

THE CHALLENGES AND PROSPECTS OF BIOLOGY EDUCATION IN NIGERIA



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Abstract

Biology is a subject matter of great importance and concern to all. Biology helps to promote economic development, eliminating poverty and introducing social welfare (Nwagbo, 2005). Despite all these great things biology education can accomplish for the Nation, its improvement in Nigeria seems slim. This is due to some fundamental challenges which the paper discussed under the following headings: security, corruption, teacher, lack of proper curriculum development and inadequate fund. The paper highlights the objectives, importance, and prospects of biology education in Nigeria. Few recommendations on how to achieve biology education improvement in Nigeria were discussed. In conclusion, the government should support people in understanding and acting to transform the social, cultural, political and economic structures which affect their lives and the lives of others at personal, community, national and international levels. The paper therefore focused on the challenges and prospects of biology education in Nigeria.

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). Science is classified into so many branches of which biology is one. Biology however 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 observation, inferring, classifying, hypothesizing, questioning, measuring, interpreting, communicating, predicting and others. 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 therefore the act of teaching and learning in order to inculcate or transfer the knowledge of biology to the students (Okenyi, 2012).

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. These contributions of biology to the Nigerian's economy will be highly improved through analyzing the challenges and prospects of biology education in Nigeria.

Concept of Biology Education

Biology deals with the study of many varieties of lives. It is a natural science concerned with the study of living organisms including their structure, function, growth, distribution and taxonomy (Magna, 2002). Biology is the study of the structure, function, heredity and evolution of all living things: micro-organisms, fungi, plants and animals.

However, despite the broad scope of biology, there are certain general and unifying concepts within it that govern all the studies and researchers that consolidate it into simple and coherent field. In general, biology recognizes the cell as the basic unit of life, genes as the basic unit of heredity, evolution as the engine that propels the synthesis and creation of new species. It is also understood today that all organisms survived by consuming and transforming energy and by regulating their internal environment to maintain a stable and vital condition. Sub-disciplines of biology are defined by the scale at which organisms are studied, the kinds of organisms studied and the methods used to study them. For example Biochemistry examines the rudimentary chemistry of life, molecular biology studies the complex interactions among biological molecules:- Botany is the study of the biology of plants: cellular biology which examines the basic building-blocks of all life cells, physiology which examines the physical and chemical functions of tissues, organs and organ systems of an organism. Evolutionary biology, examines the processes that produced the diversity of life: Ecology examines how organisms interact in their environment: Zoology, the study of animals: Pathology the study of disease of plants and animals and methods of controlling them. Entomology, the study of insects: Algaelogy which is the study of algae, parastology, the study of parasites and microbiology the study of microorganisms.

Biology Education therefore is education in biology which generally aims at training individuals to understand himself or herself, the parts of his or her body and how the body parts function. Hence, the application of principles of education in teaching and learning of biology is known as biology education. It is the art of teaching and training in order to inculcate or transfer the knowledge of biology to students

(Okenyi, 2012). For this can afford them the opportunity of contributing meaningfully to the development of the society in one way or the other.

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 provide the youth with sound knowledge of the basic principles and techniques of biology.
- To 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.
- To develop confidence in biology teachers and enhance the ability to adapt to the changing situation in science and the technological oriented society.
- To view biology as a processes of inquiry into the living world.
- To analyze the activities of living things in their environment.
- To demonstrate practical skills in handling scientific apparatus.
- To demonstrate excellence and professional competence in teaching secondary school biology.
- To inculcate positive scientific attitude and value in the society and promote positive disposition towards biology, science and the scientific enterprise.
- To apply concepts and methods acquired in new areas of study and in everyday situation (minimum standard for NCE teachers, 2008).

Importance of Biology Education

1. 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.
2. The skills include the ability to observe, communicate, identify problems, ask questions, formulate hypothesis, analyze data, make inferences and predictions.

3. The carefulness, open-mindedness and acceptance of warranted generalization.
4. It helps to prepare the individual for vocational selection such as in Pharmacy, Medicine, Teaching, Agriculture, etc.
5. It helps to increase the individual's interest and aesthetic appreciation of nature.
6. 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.
7. It helps to impart factual knowledge and stimulate scientific reflective thinking so as to produce a better informed individual.
8. It helps to inculcate in the individual scientific skills and attitudes in his approach to personal and social problems.
9. 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).
10. 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).

To achieve the above listed objectives and importance of biology education, there is need to examine the challenges and prospects of biology education in Nigeria.

Challenges and Prospects of Biology Education in Nigeria

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.

1. Security: Security issue in Nigeria has been worrisome for more than two years now because of the insurgence of the Boko Haram sector due to religious motivation. People in Nigeria live in fear of the uncertainty of death from bomb explosions or gunshots from the terrorists or from armed robbers and many a time from kidnapers. The lives of nationals living in Nigeria are in perpetual danger due to kidnapping (Aina, 2010). Lecturers and students don't know their fate everyday until they retire to bed at night because of armed robbers. The recent attack on a northern university where

student and lecturers were cold bloodedly murdered still remains fresh in the academic arena. Science infrastructures built with huge amounts of money for schools in which Biology departments in such schools are part of its beneficiaries were also destroyed while gas and oil installations are vandalized too. The resultant effects of these are on education. Many parents have lost their jobs and the effect is on the children. These children could not complete their education and eventually had to drop out of schools. Majority of these dropout students are very brilliant scholars who could have become renowned Biology educators the country would be proud of.

2. Corruption: Corruption has eaten deep into the Nigerian system and it is manifesting in every sector of education including biology. In Nigeria today it is not what you know but whom you know. Appointment and admission into higher institutions of learning are no longer based on merit but on whom you know and the amount you can offer for such job or space for admission. Purchases of biology equipment for schools are no longer done transparently since it is either the chief executive of the school or many of his or her relations will do the supply. In this case they neither supply according to the required specification nor the required quantity. In most cases they don't even supply anything thereby leaving most of the biology laboratories empty or with fake and obsolete biology equipment which are useful for nothing but for mere demonstration. Money meant for staff training are diverted to personal account while selection of those who benefit in staff training is on whom you know syndrome. All these will bounce back on the quality of biology educators Nigeria produces. Employment is also no longer based on merit; those who are qualified for teaching biology are not given employment because they don't have godfathers in the government. Teaching appointment is done based on nepotism and favouritism. This is affecting the biology education in Nigeria.

3. Teacher: 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, and the so called biology teachers are not professionally qualified. They may have the knowledge of the subject but lack the method. Aina, (2009) in his study of challenges and prospects of science teaching affirmed that there are unqualified science teachers in the country. These teachers for many years have not upgraded their certificates by going for in-services training, this affects their output and it is a problem to the development of science education of which biology is one of them.

4. 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 biology teaching in Nigeria.

5. 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). These expectations are not adequately met due to inadequate funds as research in biology requires huge investments and capital which ordinary individuals cannot cope with.

The Prospects of Biology Education in Nigeria

The prospect of biology education is very slim. Poor governance is significantly slowing progress towards biology education and undermining the quality of biology education services. Despite the challenges of biology education in Nigeria, some prospects are reviewed under the following headings:

(1) 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 help the biology educators to teach the study of life to future generations.

(2) Understanding living system and Critical Thinking

Biology education will 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.

(3) Employment

Biology education in Nigeria will prepare the Nigeria 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 (Augustana, 1999).

(4) Program Goals

Biology education will 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.

(5) Learning Aspect

Biology education will 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

For the prospects of biology education listed above to be met, there is need to find solution to assess the challenges of biology education in Nigeria, bearing in mind the stated challenges like insecurity, corruption, lack of funds, teachers altitude and method of teaching, poor curriculum standard and the recommendations made below.

Recommendations

Having assessed the challenges and prospects of biology education in Nigeria, the writer is of the opinion that such challenges can be resolved if the following recommendations are considered for implementation.

1. Biology education curriculum and methodology should be refocused in Nigeria. This involves reformation and restructuring of biology education in line with the ethics of production and training for self-reliance.
2. There should be a restructuring of the minds of the Nigerian youths through education for a purposeful and determined effort aimed at biology education improvement. Identifying the challenges of Biology Education in the light of the improvement of biology education in Nigeria is the starting point of the restructuring process.
3. Biology students should have the ability to communicate, work in teams and adapt to changes. This is to enable the students to be innovative, creative and be familiar with the new technology.
4. Biology teaching should be adjusted to employment needs and entrepreneurship. This entails relationship with the employment market, local needs, community participation and development objectives.
5. Biology Educators should be sponsored for seminars, conferences at the appropriate times for this will motivate them.

6. Government should increase funding for the biology sector. Various agencies should donate laboratory equipment to both secondary schools and tertiary institutions offering biology as a course.
7. Biology education should be perceived as a global issue. This can be achieved by restructuring and reforming government policies, international co-operation and biology education institutions. For this is the principle for improving strategy in support of biology education.
8. Finally on corruption, the ongoing constitution review must be taken seriously and it should stipulate a life imprisonment for any corrupt person weather in government or private establishment, corruption is corruption once it is established, the individual should be sent to life imprisonment. Moreso, government should create more jobs. Corruption and Boko haram insurgency must be condemned at everywhere they rear their heads in the country and biology teachers must be ready for a change in their methods of teaching and attitude to work.

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