and fabrics were new and have not attended any workshop on environmental education.

#### 10.5. Summary of results from Mathematics and Sciences

Mathematics and Physics lectures claimed that their subjects were too abstract to implement environmental issues. A Mathematics lecturer noted that:

*“Although we infused environmental education, the implementation aspect is a bit lacking. There is no coordinated system for implementing environmental education in the department.”*

The lecturers in the mathematics department claimed that their subject was too abstract for example algebra which is difficult to relate to the environment. The lecturers agreed that in the section of methodology there is use of the environment such as the use of pots and basketry when teaching volumes. They also make use of traditional games such as ‘pada’ when teaching some concepts in mathematics. Environmental education is implemented in Biology as the lecturers teach topics on ecosystems. There was resistance of moving away from traditional methods of teaching in the science section.

#### 10.6. Summary of results from College STTEEP Steering Committee Members

The STTEEP steering committee is responsible for the implementation of environmental education activities across the curricula at the college. The STTEEP members outlined the achievements made since the inception of EE in 2003 at Mutare Teachers’ College. The achievements are as follows:

- The resource center with a computer on internet, printer, photocopier, television, journals and CD’s has been set up. These facilities are available to the college community. A Coordinator for the resource center has been appointed to run the activities related to environmental education.
- STTEEP has mounted workshops for new staff on environmental education. The local steering team held a workshop at the college with the grounds staff on sustainable cutting down of trees.
- The members have participated in the production of Environmental Education Guide on the use of teaching and learning materials. Some of the books are on the shelves in the college library.
- The environmental club has been established. The club is involved in cleaning the environment, mounting environmental education campaigns and running a herb garden at the college.

However the core steering committee members raised some reservations on the implementation of STTEEP. This was evident when one member noted:

*“Nationally infusing environmental education in the syllabus was one thing and implementing another think. There has been a gap between infusing the Syllabus with EE and implementing it in the classroom.”*

The members of the steering committee acknowledged that there was no enthusiasm in implementing EE. There was no follow up to see how different subject areas are implementing STTEEP strategies. Lack of funding was a major constraint in holding workshops to orient new members on the implementation of environmental education. The original project funders, VVOB ceased to fund STTEEP project in 2008.

#### 10.7. Summary of Results from Grounds Workers

The grounds staff indicated that those students who completed their studies in 2008 and earlier behaved responsibly to the college environment. The students collected litter around the hostels. There was also less littering around the college. The students followed designed pathways. They suggested that earlier groups were attending regular workshops on the environment. There was also a constant reminder on littering during assemblies. They bemoaned the 2009 and later intakes that showed less regard to keep away from the lawn. The workers appreciated earlier efforts by the STTEEP local steering committee who planted some gum trees around the college.

### 11. Conclusion and Recommendation

The research findings of this study revealed that the infusion of environmental education was done across the college curricular, but the implementation varied from one subject to the other. Geography and Biology have infused EE content and in its assessment. Specific EE assignments were given to the students. There is no change in content and assessment in History and Religious Studies to cater for EE. National Strategic Studies have removed some topics in order to give way to EE, although it did not change its assessment. In the languages the subject content remained the same, but participatory methods, recommended for EE are used in the teaching of poetry and literary criticism. There have been no specific changes in the assessment of subjects. The commercial subjects have not incorporated assessment items specifically for EE although they have changed some of their aims in the syllabus and added content related to EE. Technical subjects have infused EE in their teaching methods but without specific items on assessing EE. Fashion and Fabrics is now emphasizing on processes rather than full garments in order to save materials and therefore protect the environment. Environmental education has been incorporated in the teaching methods of Physics and Mathematics with no test items on EE. The College has established a resource center with a Coordinator to support EE activities. A herbal garden, gum plantation and environmental club have been put in place in support of environmental education.

The implementation of EE has been infused and implemented variably across the curricula. However the programme has been set back due to problems ranging from lack of enthusiasm and support of staff and students as well as financial constraints.

In view of the findings and conclusions reached, the researcher recommends the following:

- The government should avail funds to the college in order to buy environmental education teaching and learning materials.
- The college should have fundraising activities to raise money to develop teaching materials for environmental education.

- Workshops must be held to orient new staff on environmental education.
- There should be in-service-training for lecturers so that they keep in touch with changing trends in EE. Lecturers should be introduced to current approaches in teaching.
- Lecturers who were trained and awarded certificates in environmental education should take an active role in running the College EE Steering Committee.
- A full time Co-coordinator for EE is needed to increase access to the EE resource room. This will increase EE enthusiasm on EE among lecturers and students.
- The STTEEP Steering Committee should make a follow up and give advice on the implementation of EE in various subjects.
- Environmental education lessons must be taught as a separate module to every student.
- The whole curriculum from primary up to secondary has to be changed to cater for school-based assessment. In the present the education system is examination-oriented such that teachers only teach what is likely to come in an examination. The School-based assessment allows flexibility in teachers to assess EE in their coursework or examinations.
- The college could introduce awards for staff and students who excel in the implementation of environmental education.

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