

REPOSITIONING ENVIRONMENTAL EDUCATION FOR SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

The Earth Summit in Rio de Janeiro in 1992 in many ways lifted the subject of sustainable development onto the international political agenda. The general agreement reached on Agenda 21 and the Rio Declaration, which placed in perspective the balance between environment and development, are all clear testimonies of the importance of politics in environmental considerations. The Summit also acknowledged the concerns of the developing countries by bringing into sharp focus the link between poverty, environmental education and environmental degradation (UNU, 1996). In this paper, the issue concerning environmental education and sustainable development in Nigeria was addressed. This includes the position of environmental education in Nigeria and recommendations to reposition environmental education to achieve sustainable development in Nigeria.

Introduction

The quest for sustainable development has in recent years become a key concern for the developing regions of the world. Issues pertaining to the ecosystem's capacity to tolerate and respond to population growth and other human-induced stresses have become essential for the sustainable management of natural resources. Each year significant amounts of agricultural land are converted to urban land uses or lost owing to erosion posing serious threats to local and global food security.

At the same time, critical resources, such as water, become increasingly scarce and polluted. Physical and anthropogenic processes are intricately interlinked, but it can be argued that the present environment is largely a result of the interactions between man, natural resources, and technology in the socio-economic and cultural development process.

Finding and disseminating solutions to these problems is not only a matter of technology, but requires a multidisciplinary approach with inputs from both natural, social sciences and environmental education besides the cooperation of all sectors of the international community. Environmental considerations can no longer be separated from issues related to social and economic development, population, trade, food security, and the international system as a whole.

The World Commission on Environment and Development defined sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." (World resources institute, 1992.) The concept of sustainable development is new and controversial, and the policies needed to put it into practice are still developing. No country is yet pursuing a policy of sustainable development. The road to sustainable development is not the same for an industrialized country, a rapidly industrializing country, and a developing country. Some steps are appropriate for all countries; others are more appropriate for countries at specific stages of development.

Sustainable development can be thought of as a process requiring simultaneous progress in four dimensions: economic, human, environmental, and technological. The sustainable development goals listed below are divided among these categories. There are close linkages among these different dimensions and actions in one area can reinforce goals in another. For example, if further economic development is to be sustainable, it cannot neglect environmental constraints or be based on the destruction of natural resources; it cannot succeed without the parallel development of human resources; it will require transformation of the existing industrial base and the development and diffusion of more Earth-friendly technologies,

The Four Dimensions of Sustainable Development

Economic Dimensions

- Steadily reducing wasteful levels of consumption of energy and other natural resources through improvements in efficiency and through changes in life style.
- Changing consumption patterns that needlessly threaten the biodiversity of other countries.

- Providing leadership to support sustainable development in other countries.
- Reducing import barriers or protectionist pricing policies that limit the access that poor economies have to markets for their products.
- Using financial, technical, and human resources to develop cleaner, less resource-intensive technologies.
- Giving more equal access to resources to all people.
- Reducing growing disparity of incomes and access to health care.
- Transferring money from military and state security expenditures to development needs,
- Committing resources toward continued improvement in living standards.
- Alleviating absolute poverty.
- Improving access to land, education, and social services.
- Developing an efficient manufacturing sector to employ workers and produce goods for trade and consumption.

Human Dimensions

- Stabilizing population.
- Slowing migration to the cities through rural development.
- Adopting policy measures and technologies to minimize environmental consequences of urbanization.
- Improving standards for literacy.
- Making primary health care more accessible.
- Improving social well being, protecting cultural diversity, and investing in human capital.
- Investing in the health and education of women.
- Encouraging participation in decision-making.

Environmental Dimensions

- More efficient use of arable lands and water supplies.
- Improving agricultural practices and technologies to increase yields.
- Avoiding overuse of chemical fertilizers and pesticides.
- Conserving water by ending wasteful uses and improving efficiency of water systems.
- Improving water quality and limiting surface water withdrawals.
- Conserving biodiversity by greatly slowing and, if possible, halting extinction, habitat and ecosystem destruction.
- Preventing destabilization of climate or destruction of the ozone layer by human actions.
- Protecting natural resources need for food production and cooking fuels while expanding production to meet the needs of growing populations.
- Using irrigation carefully.
- Avoiding expansion of agriculture on steep hillsides or marginal lands.
- Slowing or halting destruction of tropical forests, coral reef ecosystems, coastal mangrove forests, wetlands, and other unique habitats to conserve biological diversity.

Technological Dimensions

- Shifting to technologies that are cleaner and more efficient—that minimize consumption of energy and other natural resources and do not pollute air, water, and land.
- Reducing carbon emissions to limit the global rate of increase of greenhouse gases and eventually stabilize the atmospheric concentrations of these gases.
- Overtime, greatly curtailing, use of fossil fuels, and finding other sources of energy.
- Phasing out use of chlorofluorocarbons (CFCs) to prevent degradation of the Earth's protective ozone layer.

- Preserving traditional technologies that create few wastes or pollutants, that recycle wastes, and work with or support natural systems.
- Rapidly adopting improved technologies as well as improved government regulation and enforcement.

Source: community development library for sustainable development and human needs, C D Rom.

The Nigerian Environment

Nigeria as a geographical entity with a population of about 130 million people has been exerting immense pressure on its physical environment for a very long time. The Nigerian environment has over time, experienced changes dictated by both internal (i.e. national) and international socio-economic and technological activities; some of which are either detrimental to or incapable of supporting a sustainable development. This phenomenon should be of concern to the government and people of Nigeria, given that the survival of the nation depends to a large extent on viability and durability of the environment, particularly its natural resources.

Conscious of these facts and committed to the engendering of a virile environment, the government, non-governmental agencies, research' institutions, international organizations, public spirited associations and individuals have demonstrated their interest in caring for the environment. Many studies, workshops, seminars and conferences have been conducted with a view to finding solution to some of the environmental problems facing the nation.

The Nigerian environment, according to the NERD (1992) report, is in a constant state of degradation as exemplified by the following persistent local problems:

- Land and soil degradation,
- Air and water pollution/industrial pollution
- Deforestation and desertification.
- Loss of biological and wildlife species and reduced biodiversity.
- Coastal and land erosion
- Resource depletion and population pressure
- Spread of water hyacinth.
- Toxic waste mismanagement.

The report further noted that the major factors contributing to the environmental degradation are:

- Increasing and spatial distribution of human population.
- Environmentally unfriendly product/on processes of industries.
- Non-sustainable consumption patterns.
- Disoriented value system for the environment
- Inadequate.environment ethics.
- Low level of environment awareness, knowledge skills and actions Adegboia (1992).

Adeniyi (1999) opined that, these problems and the factors responsible for them have major implication for curriculum development in favor of environmental education of the citizenry.

The Position of Environmental Education In Nigerian Environmental Education in Primary Schools

The content analysis of the National Primary Science Core Curriculum by Adara (1992) revealed that 24 topics (45,28%) in the Core curriculum are Environmental Education and 29(54.74%) are non-EE topics.

Classification of the EE topics on the basis of Environmental Themes for Infusion revealed that majority of the EE topics (24 topics, 66.7%) are Ecological Foundation topics and therefore fall within the Ecological Foundation theme. Only one topic each was identified in the Human Environmental/Development Theme and the Environmental Change/Impact theme. Six topics were identified in the Sustainable Development Theme and these are mainly health and

safety topics. It can therefore be inferred that Environmental education of primary school pupils in Nigeria is a combination of nature study and hygiene mainly, without a corresponding knowledge of their role in the preservation, conservation and sustainable development of the Nigerian environment.

Environmental Education In Secondary Schools

The teaching of environmental education in Nigerian secondary schools is dictated by the environment oriented topics in the secondary curricula and West African Examination Council (WAEC) examination syllabus on one hand and the commitment of our teachers to environmental preservation and protection on the other hand. How do we get secondary school teachers to look beyond the school curricula or WAEC examination syllabus planning to teach from, about and for the environment? And more importantly, how do we get teachers committed to the point that they will be able to work individually and collectively towards a solution of current environmental problems and the prevention of the new ones? These are inevitable challenges to us as educators, teachers and learners.

Topics in Environmental Education in the Senior Secondary Biology Curriculum

The Senior Secondary Biology Curriculum is conceptual in design. It has been structured around the following concepts.

1. The concept of living
2. Basic ecological concepts
3. Plant and Animal nutrition
4. Conservation of matter and energy
5. Genetics

Only two out of the five concepts have a sprinkle of topics on environmental education. These concepts are Basic Ecological Concepts and conservation of Matter and Energy. The following are the topics that are identified in the syllabus as being of relevance to environmental education.

Topics on Environmental Education

	SS Class
1. Effects of agricultural activities on ecological systems. bush clearing bush burning fertilization/herbicide application	J
2. Population growth and food supply	2
3. The Carbon cycle	2
4. The Water cycle	2
5. Decomposition in nature	2
6. The Nitrogen cycle	2
7. Adaptation in form and function of living organisms due to environmental conditions	2
8. Effect of availability of water on adaptive modifications	2
9. Harmful effects of microbes: Ways in which disease-causing organisms spread and are transmitted	2
10. Maintenance of community health through : refuse disposal sewage disposal protection of water and food control of diseases health organizations	2
11. Effects of overcrowding	2
12. Food shortage and its effects on the size of a population	2
13. Dynamic equilibrium in nature	2
14. Air, water and soil pollution: effects and control	2

Environmental Education in Tertiary Institutions

Orji (1993) noted that Nigerian Conservation Foundation (NCF) pioneered the development and promotion of Environmental Education in Nigerian formal school system especially at the tertiary level under the auspices of the World Wide Fund for Nature (WWF). NCF/WWF established Environmental Education Units in the College of Education Ekiadolor Benin and the University of Calabar. The Environmental Education Unit of Calabar became operational in 1991, starting with the Ordinary Diploma, and Post Graduate Diploma in Environmental Education. It is gladdening to note that National Commission for Colleges of Education (2002) in reviewing minimum standards for NCE colleges has included a sizeable number of environmental education courses in some programmes especially integrated science. These are: -

- 1) Components of the Environment 1 (non-living aspects of the environment.
- 2) Components of the environment 11 (living things)
- 3) Environment and Population :
- 4) Man and Energy 1, 2, 3.
- 5) Transport, Control, and Development of living things 1 and 2.
- 6) Man and environment
- 7) Fundamentals of living things
- 8) Global Ecology 1 and 2.
- 9) Science and Society

Environmental Education is interdisciplinary and holistic in nature. The main task is reorienting the teachers who are involved in the teaching learning process, to be able to teach it effectively. A graduate of single subject discipline may have some problems in teaching environmental education.

Objectives of Environmental Education

In general, the objectives of Environmental Education, if met, should result in the following educational output.

- Awareness - to facilitate students and social groups acquisition of awareness and sensitivity for the total environment and its allied problems
- Knowledge - to help students and social groups gain a variety of experiences with the total environment and to acquire a basic understanding of the total environment, its associated problems and humanity's critical responsible presence and role in it.
- Attitudes - to encourage students and social groups to acquire social values, strong feelings of concern for the environment and motivation for activity.
- Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems.
- Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards solution of environmental problems.

Repositioning Environmental Education Through Research

Igbinokpogie and Ighrakpata (1993) defined research in environmental education as a systematic fact finding process for the purposes of prediction, analysis and recommendations in the development of environmental education*

Noibi (1993) defined environmental education as a process of individual and collective **intern ajization** of knowledge, attitudes, skills about, from and for the environment towards ensuring ecological stability and improving the quality of life for man.

A working definition emerging from all of these is to take environmental education as the process of acquiring or transmitting knowledge, attitude and skills for the sustainable use of natural and man-made resources.

Facing the Challenges of Research in Environmental Education.

The following strategies and issues are worth noting if an efficient delivery of sound environmental education through research is the goal:

Develop the research capacity in environmental education within NCF, and allied NGOs, and various institutions using programmes in environmental education.

Allocation by government of part of education levy for research in environmental education.

5-yearly evaluation of school-based and community - based programmes on environmental education.

Building up of case studies of good environmental education practices for people to emulate.

Institutionalization of more attractive reward systems for researchers in the area of environmental education.

Establishment of viable outlets for research findings

- Conduct of socio-culturally relevant, cost-effective thematic and collaborative research.

Repositioning of Environmental Education Through Curriculum Review

Some critical issues needed to be resolved in developing environmental education in Nigeria, This includes a review of the curriculum content to incorporate all the environmental facts and information derived from the scientific experiments and experiences necessary to produce the desired knowledge and awareness. The theory of curriculum organization that best suits the teaching of the world's problem identified by UNESCO is the "core curriculum which is characterized by an emphasis on a core of social values, broad social problems or by themes of social living such as the protection and conservation of life, property and natural resources, war and peace, the conquest of poverty and disease, population explosion, etc. Environmental issues and problems can be conveniently discussed in the core subject areas that are expected to contain themes of social living. Integration as a style of curriculum organization

Integration when applied to science courses means that the course is designed and presented in such a way that the students gain the concept of the fundamental unity of knowledge, the commonality of approach to problems of scientific nature, and are helped to gain an understanding of the role and function of science in everyday life and the world in which they live. This can¹ however be applied to environmental education'. The desired integration can be done using the following suggested strategies

1. Strategy of integration through learning experiences/ content
2. Integration through evaluation -
3. Integration through teaching and learning.

Repositioning Environmental Education Through the Application of Appropriate Teaching Methods

There are several methods, identified for teaching environmental education concepts. The methods fall under three basic types:

1. Affective based strategy
2. Psychomotor based strategy
3. Cognitive based strategy

Above (2001) listed the methods as lecture/ discussion, concept mapping, use of analogies, problem solving method, field trip, role playing, pictorial presentation/ photo approach, cooperative learning, project method, dramatization, inquiry method analysis, use of resource persons, case studies, enter educate approach, Future's wheel, value clarification strategy, guided discovery.

Repositioning Through Achieving Successful Environmental Education in the Non-formal Sector

The non-formal sector can be categorized into three groups:

- Group I: Students/pupils outside school hours;

- Group 2: Children (under 18) who are not in school system;
- Group 3: Adult who are not in school or those who have finished school (General populace)

There are some clubs existing in schools, especially at the secondary level, that have direct or indirect relationship with environmental education. Conservation Clubs already exist in some secondary schools. There are also the Junior Engineers, Technicians and Scientists (JETS) Clubs in almost all secondary schools and technical colleges in the country. Some primary schools have also introduced JETS clubs in their schools. Group 2 and 3 could be reached through awareness campaign, mass media and the organization of talks, seminars and workshops on environmental education.

Recommendation

1. Curriculum Development Agencies should take a critical look at the available materials on EE content with a view to harmonizing EE curriculum with similar programmes into an instructional module. EE when combined into one instructional content should be given its own slot in the school timetable.
2. International organizations such as UNESCO-UNEP, WWF, IUCN and voluntary agencies should be encouraged to support training of teachers and Environmental Education facilitators to ensure effective implementation of Environmental Education programmes in Nigeria.
3. All tiers of government including local communities should participate in the formulation and implementation of project-centered education programmes based on the peculiarities of their local environment.
4. NUC and NCCE should offer overseas training opportunities to Nigerians in sustainable environmental Education.
5. Environmental Education is very broad, and any teacher in this field must have some reasonable knowledge of the entire relevant subject that make up environmental science. Therefore teacher training is paramount for the successful development of formal Environmental Education in Nigeria.
6. There is need for appropriate literature in Environmental Education for use in Nigeria. There exist enormous virgin areas of research in Environmental Education, which if explored, would guide the successful implementation of the programme. Thanks to the members of the STAN Environmental Education Project Team for their continued efforts in this direction.
7. Colleges of Education should start to run Environmental Education programmes on NCE level for some period of years until NCCE recommends them to NUC to run degree programmes as the law stipulates.
8. There should be a review of the primary science core curriculum by the curriculum developers to ensure a balance of the curriculum by the infusion of more EE topics into the core curriculum, and also to enhance other topics in the core curriculum, which can be used for teaching and learning about the environment.

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