Assessing the level of environmental literacy of teachers

Environment, Ecology

Assessing the level of environmental literacy of teachers in Epe division of Lagos State, Nigeria Fatona P. Olugbenga School of EnvironmentalHealthScienceOgun State College Of HealthTechnologyP. M. B 2081 Ilese – Ijebu Email:ca 08033835621, Akinyele C. Babasope School of Environmental Health Science Ogun State College Of Health Technology P. M. B 2081 Ilese – Ijebu Email:com 08037221905 & Musah K. Toyin School of Public HealthNursing

Ogun State College Of Health Technology P. M. B 2081 Ilese – Ijebu Email: musahk.com 08033708027 Abstract The crucial role that teachers' environmental literacy plays in realizing thegoalsof environmentaleducationand its importance cannot be overemphasized. Therefore, this study sought to measure the environmental literacy of teachers who are saddled withresponsibilityof imparting environmental ideas and knowledge into the school-going population. The tudy employed a descriptive research design and administered questionnaires on four hundred (400) male and female teachers drawn from government controlled secondary schools that were randomly selected from the teachers' corps in Epe division of Lagos Nigeria. However, three hundred and fifty-two (352) copies were retrieved and analyzed. A self-designed instrument that has a reliability coefficient of 0. 945 was used in gathering data which was analyzed by using analysis of variance (F-tests and T-tests). Three (3) null hypotheses were formulated and tested in the study; two (2) were accepted while one (1) was rejected.

The findings revealed a tendency regarding the impact of training of teachers on their environmental literacy among others. Consequently, the study suggested the need for pre-service as well as in-service environmental education training of teachers and that the existing curriculum at all levels of education should be reviewed to richly include environmental sustainability. Keywords: Environmental literacy, education, teachers Introduction The earth is primarily life supporting system. It consists essentially biochemical processes that imbue it with the capacity to sustain life.

As an ecosystem, the earth however, has a threshold within which it can effectively absorb or withstand interruptions and radical changes in the biochemical processes that help to sustain life. Unfortunately, development-oriented activities of man over the last century or so have primarily restructured theenvironmentand upset the delicate balance of nature. It has resulted in a number of changes on the planet, earth. These changes are essentially inimical to the continued existence of man and other life forms here on earth (United Nations, 1992).

For example, the air we breathe is constantly being overloaded with carbon dioxide and other poisonous material from vehicular emission, exhausts of industrial and power plant etc. Land are stripped bare of vegetation or polluted with oil spills and human waste. The use of ozone- depleting substance such as products with chlorofluorocarbon, halons and methyl bromides (from which plastics and foams are made) allow excessive levels of harmful ultraviolet rays to reach the earth, resulting in increased rates of skin cancer, eye damage and weakened immune system.

There is higher rate of exploitation and use of natural resources and higher levels of waste become a global issue (United Nations, 1992). According to the Council of Ministers of Education (2005) sustainable development is both a goal and a concept. As a goal, it is an idea of a world where people protect the environment as they carry out their daily activities. As a concept, it involves conceptual probing about limits on natural resources, capacities of ecosystem and interactions among social, economic, political and environmental systems. In other words, it works towards a sustainable quality of life, now and in the future.

Thus, Noibi and Lawal (1993) sees it as a development strategy wherein the physical assets, natural and human resources as well as available funds are managed in a manner that ensures increasing health and wealth for both the present and future generations on planet earth. The essences of sustainable development is to meet the needs and aspirations of the present generation of man and other living creatures, both plants and animals, without compromising the capacity of future generations to meet their own needs and aspirations (NEST, 1991).

The United Nations (1992), Uche (1995), UNESCO (1997) and Inyang-Abia (1998, 2001) all assert that education is humanity’s best hope and most effective means for the quest to achieve sustainable development at national or global levels. This may be due to the fact that sustainable development calls for the particular skills, knowledge, values and attitudes regarding the environment, the economy and the well-being of people.

Perhaps, in response to the calls by UNESCO and United Nations, education for sustainability has become the norm in most countries of the world in recent years. In Nigeria, there have been some activities aimed at creating awareness and educating the masses on environmental issues. Initially the mass media, various Non-Governmental Organizations (NGOs) and government agencies were used to create awareness of the nature of the environment and the need for its sustainability, as Uche (1995) observed.

The birth of Nigerian Conservation Foundation (NCF) in the 1980’s, the rising interest among policy makers on the need for a sound environmental base for development, launching of national conservation strategy (NCS) in 1986, the natural resources conservation council (NRCC) in 1988 and the ultimate launching of the national policy on the environment in 1989 were all critical steps in the national drive towards environmental awareness and resources conservation.

In order to facilitate the education of the citizenry for sustainability, the Nigeria government has infused environmental sustainability topics into the 2003 version of the national curriculum for primary schools (NERDC, 2003). The topics infused include population, pollution, soil management, waste and waste disposal, drugs anddrug abuse, etc. The idea is to start education for sustainability from the foundation. While arrangements are made to do the same in higher levels of education, teachers are encouraged to incorporate environmental sustainability issues in their instruction (NERDC, 2003).

The potential of environmental literacy as a vehicle to realize the educational agenda of sustainable development cannot be over-emphasized. According to Disinger and Roth (1992) environmental literacy is a prerequisite to maintaining and improving the quality of the environment and life as such. The development and fostering of environmental literacy need, therefore, to be a key objective in any general education programme (Roth, 1992). Apparently, the term “ environmental literacy” does not mean the same to everyone.

Since the first general reference to the concept “ environmental literacy” appeared in 1969 (Roth, 1992), various researchers have made an effort to define it or to refine description of it. Example can be found in, inter alia, Clacherty (1992), Roth (1992) and Subbarini (1998). A definition of environmental literacy was developed from the various efforts of researchers such as Leeming, Porter, Dwyer, Cobern and Oliver (1997), Loubser (1994), Smith-Sebasto and Smith (1997), Pohorille (1985) and Buethe and Smallwood (1987).

This definition was used for the purposes of this research and it stated that: Environmental literacy is the ability to be aware of one’s environment. It enriches one with the knowledge to realize the imbalances and threats the environment faces and enables one to form positive attitudes towards it with the aim of developing skills to resolve and prevent environmental problems and urge to protect and improve the environment for the present and future generations by active participation. A study was also made of various models

comprising concepts researchers regard as important to environmental education and environmental literacy.

From these attempts by, inter alia, Munson (1994), Odum (1992), Roth (1992) and Loubser (1994), ten concepts that were regarded as necessary for teachers to have a grasp of, before being able to really do justice to environmental education were identified. The ten concepts are in line with the definitions, aims, objectives and guiding principles of environmental education and preceding definition of environmental literacy. Each of the ten concepts is a cluster of related sub concepts representing aspects of environmental literacy.

These ten concepts were selected mainly from major environmental area such as ecology and interactions in the environment, participation in the identification and prevention of environmental problems, decision making on environmental issues and environmental ethics. The ten concepts are biosphere, ecological perspective, interrelationship in an ecosystem, environmental changes, basic human needs, resources, maintaining environmental quality, the ability to make choices, decision-making on environmental issues, as well as environmental ethics.

In most of these concepts there is a close link between knowledge, affect, skills and behaviour. Environmental literacy, therefore, is considered to be continuum of competencies raging from zero competencies to a very high competency. There is a broad spectrum of environmental literacy, from complete unawareness to deep, thorough understanding and concern

(Buethe and Smallwood, 1997). For the purposes of this research a few distinguishable, but not separable, disposition levels on this continuum were identified, namely awareness, knowledge, attitude and participation.

Teachers- more than any other professional group- can probably promote environmental literacy, by virtue of their interaction with society (more specifically learners, parents and colleagues). Teachers at all levels and subject areas have a role to play in this regard, i. e. contribute to the development of citizens who possess the basic understanding and skills to make informed decisions in matters affecting the environment and whose personal lifestyles support sustainable development.

Teachers can, however, hardly assist learners to become environmentally literate if they themselves lack environmental literacy. Despite the important role teachers' play in educating students, research intoteacher's level of environmental literacy has been extremely limited. The few studies that were reported indicated a relatively low level of environmental literacy. An example is a study by Buethe and Smallwood (1997) which stated that the environmental literacy of Indiana teachers is far from optimal. In addition several researchers, for example, Schreuder (1995),

Braus (1995) and Papadimitriou (1995), mentioned that most teachers are not trained to do justice to environmental education. It seems, therefore, imperative to be able to determine the state of affairs regarding the environmental literacy of the teacher corps. Hypotheses The following hypotheses were formulated and tested in this study: 1. There is no

significant difference between the levels of environmental literacy of teachers if they are divided according to learning area in which they offer tuition. 2.

There is no significant difference between the levels of environmental literacy of teachers if they are divided according to learning area in which they offer tuition. 3. There is no significant difference in the level of environmental literacy between teachers who receive training in environmental education and those who did not receive any training. Method Research design This is a descriptive survey research design of ex-post facto because the variables being studied had occurred and were not manipulated by the researchers.

Instrumentation The questionnaire developed in this study consisted of two sections- section A which comprised items on background demographic information of respondents and section B which comprised 30 items dealing with the various aspects of environmental literacy assessed in this study. The items were developed according to a matrix with the ten central concepts representing environmental literacy on one axis and the disposition level of the respondent on the other axis.

A 4-point scale ranging from ‘ strongly agree’ to ‘ strongly disagree’ was used as a response-measuring scale. Sample The study sample was drawn from the entire population of teachers in public secondary schools in Epe division of Lagos State. It consisted of 400 teachers randomly selected from 40 secondary schools randomly selected from the 4 local governments that

make up the division. Questionnaires were however, adequately completed by 352 teachers. These respondents were representative of gender, age, learning area taught and qualifications obtained. Procedure

Three research assistants were employed to assist in administering the printed questionnaires on the teachers in their respective schools. In some cases the filled questionnaire were returned on the spot while in other cases the research assistants went back on a different day to collect the completed questionnaires. Data analyses The data obtained from the questionnaire was analyzed by using analysis of variance (F tests and t tests). Results and discussion Hypothesis 1 ‘ There is no significant difference between the levels of environmental literacy of teachers with differentacademicqualification’.

Table 1: Level of environmental literacy of teachers with different qualifications | Qualification N Means SD | | NCE 103 416. 31 35. 71 | | B Ed 64 418. 88 37. 62 | | B A 24 417. 50 51. 4 | | B Sc 12 446. 00 41. 59 | | Other 149 422. 58 40. 48 | F (4. 347) = 1. 70; p> 0. 05 The respondents were divided into five categories based on highest academic qualification as indicated in table 1. In order to compare the mean scores of the five groups an analysis of variance (F test) was carried out. The results of the F test, which appear in table 1, revealed that the null hypothesis could not be rejected (p> 0. 5). It can, therefore, be concluded that there is no significant difference between the average environmental literacy of teachers with different academic qualification. It appears that this result contradicts research results reported by Buethe and Smallwood (1997), if one assumes

that almost all secondary school science teachers in the USA have a BSc degree. According to them, science teachers had higher levels of environmental literacy than other teachers. Hypothesis 2 ‘ There is no significant difference between the levels of environmental literacy of teachers if they are divided according to learning area in which they offer tuition’.

In order to test this null hypothesis, the respondents were divided into eight categories. According to an analysis of variance (F test), the null hypothesis cannot be rejected when the means of the total score obtained for the questionnaire are compared [F (7. 344) = 1. 81; p> 0. 05]. This result is in line with a finding from a study by Abraham and Chacko (1999), according to which teacher training college lecturers have average environmental literacy, irrespective of the subjects they teach.

An analysis of the mean scores (F test) obtained for the four dl fields in the eight categories revealed, however, an interesting picture. The results for the Knowledge dl field are indicated in Table 2. Table 2: Knowledge dl field scores of teachers in different learning areas | Learning area N Mean SD | | Language, literacy andcommunication133 98. 62 11. 1 | | Human and social science 47 100. 49 9. 60 | | Maths, maths’ literacy and maths’ science 66 99. 36 8. 69 | | Natural science 76 103. 66 10. 89 | | Arts andculture12 100. 2 4. 40 | | Economic and management science 9 103. 33 16. 12 | | Life orientation 7 90. 43 5. 06 | | Technology 2 100. 00 2. 83 | F (7. 344) = 2. 74; p