

TRANSLATING ENVIRONMENTAL SCIENCE POLICY INTO PRACTICE: A CASE STUDY OF THE ENVIRONMENTAL SCIENCE CURRICULUM IMPLEMENTATION IN MASVINGO DISTRICT OF ZIMBABWE

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ABSTRACT

The aim in carrying out this study was to investigate whether teachers are translating the Environmental Science (ES) policy of Education for Sustainable Development (ESD) through ES teaching. The design adopted was a descriptive survey. A purposive sample of 50 teachers and 20 Grade six pupils was used from ten sampled schools in the Masvingo District, Zimbabwe. Data was collected through questionnaires and face-to-face interviews. The study established that teachers, indeed, used the local environment in the teaching of ES, which makes it possible for pupils to understand the ecosystems. The study also found out that some teachers were not able to recognize that environmental science carries a lot of Education for Sustainable Development in its aims, objectives, and content. The BEST approach used by the Curriculum Development Unit on the most effective methods of teaching ES did not reach all teachers in the district. It is recommended that the academic study and ES courses at teachers' colleges and universities that offer diplomas and degrees in primary education should put great emphasis on merging ES and ESD, as this will largely lead to the development of pro-environmental attitudes in the pupils. Schools can be made to establish environmental care centers, which act as a microcosm of the natural environment. The school heads can also promote and support ESD through ES, realizing that the environment is our common heritage for present and future generations. The Ministry of Education, Sport, Arts, and Culture should continue to conduct workshops on the relationship between ES and ESD.

Keywords: Environmental Science, sustainable development, curriculum implementation, syllabus interpretation, land degradation.

INTRODUCTION AND BACKGROUND TO THE STUDY

Throughout the world, concern for the preservation of the environment has led to the emergence of well-known environmental movements, such as the Green Peace. These have advocated for the protection of nature both flora and fauna, from excessive commercial exploitation. Governments throughout the world have also developed and formulated environmental policies and sponsored education for sustainable development in schools. In countries like Australia, New Zealand, Germany, and Sweden, environmental science education programs are regarded as central components of the school curriculum (Palmer, 1988).

In Zimbabwe, education for sustainable development programs predates independence. Legislation and commissions have recommended the establishment of statutory bodies, such as the Natural Resources Board and Wildlife Societies, among others. The Lewis Taylor (1975) commission recommended, among other things, the introduction of Environmental Science in the school curriculum as a way of developing knowledge, skills, and positive attitudes towards the environment in pupils. The regular revision of the ES curriculum in the post independence era (1990, 1992, and 1994) is a clear indication of government concern over the preservation of the natural environment. The aims of ES teaching are embodied in the syllabuses, pupils' resource books, and teachers' books.

ES is a core and compulsory subject in the formal primary school curriculum in Zimbabwe. The subject was introduced in the early 1990's as a sequel to the 1975 Lewis Taylor report on African Primary Education. The overall aim of the subject was to develop scientific skills in pupils, while at the same time, investigating relevant environmental issues, thereby developing necessary values and attitudes to effectively appreciate and manage the natural environment in a sustainable way. Hence, education for sustainable development has the objective of ensuring that future generations will have the opportunity to use their fair share of resources and will inherit a quality environment (Botkin & Keller, 2000). Resources should, therefore, be used to meet current human needs without harming the biosphere and with an eye to the possible needs of future generations (Hugget, Lindley, Garvin & Richardson, 2000)

During the initial years of ES implementation of the new syllabus, a number of problems were encountered, namely, time tabling, use of materials, gardening, and the hands-on approach, just to mention a few (Curriculum Development Unit [CDU], 1994). As a result of these experiences, CDU launched an evaluation in 1990 to appraise stakeholders on the developments and implementation of the ES program. Results of that evaluation found that teachers lacked teaching qualifications that affected their ability to interpret and implement ES programs, teacher dominance in most ES lessons, lack of syllabus documents in schools, insufficient textbooks in schools, and a lack of teaching material support from the CDU. The major problem was found to be a lack of teaching and learning equipment needed for pupil activities.

One direct result of this evaluation was the realization of the need to revise the ES syllabus and the need to launch the necessary training program to support the syllabus implementation. Revision of the syllabus took place from 1990-1993. This revision involved teachers as actual curriculum implementers. The government and CDU sought a donor to help improve the development and implementation of the Environmental and Agricultural Science in Zimbabwe primary schools in the name of German Development Cooperation (GTZ). In 1994, a bilateral agreement between the Zimbabwe government and the German government resulted in the establishment of the project, named Better Environmental Science Teaching (BEST) to implement the revised syllabus within a ten year period. BEST was to conduct in-service courses at different levels with key players, such as school heads, teachers, school supervisors, and teachers' college lecturers. Broad aims and objectives of these in-service courses or workshops were to improve the teaching and learning of ES in primary schools.

In all these series of workshops, the project recognized and appreciated that through ES teaching and learning, the subject will be laying the foundation stone for young people's sense of responsibility to enhance sustainable management of the

environment. Since the launch of BEST, a lot of evaluation has been done (Shumba, 1999; Shumba, 2000), which found that implementation of ES was not very effective in most sampled schools due to poor resource provision, poor subject supervision, and little support at the cluster level. Furthermore, Shumba (1995; 2001), which were on studies on how teachers' colleges were preparing teachers for ES teaching, established that colleges were not adequately preparing student teachers because of equipment shortages, among other shortages. A study by Tondhlana (2010) found that the Ministry of Education, Sport, Arts, and Culture was not giving adequate support on the implementation of the ES curriculum.

It is against this background that this study focused on translating the ES policy of education for sustainable development through ES in primary schools in the Masvingo district. Primary school pupils are the future generations and equipping them with sound environmental management skills ensures that our environment will be properly managed.

PURPOSE OF THE STUDY

ES is the pupils' first formal experience in science. It associates itself with environmental education programs such as Tree Growing and Tree Care We Care, Permaculture, Action Magazine, and Environment 2000. ES deals with the relationships between humans and their natural and manmade environments, therefore it should be taught from a sustainable way. Sustainability is "the use of resources by the current generations in a way that there is no reduction of capability of future generations" (Ekosse, 2009). Ekosse (2009) further suggests that the key to guarantorship of sustainability is education. If the school, as a nationwide institution, is involved in the dissemination of ES programs, there is a greater likelihood to reach everybody, including rural people. As our population is growing, we will certainly have less and less of the resources today. To overcome this problem, there is need for a new ethic, one that emphasizes the need to protect our natural resources in everything that we do.

The purpose of this study was to assess the implementation of the ES policy goals in selected primary schools. The ES policy is embodied in the following documents: ES syllabus (1994); Lewis Taylor Commission (1974); and Nziramasanga Commission (1999) reports. The major aims of these documents are to develop a positive interest in the environment by pupils, develop and appreciate a well-managed environment, and to use scientific knowledge and skills to influence and manage the environment (Curriculum Development Unit, 1994). The teaching and learning of ES involves the local environment (outdoor) as a learning laboratory. It is believed that the skills acquired from a wide coverage of topics will help the pupils to manage the environment. A study by Tanner and Tanner (1995) found out that the outdoor experiences had the most dominant influence on environmental awareness. Tanner and Tanner (1995) established and confirmed a hypothesis that children must first come to know and love the natural world before they can become concerned with its care. ES teaching and learning can play a positive role in developing pro-environmental attitudes in pupils at school level. The main purpose of this study, which was conducted in 2007, was to establish whether the policy vision of ES was being implemented at classroom level in the Masvingo District of Zimbabwe.

STATEMENT OF THE PROBLEM

Against a backdrop of massive land degradation, successive governments in pre and post-independence Zimbabwe have been grappling to develop an environmental ethos desirable for the conservation of resources. To this end, environmental programs have been crafted and implemented, but to no avail. This study investigated the implementation of the ES policy in primary schools.

The following research questions guided this study:

1. Are teachers familiar with ES policy goals embodied in the ES syllabus of 1994?
2. To what extent are the teaching methodologies compatible with the ES policy goals?
3. Do schools in Masvingo District possess resources relevant to the implementation of the ES policy goals?
4. Do both teachers and pupils display responsible environmental behavior in and out of the school?

THEORETICAL FRAMEWORK

Fein's (1993) concept of education for sustainable development provided a useful framework for conducting this study. Summerton, 1979, in Fein (Ed) (1993), defines an ideology as a total way of looking at the world, whereas Sergeant (1982), in Fein (Ed) (1993), defines ideology as a value or belief system that is accepted as a fact or truth by some group. Fein (1993) argues that every modern discipline is underpinned by an ideology. In education for sustainable development, two ideologies have been identified, namely the Dominant Social Paradigm (DSP) and the New Environmental Paradigm (NEP). According to Fein (1993), the DSP refers to an ideology, which has become entrenched as a result of the structures of power in a society by hegemonic values, institutions, and social processes. Cartgrove (1982) in Fein (Ed) (1993) argues that dominant groups hold the DSP and that it serves to legitimize institutional processes. The assumptions of the DSP have been identified as that humans are fundamentally different from all other creatures and have dominance over them and that people have control of their own destiny. They can choose their goals and learn to do whatever is necessary to achieve them.

In contrast, the New Environmental Paradigm (NEP) is underpinned by the following assumptions that humans are an exceptional species. However, they still depend upon other forms of life for survival and that the social processes influence human affairs. It is the biophysical environment that often reacts to human activities. The biophysical environment imposes constraints upon human affairs, that is, human health and survival are possible under certain environmental conditions. No matter how inventive humans may be, their science and technology cannot repeal ecological principles. That is, there are limits to the economic growth of human societies (Fein, 1993).

Therefore, this study was informed by the above approaches to investigate the implementation of ES teaching as a way of gaining knowledge on how pupils' environmental citizenship or values can be developed from primary school into adulthood, based on the premises that sustainable resource management calls on us to meet the needs of the present generation, while leaving the same or better still, an improved resource for future generations (Cunningham, Cunningham & Saigo, 2003; Gottlieb, 1997; Waugh and Bushell, 2002). The broad aim in developing pro-environmental attitudes is that in our endeavor for a real increase in well-being and the standard of life for the average person, we should ensure that this can be maintained

over a long term without degrading the environment or compromising the ability of future generations to meet their own needs.

METHODOLOGY

The study used a descriptive survey. Quantitative and qualitative data were obtained from the teachers' questionnaire and pupils' interviews.

Sample

Purposive sampling was used to select the 50 teachers and 20 pupils. These respondents were found suitable because every classroom practitioner in the primary school teaches ES across all grades and that all pupils have been exposed to ES lessons.

Instruments

Questionnaires with open and closed questions were used to solicit data from teachers. The questionnaires raised issues on teachers' demographic information; syllabus interpretation, that is, aims, objectives, content, and methodologies; relationship between ES and ESD; relevance of ES teaching approaches to ESD methods; learning materials and equipment availability in schools; and teachers and pupils' environmental behavior in and out of school. The interview schedule for pupils sought to establish time allocated to ES lessons, whether the local environment was used as a laboratory, topics that are commonly favored by pupils, and the environmental related work carried out at school, as well as at home. Pupils were asked whether they had ever visited any local environmental center to learn about environmental management and to suggest 40 forms of environmental destruction possibly caused by man.

Procedure

Permission to conduct the study was sought from the Provincial Director for the Masvingo Province. Questionnaires were administered to ten sampled schools in the district. Interviews were conducted on twenty pupils sampled from the ten schools.

Data Analysis

Descriptive analysis, frequencies, and percentages were used on both teachers' questionnaires and pupils' responses.

RESULTS

Sampled teachers who took part in this study were 50 qualified teachers, that is, holders of certificates, diplomas, and degrees in education. One (1) respondent had studied Nature Study, 18 respondents studied Environmental Science, while 31 respondents did Environmental and Agriculture Science. Thus, the teachers who were respondents in this study held the required skills in teaching and syllabus interpretation and implementation.

Teachers' understanding of the ES goals in the 1994 syllabus

A number of questions were asked on teachers' knowledge of ES and ESD, with a view to understanding whether teachers were familiar with ES goals in the 1994 syllabus.

On whether teachers knew the difference between ES and ESD, 62% of the respondents were able to distinguish the two terms correctly, while 38% could not define them correctly. This may mean that a lack of a clear definition is likely to affect the teachers' ability to interpret the 1994 official syllabus and affect their ability to implement the syllabus correctly. In the absence of clear knowledge, the emphasis on the value of education for sustainable development suffers with its downstream consequences of the natural environment.

Respondents were asked to indicate if they faced any problems in syllabus interpretation. The study established that 84% of respondents said they faced problems in understanding the current syllabus. Their problems are likely to affect the way they teach, let alone ESD, on day to day teaching. If pupils are not exposed to the elements of elementary environmental management, the natural environment suffers with consequences on flora and fauna.

Workshop History

The respondents were required to indicate the number of times that they had attended workshops on BEST from 1994 to 2000 and the responses are given in Table 1.

Table 1: Number of BEST workshops attended by teachers

N=50

Variable	Frequency	Percentage
One workshop	16	32
Two workshops	8	16
Three workshops	4	8
Nil	22	44

As indicated by the results in Table 1, although 56% had attended some workshops on BEST, a significant number of 44% never attended any workshop. BEST was introduced to improve the teaching in learning of ES quantitatively and qualitatively in the Zimbabwe primary schools through a cascading method, but the study found that this approach did not reach all teachers in the Masvingo District, as shown in Table 1. Key BEST workshop teachings and interactions emphasized on teaching ES using the local environment as a laboratory, that is, materials in and around the classroom, that includes nature as made up of trees, grass, soil, landforms, simple man made tools and machines, fuels, health, and pollution. It is believed that these approaches will expose pupils to elements of elementary environmental care, thus possibly managing it in a sustainable way. The 44% who missed workshops either at the district, cluster, or school level could possibly disadvantage pupils, and, as a result ESD, would suffer with a known effect of environmental degradation.

Table 2: Teachers' reasons for resisting the inclusion of ESD

N=50

Variable	Frequency	Percentage
Lack of time	20	40
Incorporate ESD during other practical subjects	3	6
Pupils acquire ESD skills during ES lessons	2	4
Link topics in ES with topics in ESD where possible	1	2
Most of the materials used in ES lessons are found within the environment	4	8
Lack of resources	12	24
Difficult to incorporate	5	10
Too much theory and no time for practical work	6	12
Negative attitude from the community	9	18
Some topics are irrelevant e.g. materials and technology	10	20
Teachers are not well educated on goals of ES and ESD at college	11	22
Authoritarian nature of parents –parents order children to cut trees	8	16
Language problem i.e. striking a balance between English and vernacular	7	14

Respondents were asked to respond to an open ended question on the nature of problems that affect their ability and willingness to fully talk about environmental issues. Teachers indicated that they meet a number of problems in incorporating education for sustainable development into the ES curriculum, as shown by Table 2. Problems ranged from a lack of teaching time, resources, and lack of skills, to negative attitudes from the community. These problems affected the teachers' readiness to make the ES syllabus well understood and applied by pupils. The sum total effect tends to affect the development of positive attitudes towards the environment.

When respondents were asked to rank the most effective methods in the teaching and learning of ES and ESD at the primary school level, the rating was as follows: the field trip (70%), the project method (56%), and the demonstration method (54%). This means that these methods can be equally used to teach education for sustainable development and develop pro-environmental behavior in pupils, which is compatible with the goals of the ES policy.

Table 3: Teachers rating of available teaching and learning resources at schools

Variable	Poor	Fair	Good	Very Good
Manufactured materials	40	20	13	27
Natural materials	2	12	30	56
Print materials	36	28	10	26
Sewing materials	34	32	12	22
Liquids and powder	36	40	10	14
Birds	28	38	14	20
Fish pond(s)	50	24	8	18
animal unit	28	16	20	36
Land(space)	12	20	36	32

Materials, which form the basis of equipment, can either be manufactured, natural, sown, print liquids, and powders (CDU, 1994). Teachers indicated that they had more natural materials at their disposal, as shown by 56% of the respondents.

Table 4: Commonly practiced activities during ES lessons taken as class

Variable	Frequency
a) Have planted trees	36
b) Have returned specimen to the natural environment	16
c) Have practiced permaculture at our school	5
d) Have kept fish, birds, animals at school	2
e) Have minimized soil loss at our school	37

All the teachers who took part in the study had done some environmental work in one way or another, from planting trees to erosion control in their respective schools. The ability to relate environmental science to ESD means that both teachers and pupils can establish a relationship that can result in the development of pro-environmental behaviors in the learner.

Table 5: Nature of teachers' environmental work carried out at their homes

Variable	Frequency	Percentage
Stone pitching	1	2
Planting grass	6	12
Avoiding pollution	1	2
Soil conservation	10	20
Planting trees	20	40
Keeping small animals	4	8
Established orchard(s)	3	6
Gully reclamation	1	2
Water conservation	3	6
Establishing fire guards	1	2

Every teacher who participated in the study carried out some form of environmental work, with 40% of them having planted trees as a form of sustainable environmental utilization. It is believed that hidden curriculum can pass these practices at school, thus benefiting the environment.

Summary of oral interview data from pupils

Group oral interviews were carried out on 20 sixth-grade pupils on various issues related to the environmental preservation and their significant responses are given below in summary form. Pupils were asked to give out any environmental destructive act, their effects, and suggest possible solutions, which they did as shown below.

Table 6: Forms of environmental destruction caused by man effects and possible solutions

Environmental act	Effects	Solution
Soil erosion	Gullies, loss of soil fertility, Destruction of infrastructure	Stone pitching, storm drains, contour ridges, planting trees/grass
Fish poaching	Indiscriminate harvesting of fish	Issue permits. Seasonal fishing
Pollution	Polluted atmosphere causing diseases	Avoid burning of any kind of safe disposal of garbage
Indiscriminate cutting down of trees	Erosion, lack of fresh air, deforestation	Sustainable planting of trees
Wildlife poaching	Extinction of wildlife species e.g. rhino	Game parks licensing to hunting safaris, arrest poachers, issue permits

Pupils were able to actively participate in the group interview on the effects and possible solutions on most environmental human acts. There was an a hundred percent correct response from pupils, which means that although they are not well taught on ESD, they realize that issues of environmental preservation are important and demand anyone's attention.

DISCUSSION OF FINDINGS

Teachers' knowledge of ES policy goals in the 1994 Syllabus

Respondents were asked a number of questions to distinguish and appreciate the relationship in meaning between ES and ESD. Most teachers (62%) could correctly differentiate these key terms, while 38% could not. These correct responses did not, however, mean the ability to incorporate ESD in everyday teaching. The benefits of understanding the syllabus are that one teaches all concepts as outlined, with a deserving emphasis on activities that will remain as permanent experiences in the pupils and develop the basic scientific skills in the pupils as outlined in the ES syllabus (CDU, 1994). In addition, the Better Environmental Science Teaching (BEST) policies under CDU emphasized the importance of involving local communities in the teaching of ES, such as Tree Growing and Tree Care by Forestry Commission, Natural Resources Board, We Care, Scope and Permaculture. Involvement of these institutions would enhance environmental protection. .

As a follow-up to the introduction of the current syllabus, CDU launched a program to educate teachers on the ES syllabus through BEST in a cascading manner. The BEST program aimed at holding workshops, establishing resource files, and placing subject resource teachers at the district level. Although this was done, this approach did not reach all the teachers and many teachers missed out on this important requirement. This was evidenced by the results where 44% of the teachers did not attend any BEST workshops. Failure to attend such important workshops tended to disadvantage the teachers, since all teachers that were irrespective of the status are classroom science teachers at various levels in the primary school. This would mean failure to understand the incorporation of ESD in the syllabus with negative consequences of failing to interpret the syllabus. This was further supported by 100% of the respondents who indicated the need to do some in-service training in ES teaching and learning. If more workshops were held, this would invariably expose some teachers to the issues of environmental management with its down streams advantages to the pupils.

On whether activities in the teaching of ES are given enough time where concepts are supposed to reflect ESD, 94% of the respondents indicated that the thirty minutes allocated to each lesson was not sufficient to discuss issues of environmental management at the class level. They are of the view that environmental conservation needed separate lessons for them to be taken seriously by pupils and have a positive impact on their lives. In addition to these problems, methods used in everyday teaching make it difficult or impossible to tackle ESD fully. These methods include the guided discovery, experimentation, problem-solving, simulation, and drama (CDU Environmental Science Syllabus, 1994).

In an effort to make teachers understand and fully appreciate that the curriculum can influence behavioral change in pupils, more so on ESD, teachers were asked to suggest ways that could be done to truly relate ES and ESD. In response, teachers suggested more workshops at the school/cluster level, involving the community, the total use of the environment, CDU to

provide learning materials, and the teachers' colleges to emphasize ESD during pre-service at the college. In addition, they suggested that the government could award prizes to schools that excel in ESD work. Examples of projects that could get prizes include establishment of gum plantations, orchards, permaculture gardens, and the establishment and management of environment care centers. The above initiatives would encourage more schools to put emphasis on ESD. From the study, 28% of respondents proposed the total use of the environment in a sustainable way, a way that could result in the conservation of natural resources for sustainable development. Schumacher (1993) pointed out that the curriculum has an important role to play in transforming values and empowering people to participate in the environmental improvement and protection.

The extent to which teaching methods are compatible with ES policy goals

On common problems that negatively affect the teaching of ES and ESD, respondents identified the lack of resources, the lack of time, the negative attitude from the community, and the irrelevant topics in the ES syllabus. ESD is all about sustainable utilization of soil, fish, wildlife, plants, small animals, minimizing pollution, water conservation, and avoiding deforestation. The above values can be inculcated in pupils at a younger age. The 'catch them young' philosophy could be effective for environmental education (CDU BEST policies, 1994). Respondents indicated that environmental issues were not dealt with adequately at the college level. They also noted that both pupils and parents showed a negative attitude towards environmental affairs, as evidenced by random cutting of trees by both educated, the in-school, and out-of-school population. Furthermore, respondents cited language as a barrier, where environmental issues are taught and explained in English at a stage of development, when the language competency is low (Shumba & Manyati, 2000). Therefore, environmental issues could also be explained or carried out in the mother tongue in order to be better understood and applied by the pupils (Mapara & Nyota, 2007).

Possession of relevant resources for the implementation of goals

The study found that respondents viewed the use of the environment as the only way issues about the environment can best be taught. The environment is a readily available source of learning materials, given the fact that the primary schools have limited resources to build laboratories for science learning. It is believed that the concepts and skills that are developed are immediately applied. In the process of using the local environment concepts that are on environmental education are acquired, children learn about such things as water, soil, plants, animals, landforms, and energy conservation. Palmer (1998) came up with an idea of a small environmental center at the school level, which should house a plant section, bird section, animal section, and a fishpond. Such a center can be further enriched to make the learning of the environmental science realistic, practical, and long lasting in terms of developing positive attitudes that are pro-environmental, in nature. Environmental science should enable both teachers, as professionals, and pupils, as learners, to make meaningful changes to personal beliefs and social and educational lives (Fein, 1993).

Display of responsible environmental behavior by teachers and pupils in and out of school

Both teachers and pupils were asked to indicate their out-of-school environmental work. Teachers indicated, among other activities, stone pitching, planting grass, planting trees, and establishment of fireguards around homes. What is interesting is

that teachers were aware of the need for sustainable use of the local environment. This knowledge of environmental work could spread from teachers to pupils and this would consequently develop positive attitudes towards the environment. Pupils were aware of soil erosion as the principal cause of land degradation and the loss of soil fertility. They also knew that fish poaching causes depletion of fish stocks as well as an indiscriminate harvesting of fish. Pupils appreciated that a polluted atmosphere causes diseases, indiscriminate cutting down of trees causing soil erosion and deforestation, and lastly that wildfire poaching causes extinction of wildlife species, such as the rhino. Pupils are, indeed, aware of the human effect on the environment. This, therefore, is a pointer that the ES curriculum can tap the talent and develop it into long-term pro-environmental behavior to preserve the natural environment for future generations.

Findings from the study established that schools involve their local communities in teaching/learning of ES. Communities are a reserve for environmental knowledge and conservation skills. Teachers felt that members of the local community who could be involved are health personnel, forestry staff, AGRITEX staff, youth groups, home based care groups, cultural dance groups, village development groups, and water conservation groups. It is believed that the above groups are relevant since they deal with nature on a daily basis. Their interaction with the local communities has a great influence on community behavior. These groups have a lot of indigenous environmental knowledge. Mapara and Nyota (2007) are of the view that indigenous knowledge is the basis for decision-making at a local level and has a bearing on agriculture, health care, food production, and education as well as natural resource management.

Teachers also raised issues that hinder the complementary role of ES as a school subject and environmental education as stipulated by policy. The major hindrances cited were time allocated to ES lessons as being insufficient to include environmental awareness. Schools are under resourced in manpower, literature, teaching media, facilities, and a supportive environment on matters that promote ESD ideas. They suggested a host of measures that range from more workshops on linking ES and ESD, allowing for ESD competitions and awards, employing qualified environmentalists to spearhead uniting parents and teachers to work together to improve teaching of ES and ESD in schools, and lastly to teach ES as an extra-curricular subject to all grades and to apply ES on a project basis. These groups can spearhead a multi-sectoral participatory approach, as advocated by Freire (1972). It is believed that if ES is well taught, it will lead to the acquisition of values of conservation and the development of pro-environmental projects at the school level to reinforce what subject teachers do.

CONCLUSION

The study targeted grades one to seven teachers in the Masvingo District where ES is a compulsory subject. Teachers knew of the existence/inclusion of ESD in the syllabus, but were not able to fully teach ESD concepts due to the lack of time, the lack of resources, the overloaded time-table, and the lack of sufficient training at college level, among other obstacles. The BEST workshops mounted by CDU did not reach all practitioners and, therefore, affected their ability to interpret the ES syllabus and subsequent teaching. The study found that indeed, teachers use the local environment as a laboratory (outdoor) learning, which is ideal for environmental work as advocated by BEST. However, due to time constraints, issues of environmental management are not well covered in ES lessons.

RECOMMENDATIONS

In light of evidence obtained through this study, the researchers would like to make the following recommendations:

- Teachers should be made aware of ESD in the ES syllabus through workshops at various levels of the district.
- That academic study and academic courses at the teachers' colleges and universities that offer diplomas and degrees in primary education put great emphasis on merging ES and ESD.
- The school can establish environmental care centers, which can act as a microcosm of the natural environment, that is, a housing animal unit for fish, bees, fish ponds, birds, wildlife, etc.
- The school heads to promote and support ESD through ES, realizing that the environment is our common heritage for present and future generations.
- The schools to have resource persons at either the cluster or school level to oversee ES and ESD teaching.
- The schools should establish a reservoir of information on ES and ESD from which teachers can access information easily, when the need arises.
- Schools can establish Environmental Clubs in conjunction with the Environmental Management Agency (EMA) that spearheads the ESD projects. The club would encourage as much environmental work as possible at the school and at home.
- That sustainable teaching becomes the watchword for teachers in primary schools, especially in the Masvingo District.

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