ENTREPRENEURSHIP IN BIOLOGY EDUCATION AS A MEANS FOR EMPLOYMENT

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Abstract
Entreprenuership exists when a person develops a new approach to an old business or idea. Entrepreneurship education is therefore the answer to ever-increasing graduate unemployment problem in Nigeria. In order to enhance entrepreneurship in biology at all levels of our educational system it is necessary to understand the role biology plays in national development. This paper x-rayed entrepreneurship in biology education as a means for employment in Nigeria. The concepts of entrepreneurship, biology education and employment generation were discussed.

The entrepreneur is widely regarded as an integral player in the business culture of any nation, and particularly as an engine for job creation and economic growth. Biology as an applied field of study is diversified in nature and it is capable of providing job opportunities for those who studied it. Biology is commonly known as the study of life. This means the study of life in totality. In other words, biology is a natural science which studies living organisms and how they interact with each other in their environment. It examines structure, functioning, growth, origin, evolution and distribution of living things. There are four unifying principles from the foundation of modern biology. These are cell theory, evolution, genetics and homeostasis. Biology as an important subject is taught at schools and universities around the world (Pascal, 2007). Biology the science of life makes life enjoyable and occupies a unique position in Nigeria curriculum. Biology is taught in Primary and Junior Secondary Schools as Basic Science, in Senior Secondary Schools it is called Biology while in tertiary institutions and it is sub-divided into multiple disciplines such as botany, zoology, animal science, agricultural science, microbiology, and biochemistry.

Researches are being carried out in the field of biology. It is pertinent to know that a series of professions that are of vital importance to man especially human and veterinary medicine, agriculture, breweries and food industries make use of biological principles. This view is supported by Abubakar (2009) when he asserted that the influence of biological sciences is more likely to have a more significant effect on man than the physical sciences. This is because most of our basic problems are biological. Therefore, proper understanding of life processes would lead to greater appreciation with the living world. The understanding is an important force in the realization of a healthy productive and happy life which is the ultimate goal of education.

Biology contributes to the realization of the ultimate goals of education. This is dependent on how it is taught. When it is taught properly using activity-based instruction such as inquiry method it stands to contribute immensely to general development of the students. To achieve this both teachers in high institution and Secondary schools should do everything humanly possible to produce students devoid of parasitizing the nation’s economy. This can be achieved by guiding the students to realize that is hundred percent better to be innovative, creative self-reliant, entrepreneurial and productive that being dependent on government for employment and other essential of life. But biology education has not actually achieved this due to the way it is presented to the students. This paper is concerned with the issue of entrepreneurship biology education as a means for employment.

The Concept of Entrepreneurship in Biology Education
An entrepreneur is someone who has ability to develop a new venture in business in order to make money, often in a way that involves financial risks (Quirk, 2003). According to Agbobu in
Ezema (2000) defines an entrepreneur as the owner of a business who is responsible for the initiation and organization of the enterprise out of a desire to maximize profits. An entrepreneur is therefore a person who has developed certain skills, attitudes and behaviour that enable him to establish a business, thereby creating jobs for himself and others. Entrepreneurs are innovators who are capable of developing new technologies, new products and services adapting existing technologies to new use. In the words of Inegbenebor (2006), entrepreneurship raises the level of productivity in the economy by harnessing and utilizing resources efficiently.

Entrepreneurship Education is education that provides training experience and skills that are suitable for entrepreneurial endeavours (Ovie, 2011). According to Ezema (2000) entrepreneurship education is the education given to an individual which will help him develop the skills needed for the management of any business venture. This type of education helps the person to take financial risks and at the same time utilize the material and human resources available to him to achieve the aim of establishing the business. In another development, Ezeudu (2008) Omoifo (2008) all described entrepreneurship education as a process of providing individuals with the ability to recognize commercial opportunities and the insight, self esteem, knowledge and skills to act on them.

Entrepreneurship education hence, prepares graduates with entrepreneurial knowledge and inculcates in them skills that are socially useable. It produces self-reliant graduates who can utilize the skills they have acquired to establish personal businesses.

This means education for the production of usable and marketable skills necessary for employment generation, wealth creation and Productivity.

Bolariwa in Ezeudu (2008) listed the following as advantages of entrepreneurship education.

- It will help the students to form a base of knowledge about information and operation of business and develop some level of familiarity and comfort with the business environment such as technological change, micro-enterprises etc.
- It plays a complimentary role in developing the occupational acknowledgment, job skills and work experiences.
- It offers opportunities to students for job experiences and earning, saving and investing money at an earlier stage of living than their peers, contributing to their abilities and their sense of self worth.
- There would be great reduction in the rate of unemployment in our society, self employment and business ownership will become viable and appealing goals for today’s students.

To achieve these, STM more especially biology curriculum should be made adaptable, stimulating and relevant to the needs of the students and the society at large. Biology education is defined as the acquisition of educational principles and knowledge in solving biological problems. Biology has been previously explained in this paper. Entrepreneurship biology education can now be described as that education that provides employment for biology graduates. It is the education that will empower biology graduates for the application of biology knowledge and skills acquired in solving the problem of unemployment for oneself and others this will increase the income generation capacity of biology graduates.

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Unemployment is one of the problems facing the Nigerian society. Every year, large numbers of graduates are produced from Secondary and tertiary institutions in Nigeria. Unemployment arises where able bodied and willing persons who are qualified and capable for job at a giving wage do not find the employment opportunity to do the job (Iwuamadi & Ofoegbu, 2011). Employment is therefore when an able bodied individual has gained wageable job either employed by self or
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government. In order to solve the problem of graduate unemployment in biology there is need to key the new dynamics of education through life long learning in biology.

Biology is an applied field of study built upon many disciplines for the purpose of achieving and maintaining the well being of individuals in an ever changing society. Biology curriculum aims broadly at developing life coping skills such as recording, measuring, communicating, observing, predicting, hypothesizing, inferring among others. These skills when acquired are useful for success in business and for problem solving and adaptation for national and individual development. Thus, the inculcation of these skills into the students will enable them on graduating to become self reliant and productive citizens, without waiting for government employment. The teaching of biology also helps to develop in learner scientific attitude such as open mindedness, patience, curiosity, honesty and objectivity.

Furthermore, biology offers a lot of opportunity in various fields or subjects which can be taught for entrepreneurship ability among the students. These subjects will depend on the geographical locations and their biodiversity for the obvious reason that a student living far away from the sea need not be taught sea weed farming.

These topics and subjects according to Nayah(2002) include:

- Agriculture or Bee keeping: it includes the preparation of an artificial hive to attract the honey bee and once they colonize the honey can be extracted as when required the other products include bee wax.
- Aqua Culture; this includes composition fish farming, prawn farming and crab culture
- Sea Weed Culture; this includes intensive sea weed farming. Products include Agar, Agarose, machines, thickening agents.
- Floriculture; growing flowers for ornamental values and for export as well as for domestic market.
- Horticulture; growing fruits and vegetable. The products can be exported as well as can be used for domestic market.
- Ecotourism; this is the most developing field where the students will be able to guide the tourist both foreign and domestic to show the bio-diversity.
- Aquarium; the fish used in the aquarium can be reared and the students can be taught to maintain aquariums .This is again a lucrative business with export market.
- Mushroom Culture; it is a source of protein and has good export market value.
- Water Conservation; it is a must in many nations of Africa for agriculture and drinking.
- Preservation of soil fertility and prevention of spreading of the desert; Biological methods are having advantage over the others.
- Poultry; rearing birds used for human consumption.
- Insect pest and their control; to increase agricultural yield.

These fields among others when properly practiced can increase the economic growth rate of Nigeria because of the export market potential thereby creating employment, this will also improve the life of those who cannot go for higher education. However it is the duty of the biology teachers to teach these entrepreneurial topics properly. For the biology teacher to inculcate entrepreneurship skills in students’ demands that she in addition to being the master of the subject will be able to spur the students’ interest in the subject through her method of teaching and attitude to the subject. According to Ukeje in Ezema (2000) a good teacher is one who in addition to transmitting knowledge and effective manner is also able to inspire the students to greater heights of achievement by guiding them to the full realization of their potentials.
Since, unemployment is on the increase, there is need for reorientation of the youth to pay attention to skill oriented subjects and topics like biology. This will help the students to acquire the competencies required for employment and productivity. Thus the biology teacher should employ child-centred method in teaching for the acquisition entrepreneurship skills in biology, so that the student will be able to stand on their own on graduation.

**Strategies Required For Promoting Entrepreneurship in Biology Education**

The following strategies will assist in promoting entrepreneurship in biology education.

- Employment of qualified and competent biology teachers. The biology teacher should be competent and qualified, in terms of professional and practical skills and knowledge of business opportunity available in biology. The teacher is expected to know both the methodology and content of the subject matter in order to foster effective teaching and learning.
- Teaching strategies Biology teachers should use appropriate teaching strategies (such as field trip, demonstration and inquiry) in teaching entrepreneurship education so that students will understand the lesson.
- Entrepreneurship club & Exhibition Entrepreneurship club should be established to promote and teach those topics in biology that create self employment.
- Seminars and Workshops. Seminars and workshop on entrepreneurship in biology are needed by the entrepreneur to succeed in business. So seminars and workshop should be organized for students at least once each academic session. The successful entrepreneurs and experts in biology to be invited to deliver lectures on entrepreneurship to broaden the students mind so as to learn more about the entrepreneurship.

**Challenges to Entrepreneurship in Biology Education**

Entrepreneurship in biology is faced with a lot of challenges in Nigeria These include:

- Lack of awareness
- Large classes
- Poor funding
- Assessment procedure.

**Conclusion**

Entrepreneurship in biology in biology education has the potential of equipping individuals with acceptable skills entrepreneurship and reliance as a pathway for creating and generating gainful employment. Individuals who are trained properly in biology should be creative in thinking and be able to observe job opportunities where others have over looked and invest on such. Such a person should acquire the attitudes and skills to be self employed and productive. In order to quench the unemployment issue in Nigeria, there is need for the biology teacher to teach students for the acquisition of the requisite skills necessary for employment and productivity. This should be done using appropriate teaching strategies such as games and inquiry.

**Recommendations**

The following recommendations are made to meet up with the challenges facing entrepreneurship in biology education.

1. An entrepreneurship club (horticulture, floriculture) should be organized and encouraged in biology department so as to popularize entrepreneurship.
2. The educative government at all levels should make effort for adequate funding of education in line with the UNICEF recommendation.
3. Students should be taken out for an excursion and field trips to various industries, factories and areas of biological interest. This will offer them the opportunity to see and observe things which they do not have in the school workshops and laboratories.
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4. More qualified and competent biology teachers should be recruited and the existing ones should also be trained from time to time through seminars, workshops and conferences.

References


