Perception of Biology Students on Qualitative Laboratory Studies Towards Promoting Bio – Entrepreneurship Education for Employment Creation and Economic Growth

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ABSTRACT

Youth unemployment leading to indecent work, poverty, poor livelihood sustenance, corruption and insecurity are major social ills combating developing economies, particularly Nigeria, today. Acquisition of life skills remain one of the vital steps to solving this problem. This study therefore sought to find out perception of biology students on qualitative laboratory studies towards promoting bio-entrepreneurship education for employment creation and economic growth. The study employed the case study design with a descriptive survey method. A structured questionnaire was used for data collection and statistically analysed. The NCE biology students (100 – 300 levels) of the Federal College of Education (Special), Oyo, constituted the research population out of which fifty students were sampled from across the three levels using random sampling techniques. From the study, it was found that across the genders, there are economic benefits that are attached to bio-entrepreneurial education that can engage graduates of biology but these are premised upon student's exposure to adequate and qualitative laboratory studies.

Keywords: Bio-entrepreneurship education, Laboratory Studies, Self-sustenance, Skill Acquisition, Unemployment, Economic Growth.

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1. BACKGROUND TO THE STUDY

Economic meltdown, youth unemployment, indecent work, poverty, poor livelihood sustenance, corruption and insecurity are major social ills combating developing economies today particularly, Nigeria. According to Onuba (2018), official statistics of Nigeria's unemployment rate rose to 23.1 percent of the workforce with a greater percentage of this (60%) being youths. Each year, about four million men and women enter the workforce with only a small fraction of them being able to find formal and gainful employment. This according to findings, makes the problem of youth unemployment a phenomenal issue culminating in wide spread poverty and hardship among the youths. The resultant effect is increased social instability, youth restiveness and worsening insecurity. An earlier observation by Ezeudu, Ofoegbu and Anyaegbunnam, (2013), has it that Nigerian graduates find it very difficult and impracticable to get job, handle their own business or be self-employed.

Biology education, amongst others, offers practical acquisition of life skills that could stem growing unemployment. Ban Ki-moon, UN Secretary General, in 2015 (in Onuba, 2018) had observed that biology resources are the pillars upon which we build civilizations. Acquiring biological knowledge is enhanced both through the formal classroom theoretical teaching and learning processes and practical or laboratory instructions. The entire environment in which life exists (outside classroom) can serve as biology laboratory using the living organisms and non- living components of the environment as its resource. NABT, in its 2019 position statement, relates that Laboratory and field activities and inquiry provide students with opportunities to question, observe, sample, experience, and experiment with scientific phenomena in their quest for knowledge of living things.

According to Ejilibe (2012), biology is an applied field of study built upon many disciplines for the purpose of achieving and maintaining the wellbeing 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.

Jeromen, Palmberg and Yli-Panula (2017) and Ndioho (2010), identified five laboratory associated skills, such as Acquisition Skills, Organizational Skills, Creative Skills, Manipulative Skills and Communicative Skills. These skill acquisitions however would be harnessed with the availability of well-equipped laboratories and qualitative instructions. Laboratory studies thus make biology teaching more of a discovery course than abstract as it motivates and allows for innovative ideas in willing learners. Bio-Entrepreneurship Education is a quest to solving the challenge of mere certificate acquisition void of practical skills and right attitudes amongst school leavers. It pre-supposes that for qualitative education, the trend in biology classroom teaching involves incorporation of bio-entrepreneurial instructions, seminars and workshops on possible bio-businesses with necessary managerial skills, profit utilizations and personnel administration. Persidis (1996) described bio-entrepreneurship as the wealth creation derived from the application of the biosciences to the business context. Bio-entrepreneurs look for commercial value in the technologies that they apply in conducting research in the field of biotechnology. As **defined** by Afandi (2018), it is 'the use of biological entities or any idea, related to sciences for purpose of acquiring profit and establishing a business.' Bio-entrepreneurship therefore, is the sum of all activities necessary to build an enterprise that creates, build and commercialize the biotech products.

2. STATEMENT OF PROBLEM

Acquisition of life skills for College graduates remain a vital step in solving the challenge of unemployment. This is why the opportunities made available in the biology laboratory studies should be greatly explored. It however appears that both students and teachers have not come to the full realization of the possibilities of biology education for employment creation. Though there exist much potential to empower learners for self-sustenance at the biology laboratory classroom, yet these are largely untapped. An effective biology laboratory studies emphasize skill acquisition through meaningful observation, prediction and experimentation. Qualitative laboratory experience in the teaching of Biology would stimulate learners' interest and enhance skill development needed to solve both personal and societal problems. Laboratory activities are an integral part of teaching biology where students are made to practice problem solving on their own.

It is an attempt to find answers to the factors behind these unexplored potentials that occasioned the current research work which seek the perception of biology students on qualitative laboratory studies towards promoting bio-entrepreneurship education for job creation and economic growth.

3. OBJECTIVE

This study has the major objective of examining the extent to which biology students perceive employing the skill acquisition in biology practical work and training in bio-entrepreneurship. It will also determine the adequacy of laboratory facilities and how the biology teachers and quality of their laboratory studies can prepare their students for self-sustenance after school.

4. METHODOLOGY

4.1 The Research Design

The study employed the case study design with a descriptive and inferential approach which examines and instance in action providing insight into specific situation. The NCE biology students (100 – 300 Levels) of the Federal College of Education (Special), Oyo, within the period of study constituted the research population. Fifty students drawn from the three levels across their various areas of specialization were randomly selected based on random sampling techniques. The study employed a structured questionnaire which had two parts, A and B. The design was based on the adjusted 4-point Likert Scale. Twenty five (25) items were structured for the purpose. Reliability and validation of the instrument used was achieved through the adoption of standard measures.

5. DATA PRESENTATION

The completed questionnaire were sorted and arranged and data collected were subjected to descriptive and inferential statistical analysis as presented in the results.

Table 1: Descriptive Statistics of Respondents

Demographic Features		Frequency	percent
Gender of respondents	Male	6	12
	Female	44	88
Level of respondents	NCE 1	8	16
	NCE 2	40	80
	NCE 3	2	4

Source: Fieldwork – 2016

From the total of 50 respondents in the study, 6 (12%) of them were male while the remaining 44 (88%) were female. 08 (16%) were in 100 level, 40 (80%) were in 200 level, while the remaining 2 (4%) were in 300 level.

6. DISCUSSION OF FINDINGS

The findings from the study with inferences drawn are presented below.

Hypothesis One:
Ho: There is no significant relationship between Laboratory Adequacy and Qualitative Laboratory Studies
H_1: There is significant relationship between Laboratory Adequacy and Qualitative Laboratory Studies

Table 2: Correlations of Laboratory Adequacy & Qualitative Laboratory Studies

			Laboratory Adequacy	Qualitative Laboratory Studies
Spearman's rho	Laboratory Adequacy	Correlation Coefficient	1.000	.441**
		Sig. (2-tailed)	.	.001
		N	50	50
	Qualitative Laboratory Studies	Correlation Coefficient	.441**	1.000
		Sig. (2-tailed)	.001	.
		N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Decision
The correlational value of 0.441 indicates a positively weak relationship between laboratory adequacy and qualitative laboratory studies. The significant (2-tailed) value of 0.01 indicates a significant relationship between laboratory adequacy and qualitative laboratory studies That is, as laboratory facilities adequacy improves, laboratory studies improves and thus laboratory class skill acquisition improves. The better the facilities adequacy, the better the laboratory class experience of biology students.

Hypothesis Two:
Ho: There is no significant relationship between Qualitative Laboratory Studies and Students' Skills Acquisition towards Bio-entrepreneurship.

H_1: there is a significant relationship between Qualitative Laboratory Studies and Students' Skill Acquisition towards Bio-entrepreneurship.

Table 3: Correlations of Qualitative Laboratory Studies & Students' Skill Acquisition Towards Bio-Entrepreneurship

			Qualitative Laboratory Studies	Students, Skill Acquisition & Bio-entrepreneurship
Spearman's rho	Qualitative Laboratory Studies	Correlation Coefficient	1.000	.312*
		Sig. (2-tailed)	.	.028
		N	50	50
	Students'skills Acquisition&Bio-Entrepreneurship	Correlation Coefficient	.312*	1.000
		Sig. (2-tailed)	.028	.
		N	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

Decision
The correlational value of 0.312 indicates a positively weak relationship between qualitative laboratory studies and student's skill acquisition towards bio-entrepreneurship. The significant (2-tailed) value of 0.028 indicates a significant relationship between quality laboratory studies and students' skill acquisition towards bio-entrepreneurship. That is, as students get exposed to quality laboratory studies, it improves their bio-entrepreneurial skills. The better the Laboratory exposure the better the students get exposure to bio-entrepreneurship.

Hypothesis Three:
Ho: Biology Students' perception of Bio-entrepreneurship education is independent of Qualitative Laboratory Studies and skill acquisition.
H_1: Biology Students' perception of Bio-entrepreneurship education is dependent of Qualitative Laboratory Studies and skill acquisition.

Table 4: Chi-Square Tests of Independence Between Perception of Bio-entrepreneurship education & Qualitative Laboratory Studies

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.791[a]	6	.042
Likelihood Ratio	12.139	6	.206
Linear-by-Linear Association	3.930	1	.047
N of Valid Cases	50		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .08.

Decision
Since the Asymptotic Significant (2-sided) value of 0.042 which is less than the P-value of 0.05, this suggest the rejection of the null hypothesis and it is therefore concluded that biology students' perception of bio-entrepreneurship education is dependent on qualitative laboratory studies and skill acquisition. By implication, students' bio-entrepreneurial exposure depends on the quality of the laboratory studies offered them and thus the skills acquired.

7. CONCLUDING REMARKS

From the study we found that there are bio-entrepreneurial benefits that can engage graduates of biology. However, this is premised upon student's exposure to adequate and qualitative laboratory studies. Qualitative biology laboratory training is shown to be a way out of the menace of unemployment. Therefore, the presentation of biological ideas and knowledge to biology learners through practical classes must be upheld and biology teachers must effectively promote all round development of the students and especially ensure maximum acquisition of relevant skills for self-sustenance. Such training will equip them with the needed practical skills that can be harnessed for entrepreneurial ventures or Bio-businesses as Fish farming, poultry farming, Bee farming, Animal rearing, gardening and horticulture. Indeed, there can be no meaningful curriculum planning at any level of education without taking the global challenges of providing job opportunities for young school leavers into consideration if the students are being prepared for the global market.

8. CONTRIBUTION TO KNOWLEDGE

Considering the information garnered from reviewed literature and that from the study, for a proper perspective of the perception of biology students on qualitative laboratory studies towards promoting bio-entrepreneurship education for employment creation and economic growth, the researcher recommends as follows:

- Realizing the importance of biology laboratory studies, every school, government or private, should be provided with a standard and well equipped biology laboratory.
- For empowerment in self-sustenance, the biology teacher need to intentionally package his/her laboratory teachings with the sense of bio-entrepreneurship.
- Students of biology are required to personally develop the right attitude, passion, commitment and skills of engaging in lucrative bio-businesses for sustainable livelihood.
- Biology teachings should reflect bio-entrepreneurial instructions while seminars and workshops on possible bio-businesses should be organized for students-in-training.

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