

**PROSPECTS AND CHALLENGES OF BIOLOGY EDUCATION IN NIGERIA:
A REVIEW**
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ABSTRACT

Biology as a branch of science plays a vital role in providing knowledge of relevant concepts, scientific skills, environment and natural phenomena. Biology education has been widely acknowledged as a way of promoting economic development, eliminating poverty and introducing social welfare. This paper, analyses some prospects of biology education such as many applications in natural and health care environment, understanding of living system and critical thinking, career working in educational institution or industry among others. It also analyses some challenges facing biology education such as shortages of professionally qualified biology teachers, inadequate fund, lack of teaching and learning facilities and lack of proper curriculum development. Recommendations made include provision of teaching and learning facilities in schools, adequate funding of schools, reform of biology education curriculum. This will help to improve biology education and its contribution in Nigeria.

Key words: Biology Education, Prospects, Challenges.

INTRODUCTION

Science is a dynamic and objective process of seeking knowledge, a way of explaining events and phenomena in nature. It is men, women and children investigating, inquiring and seeking verifiable knowledge of which the search leads to a new discovery (Nwosu, 1991). It is an endless process of observation exploration and acquisition through empirical and conceptual means (Das, 1985). Science is classified into so many branches of which biology is one. Biology is a branch of science which studies life. It is a subject matter of great importance and concern to all. Biology helps to develop attitudes and science process skills such as observing, inferring, classifying, hypothesizing, questioning, measuring, interpreting, communicating, predicting etc. Educating people in biology has been widely acknowledged as a way of promoting economic development, eliminating poverty and introducing social welfare (Nwagbo, 2005). Biology education is the act of teaching and learning in order to inculcate or transfer the knowledge of biology to the students (Okenyi, 2012).

Biology as a branch of science plays a vital role in providing knowledge of relevant concepts, scientific skills, environment and natural phenomena (Nlewem, 2012). It helps to develop science process skills and scientific attitude. Education on the other hand is a designed process for training an individual by which knowledge is acquired (Eya, 2010). Eya opined that it is a vital developmental process which is directly related to the effectiveness of trained manpower. Biology Education is a process of imparting knowledge, skills and attitudes in biology to learners at any level. It gives the learner a sound academic knowledge, skills and ample opportunity to apply this knowledge. According to Okenyi (2012), Biology Education is an application of principles of

education in teaching and learning of biology. It is also the act of teaching and training in order to inculcate or transfer the knowledge of biology to students. Biology education is very important for any growing economy like that of Nigeria. About 70 percent graduates of biology education are self-employed and employers of labour (Okenyi, 2012). Many graduates of biology education also own schools of their own where people work and earn their living while some are into fishery business. Biology education and its contribution to the Nigerian's economy will be highly improved through analyzing the challenges and prospects of biology education in Nigeria. Thus, this paper analyses some prospects and challenges of biology education, in order to improve biology education and its contribution in Nigeria.

OBJECTIVES OF BIOLOGY EDUCATION

The study of biology can have a multitude of aims and objectives largely; it is studied to allow a person to enter a specific field of employment. Other aims for studying biology are intellectual, ethical and pragmatic: to increase knowledge about all types of organisms, to encourage greater benevolence in the relationship between humans and the natural environment and to implement biological skills into various technologies or management techniques (Heather, 2007). The study of biology aims to increase understanding of living systems and to allow one to consider the systems in relationship to the self and other organisms in the natural environment. Biology has many applications, in the natural environment. Studying biology however allows health care workers to understand the living systems of the body and to apply the knowledge in direct ways to recover and maintain the physical health of both animal and human patients.

The major objectives of biology education in Nigeria are to (NCCE, 2008)

- a) Provide the youth with sound knowledge of the basic principles and techniques of biology.
- b) Produce knowledgeable, highly motivated, professional and effective teachers of biology who will be able to develop in students an appreciation and understanding of biological processes and principles.
- c) Develop confidence in biology teachers and enhance the ability to adopt to the changing situation in science and the technological oriented society.
- d) View biology as a process of inquiry into the living world.
- e) Analyze the activities of living things in their environment.
- f) Demonstrate practical skills in handling scientific apparatus.
- g) Demonstrate excellence and professional competence in teaching secondary school biology.
- h) Include positive scientific attitudes and value in the society and promote positive disposition towards biology, science and the scientific enterprise.
- i) Apply concepts and methods acquired in new areas of study and in everyday situation.
- j) Achieve the above listed objectives which are aimed at the development of biology education and acquisition of knowledge for an improvement in biology education in Nigeria beyond 2020, there is need to assess the problems and prospects of biology education development in Nigeria.

IMPORTANCE OF BIOLOGY EDUCATION

- a) It helps to promote the individuals' understanding of the man's relationship with environment as well as knowledge of the interrelationship existing between living and non-living things that abound in the environment.
- b) The skills include the ability to observe, communicate, identify problems, ask questions, formulate hypothesis, analyze data, make inferences and predictions.
- c) The carefulness, open-mindedness and acceptance of warranted generalization.
- d) It helps to prepare the individual for vocational selection such as in Pharmacy, Medicine, Teaching, Agriculture, etc.
- e) It helps to increase the individual's interest and aesthetic appreciation of nature.
- f) It helps to stimulate the individual's interest in biologically-based hobbies such as growing flowers, collecting insects, etc thereby encouraging leisure activities for individual enjoyment.
- g) It helps to impart factual knowledge and stimulate scientific reflective thinking so as to produce a better informed individual.
- h) It helps to inculcate in the individual scientific skills and attitudes in his approach to personal and social problems.
- i) Study of the importance of plants in botany makes us understand their role in human survival. They are the resources which provide many of the basic needs like food (for both humans and animals in the form of carbohydrates, proteins and fats), clothing (they are the largest supply of fiber as cotton required to make cloth), shelter (as they provide interior and exterior furniture), medicines (as they are greatest sources of medicine).
- j) Study of animals is vital because it helps in better study on animals useful to humans like those: which provide food (eggs, milk, honey & meat) which contribute in clothing (wool from sheep), which are dangerous when encountered by man etc. some of the animals are useful in making drugs and medicines useful to man. For example many of the anti-bodies are prepared by using animals as reservoirs. We can also understand the role of animals in maintenance and balance of the environment (Mazzarello, 1999).

CHALLENGES OF BIOLOGY EDUCATION

Despite all the things biology can accomplish in the nation's development, there are many challenges militating against it especially in Nigeria. These challenges can be viewed under the following headings (Aina, 2009).

- a) **Shortages of Qualified Teachers:** Biology teachers are key factors to be considered when talking about improvement of biology education in any nation. There are shortages of qualified biology teachers in Nigerian schools, most of the so called biology teachers are not professionally trained. They may have the knowledge of the subject but lack the method (Aina, 2009).
- b) **Lack of Proper Curriculum Development:** In biology education improvement in Nigeria, the relevance of biology education curricular cannot be ignored. Biology education has not been given an appropriate place in the Nigerian school curriculum. The, bulk of what is taught in schools is imported from other developed

countries (Obiaga, 1997). It is therefore necessary to have a curriculum reform to enhance quality of biology teaching in Nigeria.

- c) **Inadequate Fund:** There is no adequate fund for the provision of conducive and enabling environment to facilitate the effective teaching and learning of biology process as well as research. Tertiary institutions are statutorily expected to be engaged in research to enrich the process of social development and not to be engaged in teaching only (Ebong, 2008).
- d) **Lack of Teaching and Learning Facilities:** Lack of ideal resources for teaching and learning in Nigerian Schools has been a major issue of concern. Majority of schools lack essential resources for teaching science subjects such as biology. Science is an abstract subject and will only be understood through the use of adequate and appropriate materials. In many schools there are no facilities for teachers to demonstrate phenomena, allow students to have the opportunity for finding out things for themselves. In many schools there are no laboratories. This can not give room for effective teaching and learning (Omoifo, 2012).

PROSPECTS OF BIOLOGY EDUCATION

Despite the challenges of biology education in Nigeria, some prospects are reviewed under the following headings (Aina, 2009).

- a) Health Care and Education Biology has many applications, both in the natural environment and the environment of health and education. Studying biology allows health care workers to understand the living systems of the body and to apply the knowledge in direct ways to recover and maintain the physical health of both animal and human patients. Biology education, if improved by the government will hopefully help the biology educators to teach the study of life to future generations.
- b) Understanding living system and Critical Thinking, Biology education will hopefully help to increase understanding of living systems and to allow people to consider the system in relationship to self and other organisms in the natural environment.
- c) Employment of Biology education in Nigeria will prepare the Nigerians for a career working in either an educational institution or an industry in which you can be directly involved in the research and development of drugs, food related items and biotechnology. Through biology education one can also become qualified to work for the government in managing an environmental research of animals, river system or biological waste. If biology education is well improved in Nigeria, people will also be able to learn many of the skills needed to succeed in business like in the fishery business (Augustena, 1998).
- d) Program Goals Biology education may provide a comprehensive education in biology that stress scientific reasoning and problem solving across the spectrum of discipline within biology. It will enrich students with opportunities for alternative education in the area of biology through undergraduate research, internships and studying abroad.
- e) Learning Aspect Biology education will hopefully help the learner to be able to read, understand, and critically interpret the primary biological literature in his/her area of interest and to apply basic ethical principles to basic and applied

biological/biomedical practice and will understand the role of biology/biomedical science and practitioners in society.

CONCLUSION

From the discussion in this paper, biology education is faced with a number of challenges such as shortages of professionally qualified biology teachers, lack of proper curriculum development, lack of teaching and learning facilities, inadequate fund which are militating against its contribution to the nation's development. Despite the challenges, some prospects of biology education include, many application in natural and health care environment, understanding of living system and critical thinking, career working in educational institution or industry.

RECOMMENDATIONS

The following recommendations were preferred:

- 1) Biology teachers should be professionally qualified by upgrading their certificates through in-services training, as such staff training should be improved by government.
- 2) Adequate fund should be provided for the provision of conducive and enabling environment to facilitate effective teaching and learning process as well as research in biology education.
- 3) Biology education curriculum should be reformed to enhance the quality of biology teaching in Nigeria.
- 4) Appointment and admission in to higher institutions of learning in Nigeria should be based on merit in order to produce qualitative biology educators

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