

STRATEGY FOR ENVIRONMENTAL EDUCATION IN SENIOR SECONDARY SCHOOLS: A FOCUS ON SOIL EROSION

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ABSTRACT

Some states of the Federal Republic of Nigeria are presently threatened by the ravages of soil erosion. Communities that live around such sites usually suffer from the loss of farm lands, good road network, and recreational parks. It is therefore strategic to sensitize the Nigerian child on the various aspects of environmental issue through formal education so as to understand the natural processes which take place therein, as well as the importance of effective action to protect and manage the environment. Environmental education can be delivered in a variety of ways such as field work, as an individual subject, through community service, through sweeping, collection and disposal of refuse around the school premises and so on. However, for the teaching of soil erosion this paper adapts a model which builds upon the learners' experiences about the environment, and uses it to generate positive concern for the environment which will in turn enable them to elicit desirable actions that would enhance the sustenance of the values of the environment in which they live.

INTRODUCTION

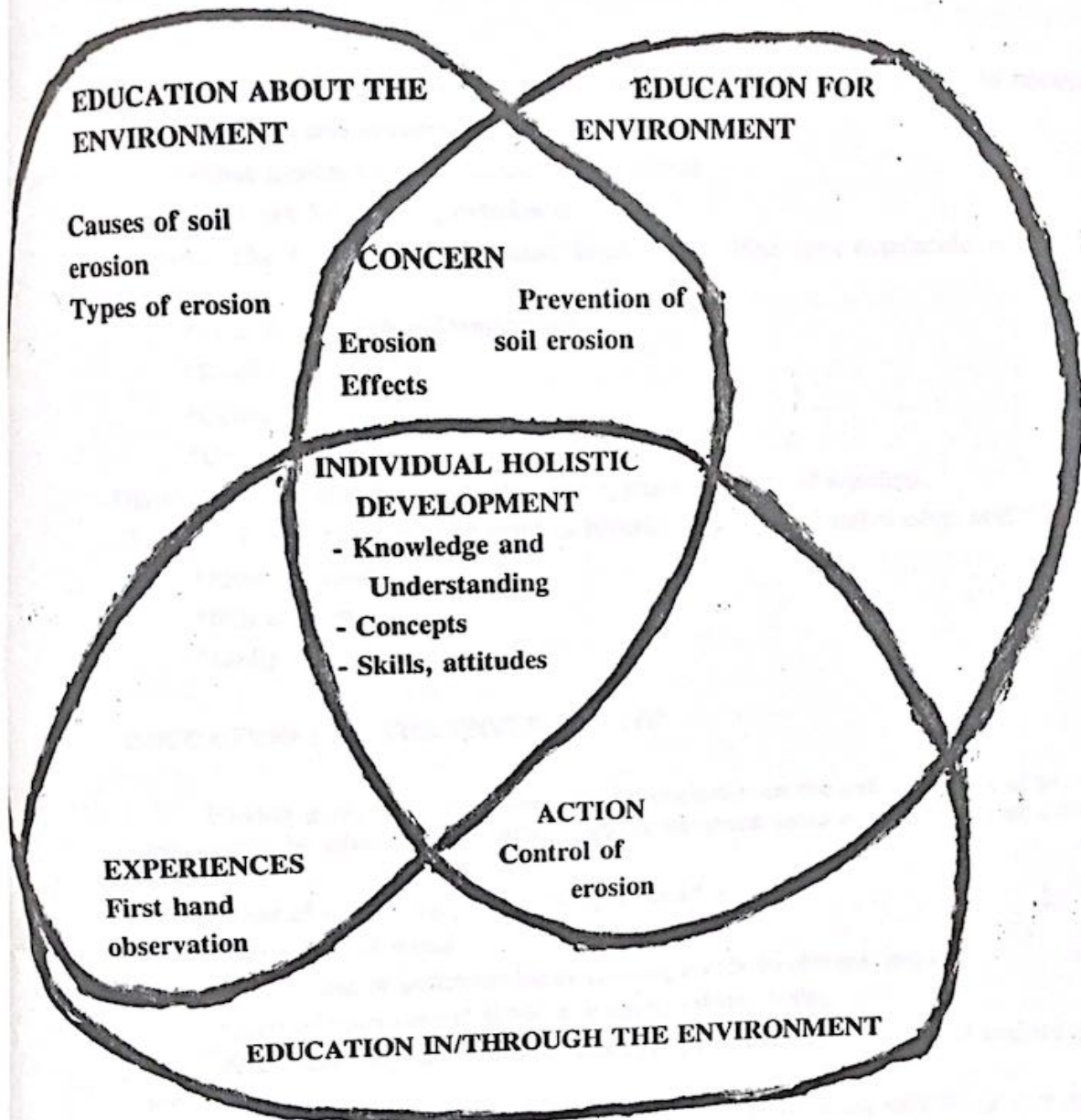
There is a global concern by governments, non-governmental organisations and individuals over the deplorable state of most ecological biomes around the world. It is believed that unless there is a vibrant consciousness among the people towards sustaining the renewable resources of the earth, most species of ecological importance would soon be humbled into extinction through environmentally non-compliant behaviours of man. In Nigeria the legislation regulating the scope and means by which natural resources are harnessed had been very flexible for manipulation by defaulters or in some cases are completely absent or neglected. Hence it is not uncommon to find lumberjacks felling economic trees without replanting, or is it uncommon to find fishermen using chemicals to kill fishes, fingerlings and other aquatic life.

A major feature of the large human population in Nigeria is the increased demand for food, which translates into much pressure on farm lands. Continuous cropping to increase food production has often resulted in exposing soils to various agents of erosion, a term which is defined as the process by which inorganic substrates such as soils, are transported from one area to another by wind, water and gravity (Moore, Chaloner and Stott, (1996). Wild, (1996), posits that soil erosion is a natural phenomenon which occurs without human intervention, but can be greatly increased by cultivation of the land. According to Olaitan and Lombin, (1988), erosion could be geological in which case it occurs slowly under natural conditions when the land surface has not been interfered with by human activity, or accelerated, in which case a geological erosion is rapidly and often destructively speeded up as a result of human activity.

NEED FOR ENVIRONMENTAL EDUCATION

The effective implementation of environmental education programmes in Nigerian secondary schools demands that the learners familiarise with the environment, so as to identify its various components and how they interplay with one another. The major focus of environmental education is the importance of attitudes and values, that is, to change the attitudes in people from ones of exploitation and dominance to ones of protection and care for the world (Palmer and Neal, 1994). This makes environmental education a onerous task for the teacher.

According to Palmer and Neal, (1994), whose model is adapted in this paper, environmental education should be structured to educate the learners about the environment, to be able to take positive decisions for the environment so as to be able to live comfortably through the environment. The model is holistic in nature because it is concerned with education for the whole person, his values and experiences so as to be able to make personal responses to issues of both local, national and global interests.



A holistic model for teaching and learning in environmental education (After Palmer and Neal, 1994).

APPLICATION OF THE MODEL

EDUCATION ABOUT THE ENVIRONMENT/IN THE ENVIRONMENT

Objective: To Teach Soil Erosion

The learners live in the environment, so the lesson on soil erosion could start by using their experience or first hand knowledge on the environment to estimate their entry behaviours. Resources required: Photographs of erosion sites before and after control measures obtainable from the local authority or ministry of environment.

METHOD

10 mins. Recall previous work on types of soils and lead the learners to explain:

- * What is soil erosion?
- *What makes the soil particles to loosen?
- *How are loose soil particles dislodged?

20 Mins. The Class discusses those human activities that accelerate the rate of soil erosion.

- *Tree felling (De-afforestation)
- *Bush burning
- *Continuous cropping
- *Overgrazing

Distribute the photographs on erosion types to groups of learners.

15 mins. The various groups tried to identify the types of soil erosion and discuss each:

- *Sheet erosion
- *Rill erosion
- *Gully erosion

EDUCATION FOR THE ENVIRONMENT

Having generated their interest and curiosity on the salient aspect of soil erosion they should be educated to realise that the environmental consequences of soil erosion include:

- *Loss of soil to support crops, grassland and forests
- *Silting up of dams
- *Deposition of sediment loads causing rivers to change course
- *Loss of recreational fields and parks (Wild, 1996).

After this they are further educated to imbibe the culture of maintaining the environment.

10 mins: The class groups now discuss the ways of preventing soils from over exposure to the agents of soil erosion.

- *Ridging across the slope
- *Planting cover crops
- *Crop Rotation
- *Wind breaks, and
- *Stubble mulching, which is allowing the stubble from a cereal to remain on the farm until the next crop is planted (Komolafe, Adegbola, Are, and Ashaye (1985).

ACTION STATE:

The second photograph showing erosion control measures are distributed to the learners.

!5 mins. The concern of the learners for the environment which includes measures for

preventing soil erosion can further be explored to make them to suggest ways of controlling erosion should the preventive measures fail. Mokolafe, *et. al.* (1985), suggest the use of terraces which are barriers constructed along the contours of the land to reduce the rapid flow of water down the slope. They observed that the terraces change a steep slope into a series of steps running across the slope. However, the slope of each step should be covered with cover crops. Olaitan and Lombin, (1988) also suggested that:

*Stripe crossing at right angles to the direction of the wind is effective in checking wind erosion.

*Barriers e.g. shelter belts is equally effective and has been successfully used in Northern Nigeria to check the wind velocity over short distances.

As a follow up activity, the teacher may take the learners out on an excursion or he may identify any sloppy path in the school compound which could potentially assist run-offs and then practice these methods of soil erosion control there.

10 mins: Evaluation of the lesson and assignment

Total time: 80 minutes.

CONCLUSION

This model is simple and can be easily adapted to many subject areas of interest. With its application as a strategy for teaching soil erosion, the learners are brought into close "contact" with their environment, and they begin to see it as an indispensable asset whose resources must be cautiously harnessed and protected to ensure its continued sustenance of humanity.

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