Environmental Education: The Philosophy of Greening the Curriculum

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Abstract: Studies have been done in various countries on the implementation of environmental education but the support from the top leadership has not been good. However environmental education is an important tool for sustainable development. The study is important to policy makers, educators and well as other stakeholders. The study used interviews and group discussions in generating data. It sought to establish the perceptions of the participants on environmental education. An ethnographic approach was adopted as the researcher spent a lot of time with respondents and also taking part in their activities. This approach was selected because it enabled the researcher to collect thick rich data that was validated through triangulating with what was collected from individual interviews and group discussions. Data was qualitatively analyzed. The results showed that some respondents seem to understand the importance of environmental education while some could not see its importance. The findings were of importance to all in the education fraternity as well as to the environmentalists. Use of the findings could change the mindset of the community through educating the learners. Therefore the findings of the study are important in redirecting the mindset of people towards environmental protection with regard to preservation and conservation.

Key terms: Environmental Education, Philosophy, Greening the Curriculum

1. Introduction

Environmental Education is a field that is within education in general such as other areas of study. Education of any people requires a model that teaches from within their culture, rather than teaching about their culture and traditions. One may want to create an understanding of the concept, environment, [1] (p503) said, “…an environment is our surrounding and that surrounding includes the air, water and the soil.” Environmental education can be used to change the mindset of people towards the components of the environment. It is evident that human activities impact the environment and through environmental education some of such environmental challenges can be reduced. “…environmental challenges culminated into socio-economic and the wellbeing of people who had been vulnerable to the infection of lungs and other infectious diseases linked to mining activities were malaria…,”[1] (p503). Mining activity alters the environment and allows water to collect in the ditches created resulting in a mosquito supportive breeding ground. In their study they
focused on the impact of mining on the environment leading to an environment that threatens life such as malaria. Some infectious diseases can be controlled at village or societal level. Through the teaching of the life cycle of a mosquito which is hinged to the environment a lot can be realized in combating malaria. The understanding of the breeding places of mosquito takes us back to the environment and if such issues are addressed in some subjects at school then the community may have an insight in fighting malaria. Diseases associated with air pollution such as lung cancer, while cholera is spread when water bodies are polluted with a bacterium from human faeces. As a result lack of understanding of the effects of not caring for the environment. The Human and Social Biology subject covers important aspects such as the control of the organisms that cause diseases, (0573 BGCSE Human and Social Biology, 2001). While this subject can be relevant when looking at greening the curriculum, it is unfortunate that is not taught in Senior Secondary Schools, only taken by learners doing private studies. The bulky of the subjects do not have any component of the environment. Of the eleven subjects purposively selected 4 out of 11 (36%) addresses environmental issues. The same subjects are not core which makes it possible that some people go through the Botswana education system with no understanding of preservation and conservation.

The environmental education should be handled and taught within the culture and traditions of a particular group of people. Alaskan natives saw themselves as part of the system in which everything was interlinked, people had dual citizenship in both spirit and physical world not all things are knowledgeable, controllable and attitudes as important as action. This is similar to [2]’s philosophy of the hidden connections. Multiple world views are essential in developing environmental education curriculum. The western view should allow different world views to exist side by side, while the second view sought opportunities for the world views to be integrated around common themes. The indigenous world view support the understanding and blending of common elements and values. In practice, there are elements of all the models in curriculum design and development. It is that area that has not been thought off the way other areas have been. The aim of this paper is to make the public and policy makers, of the importance of environmental education and the possible ways of implementing environmental education in the context that would embrace multicultural setting.
Fig: 1 The Western and Indigenous dimensions of curriculum

Fig: 1, shows examples of how different groups organized their curriculum. The western world divided the curriculum into two, the arts and sciences. These are the issues we see in different countries. The indigenous curricula is viewed as characterized by land (science, technology, geography, mathematics, health, languages and others; People (social studies, history, languages, & arts); spirit (religion, language & arts) and the Self (Self-evaluation, counseling, spiritual, languages & arts). It should be noted that the first three examples relate well to the environment or the environmental management resource use. If the western view and the indigenous world view are integrated one is likely to come up with a curriculum that is likely to address wide range of issues which lead to environmental sustainability.

2. Addressing issues that rose in Fig. 1:

Content: continuous strive to include the deep knowledge when including indigenous knowledge. The curricula often include instruction on how to make fishing wheels and the importance of protecting fisheries resources but fail to link these learning experiences with factual, spiritual conceptual knowledge. Context: knowledge systems have to be linked to their natural settings-seasonal camps and other traditional settings can help in the transmission of knowledge. Instruction: avoid and prevent negative, deficit modes explaining indigenous technologies and knowledge. For example, highlight how ancestors brilliantly developed the soft technologies of fish preservation rather than emphasizing that they managed to survive with primitive methods until the introduction of freezers. Assessment: indigenous knowledge places greater emphasis on being able to do things, while academic knowledge places greater emphasis on knowing about things. The assessment must reflect indigenous priorities on doing things, referring what is known about the process from the active demonstrations. The participants can indulge elder as a way of new learning. Overall, the learning experiences seemed to have worked well, with the elders being able to share their native techniques for passing on knowledge and some cases through song and storytelling. The so called ancient methods (singing to convey messages and storytelling) are they not used in modern education classes?

2.1 The study was guided by the following objectives:

- Defining the concept curriculum.
- Examining the greening of curriculum.
- Assessing the UNESCO goals of Environmental Education

2.2 Alaska 2000 program can teach Environmental Education teachers in Africa

Environmental education is a concept of social construction which may be seen as not valuable on face value. Alaska 2000 program was an example of how it was possible to take cognizance of this concept and develop curricula which involved different world views. The use of respectful language when referring to the traditional ways of doing things, as well as in assessing students’ ability to do rather than their ability to know. Allowing discussions which give students opportunities to
understand better how cultural and spiritual world views, their own and others relate to the knowledge they explore in our class rooms. [3]’s model of the four dimensions of the environment and their implication on curriculum.

2.3 The four dimensions of the environment as postulated in O’Donoghe’s model are the:

Biophysical challenges: and among the challenges are the pollution, loss of biodiversity, degradation of life support systems, global climate change and the ozone destruction are some of the many environmental problems which become visible in the biophysical realm.

Economic challenges: there is a crisis of development. First world characterized by high economic growth and that has also led to increased consumption which made great demands on natural resources rendering those in third world poorer. Third world: lack of development has contributed to poverty and deprivation. Despite economic growth at global level there is absolute number of poor people has been increasing and the gap between the poor and the rich widening. The western consumption style has been adopted in developing countries.

Social Problems: social conflicts and violence and seeing nation’s stock-pile nuclear and other weapons with the power to destroy all. The diamond wars (DRC & Zimbabwe) shortage of oil (Nigeria), increased stress and the abandoning of children and the disintegration of values.

Political challenges: basic human rights not respected and exploitation of workers for political and economic gains.

Environmental challenges are complex and interlinked. One can see this by examining the causes and efforts of any environmental issue, for example, the population growth, and soil erosion or water pollution. Both the causes and effects of environmental problems can often be traced to all four dimensions of the model adopted by [3]. Martin (1975) in [4], points out that, “….environmental education does not ultimately have validity unless it also involves education to change the human environment for the better by understanding on one hand the political processes by which this can be done as ‘participating citizens’ and on the other hand as noted by conservationist and other environmentalist, by acquiring an environmental ethic and a knowledge of the ecological basis of life, on which value judgment about the environment can be based.” [5] Defines EE as, “Education for the environment should be shared speculation with pupils on those forms of technology and social organization which can enable people to live in harmony with one another and with the natural world.” The two definitions seem to have some common elements such as interaction between people and the environment and also the importance of understanding of the connections that are in place between people and the whole environment. While similarities can be seen there might be some silent issues that do not come out clearly and they might have been contributed by the context on which each definition was focused on. If the definitions captured the deep underlying environmental challenges, possible solutions to the challenges and probably the responsible authorities that may recommend the green practices then one would look at environmental education with a different lens. By authorities it should not be confused with leadership position but any citizen who could come up with working model that may be useful in addressing environmental crisis. The World Conservation Strategy [6] said, “…the behavior of entire
societies towards the biosphere must be transformed,” and it is only through education that these behaviors can be transformed.

[7] (p.26) sees curriculum as, “… a program of activities designed so that pupils will attain as far as possible certain educational ends, aims and objectives.” When [7], talks of a curriculum as a program, what comes into picture is that it brings in the element of planning and a program is broad. By attaining as far as possible it implies that there could be some limitations which may not allow certain education ends to be met, and [7]’s position was that curriculum has specific aims and objectives. [8] Defines curriculum as, “…a contrived activity and an experience, organized, focused, systematic that life unaided would not provide.” He went on to say, “…it is properly artificial, selective, organize, elaborate and speeding up the process of real life.” What can be learnt from [8] is that by contrived activity tells us that it is a deliberate activity, systematic means that all move step by step in a chronological order. That life unaided is that what is conceptualized in the curriculum could not be appreciated by ordinary people in the street. Curriculum is by nature artificial as selection of content is done for a specific purpose.

Botswana has a national curriculum which provides guidelines and orientation to formal education institutions at a national level. Teacher education colleges and other tertiary institutions had the autonomy to develop and implement their own curriculum. More localized curricula can also be developed in centers, in workplace base for Environmental Education (EE) programs. Pilot projects often have some leeway to modify curricula within project schools or institutions.

3. Materials and Methods

The study was conducted in Botswana in a village named Mochudi. The area of study was selected because the researcher spent a lot of time in that village, were he stayed among the respondents, and took part in their activities as a result it is an ethnographic study. This enabled the collection of thick data to a point of saturation. The study was qualitative so the analysis was verbatim. “One of the ontological assumptions of Interpretivist research was that realities are apprehendable in the form of multiple, intangible mental constructions, socially and experientially based, local and specific nature … and dependent for their form and content on the individual persons or groups holding the constructions,” [14] (p.110). The participants had differing perceptions about Environmental Education (EE). [9]’s postulated that subjectivist view knowledge as that which is socially constructed as there were interaction between the researcher and the participants. The methods of generating data used in this study were interviews, observation, document analysis and remote sensing. Interviews were used because they enabled the researcher to get the views of the respondents on the subject, environmental education. The views of respondents were important because the design and development of a curriculum should draw some concepts from the general public. This was because any curriculum is implemented in a community, society or country at large. Observation was used to verify practicality and also enabled the researcher to capture those issues that are put into practice by the educators. Document analysis was essential in that the researcher looked at the Curriculum Blue Print for Primary Schools; Junior Secondary Schools; Senior Secondary Schools and the Revised National Policy of Education. Remote sensing instruments were used such as the camera in capturing some environmental issues. The data was analyzed through thematic analysis which was coded and categorized into major themes.

4. Results
Respondents were drawn from Primary Schools, Junior Secondary schools and Senior Secondary schools. Respondents were asked questions on their understanding of the concept, “EE” and their responses were captured. What follows here under are the interpretations generated from the interviews, and part of the questionnaires.

Respondent 1: Felt that Environmental Education contributes to the effective protection of the environment. This showed that this respondent had an insight of the content of EE. Went on to point that Environmentalist is supposed to care for the environment but that can only be through an understanding of the concept environmental education.

Respondent 2: I am a geographer and I think EE is an important tool that could be used if sustainable development could be realized. The environment needs to be protected to the fullest. According to the two respondents teaching environmental education is essential as it empowers learners with learners and skills that would make them interact with the environment in a proper way. It was also pointed that while the talk is on formalized learning, one need to acknowledge that EE should be taught even to other members of the community because environment is affected by all not only of school going age. Changing the attitudes of community members towards the environment may not be easy but if one wins the hearts of few the assumptions is that it may go a long way in influencing others positively. Changing the attitudes of students as well as that of the community could not be easy as it was noted that environmental degradation as well as littering can also be seen in our environment.

The three schools visited at the Kgatleng region showed that the mindset has not changed because in one of the schools they did not have an environmental club which was assumed to positively influence towards proper care of the environment. It was observed in another school that the litter is not removed from the bin to a point that goats spill it over. A tour in the village revealed that the larger community cares about the environment as elderly people do not litter the way the youth does it.

Respondent 3: Environmental Education has been infused in subjects such as Agriculture, Home Economics and Science into a single learning area at primary schools. When document analysis was done it was found that the [10] showed that Environmental Education was infused in some subjects. This indicated that learners are exposed to environmental issues at an early age but this did not show the impact inherent in the teaching of environmental education. According to the Curriculum Blue Print environmental education sought to enable learners to develop knowledge base that enabled the learners to acquire skills, values and attitudes that helped them to interact with the environment in a positive manner. It was noted that there was an attempt of introducing education for the environment at an early stage of learning. An example was, “…an understanding of the interaction among science, technology and society.” The acquisition of desirable attributes towards the environment was important and that was good in that environmental issues were introduced to learners at an early stage.

Respondent 4: Responded focusing on the ten year basic education, environmental education is infused in Integrated Science and Agriculture. One would have expected the greening of the curriculum to be visible in all subjects. One respondent indicated that little was done in teaching environmental education. It was suggested that policy structures were not in support of

Respondent 5: pointed that at Senior Secondary level the study areas that are connected to the environment were in the Optional group of subjects. Under Optional Groups, Geography and Development Studies were classified as Humanities and Social Science. Environmental issues were addressed in Science Subjects such as Single Science, Double Science, Biology and Human & Social Biology. However, the sciences mentioned treat environmental issues at different depths and being optional means that environmental concerns are not equally conveyed to learners.

Respondent 6: The concept of EE included the biophysical components which might have excluded some environmental components. According to respondent 6, environmental education consisted of preservation, conservation whose main mandate was to protect the environment. This was supported by [12], (p.341) who said, “Environmental Education is the teaching and learning about biodiversity and how it needs to be managed.” The issue of interest is that an environmentalist focuses on disseminating information on protection of the environment and making sure that the biodiversity does not dwindle the way it happens in some sectors in the world. Analysis of environmental education one can conclude that it promotes the development of the affective domains in individuals.

It was observed on the ground that there was littering on the environment and this could be attributed to little understand of the need to protect and preserve the environment in good shape. The plat 1: below shows and environment that has been disfigured and could be a breeding place for rats and cockroaches.
Plate 1: An illegal dumpsite in Mochudi village, (Mochudi, April 2013
Source: [15]

If environmental education is taught across the curriculum, littering which is shown on Plate 1: would not be common in our localities. Environmental education can change the attitudes of people to a point where the environment could be respected and treated with dignity.

5. Discussion

The philosophy of greening the curriculum can be by adding environmental information to existing subjects or learning areas, for example an Environmental Module in Geography, or a section on environmental issues in Biology. In an education environmental attributes can be used as examples in Mathematics or any other subject and by so doing an environmental awareness in the community is created. In English language comprehension assessment, papers whose text looks at environmental issues can be used, for example, the after math of the spill of chemicals from a mining activity into a major source of water in a particular village. In the process the environmental issues would be taught to learners without having to do the Environmental studies. The other option of greening the curriculum is coming up with an, integrated curriculum. Here the curriculum would be designed to address environmental challenges and some of the essential elements of this approach are:

- Critical Action
- Dialogue
- Participation (action) in solving common local problems

The single subject or interdisciplinary model pulls all other curriculum areas into one Environmental Education Curriculum (EEC) and has Environmental Education (EE) as a subject with exams. In Scotland Environmental Education (EE) is taught within other subjects but with a separate syllabus and examination at the end of the year. The situation is somewhat similar in Botswana but what was found to be a challenge is that teachers are not well grounded in this such that some may not know what is to be done. Multidisciplinary (infusion) is that EE as a discipline that is incorporated as a component of established disciplines taught as subjects. These subjects would be interrelated and EE questions would be within the other subjects. EE is an informed holistic response to environmental challenges. Environmental education is life long process that develops skills, attitudes and values that are necessary for appropriate environmental management.

EE is a process but an appropriate response to environmental issues which could be synonymous to action research. Emphasis in EE is that of an enquiry, social change and an empowerment of learners of all age groups. Nziramasanga Commission on Education in Zimbabwe recommended that EE be incorporated in all subjects, while some scholars contend that it should stand on its own. If it stands on its own it would have implications on teaching resources and the manpower resources. This has made education sectors to be skeptical when it comes to implementing Environmental Education as a subject.

5.1 Ways of Integrating Environmental Education into the main stream curriculum
Thematic teaching starts with the identification of a theme which is an underlining concept that allows for the structure and organization of specific content across other study areas. The theme is the topic of interest that provides the core group of activities. It helps the learner to see meaningful connections across disciplines or learning areas such as subjects or modules. More importantly, themes provide relevance for the learners by drawing together concepts under one umbrella. Lessons could be studied thematically in social studies for example, environmental hazards, wars, conflicts, human rights violation, economic progress and the like. The themes could be developed also in reading, language, music, physical education and art. Thematic means that the same topic is used to develop the teaching plan regarding the content and instruction for each of the different subjects in which students are enrolled. Two methods in presenting the thematic units:

- The integrated multidisciplinary thematic units
- The integrates of interdisciplinary thematic units

Both approaches use the following steps in planning instruction. Select a suitable topic or theme. Select suitable specific learning object. Detail instructional procedures and planning for pre-assessment and assessment for student’s learning including the provision of instructional material.

5.2 Integrated multidisciplinary thematic units

This attempts to combine two or more discipline into one single approach. Likewise, it draws related topics from multi disciplines. Example when Geography are still retained is considered a core; related topics could be drawn other disciplines to supplement the content of the core. In the process, however the disciplinal boundaries are still retained as well as the disciplines’ identity. Orientation of curriculum and resource development gradually has been changing. Orientation emphasized on broad and critical participants in curriculum processes and represents a recent trend in the field of curriculum particularly educational theory and action.

5.3 UNESCO’S environmental education objectives

Environmental education must involve a holistic approach and thus an interdisciplinary focus in the relation between human beings, nature and universe. Education is the right to all; we are all learners or educators. Environmental Education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and sovereignty of nations. EE must stimulate solidarity, equality and respect for human rights involving democratic strategies and an open climate of cultural interchange. EE should treat critical global issues, their cause and inter relationship in a systematic approach and within their social and historical contexts. Fundamental issues in relation to development and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner. EE must facilitate equal partnership in the processes of decision making at all levels and stages in our communities. EE should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destinies. EE values all forms of knowledge. Knowledge is diverse, cumulative and socially produced and
should not be patented or monopolized. EE must be designed to enable people to manage conflicts in a just and a human way.

Environmental Education was seen as a discipline that would make also empower women by ensuring that their voices could be heard and could be realized through recognizing that knowledge is practical and multiple in parameters. It is meant to drawing attention to the gender blindness and racism in environmental education. Developing an understanding of the stories of what we are a part of and our abilities to deconstruct them, (where deconstruction is a method of critical inquiry which allows us to uncover that which is disregarded by the dominant world views. [13]’s idea were that they were grounded in an opposition to the longing for one true story that has been the psychic motor for western science.

6. Conclusion

This paper sought to explore and shed light on issues that are hinged to Environmental Education. It highlighted the importance of Environmental Education in the wake of the need to preserve and conserve natural resources including wildlife and wild forests. Environmental Education is a tool that can effectively use in transforming the minds, the attitudes and the way the world is viewed by the community, on its own it is not preservation or conservation as some people may see it but a look at the Bloom’s Taxonomy one would say it attempts to realize the cognitive domain for example, learning how to make decisions, answer questions, solve problems. The affective domain was also attended to in that the idea was to inculcate in leaners the valuing of the environment. It was noted that the participants belonged to two separate worlds, anthropocentric world view and ecocentric world view. Some respondents were familiar to the subject Environmental Education while some did not know anything about it. Those who had an idea were able to state that EE can be taught through transmitting environmental knowledge so to influence positive attitudes and values towards the environment. Having individuals who could not figure it out created a lot of challenges in influencing a positive mindset towards the environment. Environmental education can be implemented effectively if education policies and other legislature support it. The three Curriculum Blue Prints did not articulate the space for Environmental Education.

7. Contribution of the study

One of the recommendations in a study conducted by [15] (p.1567) was the importance of “sensitization of the public on solid waste reduction, reuse, recycling and composting before disposing the waste,” this was assumed that it contributed to good health and a sustainable environment. To win on this regard environmental education could be infused in the curriculum in all stages of learning as advocated on this paper. The challenge was that when environmental education is imposed on the community at higher learning it could be resisted, the process of muddling through could save the situation where the greening of curriculum is introduced bit by bit.[15], (p.1567) said to effectively implement Environmental Education, “…limited public support and participation,” can be corrected through education at ward level and move out to reach a larger
community which is an issue within the sociological foundations of curriculum design and development. The environmental issues can be filtered into the mainstream curriculum such that institutions of learning would be used as an agent in rolling out environmental education. The study contributed to the body of knowledge and will inform policy makers on the importance of environmental education and the curriculum designers. Other scholars may also look at areas that were not covered on this study and explore them so as to reduce the rate at which people transgress the planetary boundaries. The study is important from the side of policy making, implementation, curriculum design and development in developing countries. It addresses the knowledge gap in developing a conclusive curriculum that will have elements drawn from all essential study areas of concern. The integrated curriculum would appeal to all “stakeholders” from the community level to the corporate world. It would be of interest to the Ministry of Education and Culture as well the Ministry of Lands and rural resettlements as the findings may be useful in guiding and developing sustainable programs.

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