

The Pre- Service Teachers' Awareness of Bio-Entrepreneurial Skills Opportunities in Biology as a Means of Economic Development (a Study of Some Selected Colleges of Education in Borno State, Nigeria)

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Abstract

The Study explored the roles played by Bio-entrepreneurial skills opportunity in Biology education as a means of economic development in some selected institution of higher learning in Maiduguri Borno State, Nigeria. Four Objectives were raised and four research questions were answered in the study. The research design employed was descriptive survey design. The targeted population of the study was 500 NCE three Students for the two selected colleges of education. Out of this number, 250 prospective NCE-teachers were selected using simple random sampling from the list of prospective NCE graduates. Questionnaire and unstructured interview was developed by the researcher based on the four (4) research questions of the study. The face and content validation of the research instrument was established by expert in Science education from the University of Maiduguri, and the instrument yielded a coefficient value of 0.85, Data collected were analyzed using descriptive statistics of frequencies and percentage to answer the research questions. The findings revealed that there are many entrepreneurial skills that should be acquired by the pre service teachers in Science Education. Also the result revealed that 80% of the prospective NCE graduates (respondents) agreed that they were not aware of the entrepreneurial skills opportunities available in Biological science. Furthermore, respondents also agreed that entrepreneurial skills acquired would no doubt helps in eliminating the deepening rate of economic recession and further improve the economic development in the State. Based on these findings, it was recommended that the teaching of these skills should be part of the college curriculum and must be taught to teachers to be, in addition to the theoretical aspect. Government should also allocate enough fund to these colleges so that the new innovation could be sustained especially in any field of Science Education.

Keywords: *Biology education, Bio-entrepreneurial Skills, Economic development*

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Background to the Study

The roles play by science and technological education in the growth and development of the national economic cannot be over emphasized. Any nation with priority in science and technology education will among other things improve its economic growth substantially hence reduce the impact of the menace due to global economic depression. In their study strategies for combating global economic crisis in Nigeria through science and technology education. Udugo and OJIAKU (2012) cited Abba, (2010), that developed nations like U.S.A, Japan, who acquired their prosperity through science and technology advancements are leading in industrialisation because their scientist passes greater amount of technical know and know practice them than the rest of other nations world.

According to Kumuyi (2010) advised that the reactions call for every ones' hand to be on the spindle so as to overcome the enosis before us. He maintained for attention should be directed to science and technological education which are the base of any nations development and sustainable. According to Chaston (2009) Economic recession is define as economic go slow which brings an economy to low ebb and maintained, that it can be explained as a difficult time for the economy of a country. A period when a country experience less trade and industrial activities that often result in high unemployment rate, redundancy, business short down or systematic distress of business venue. Which subsequently generate hardship, high eve poverty, frustrations unbearable misery that usually push the business into financials slump, income down or collapse or investment? Through scientific knowledge the general public must be given the powers which enable them to explore the natural endowment by creating resources. Conqueror qualities of life. It is in that light that pamper and humble (2009) describe science and technological education as a process of teaching in school to improves one knowledge about the environment and to develop one's environment and to develop one's skill of systematic enquiry. But due to economic recession in Nigeria face many challenges such as social, economic environmental which results into unemployment and poverty. It is on this premises that Nigerian government in the recent times compelled to initiate the training of youth in various entrepreneur skills which is aimed at making individual being gainfully self-employed. Aniamaa and Salome (2017) stated that science and technology offer a lot in socio economic and cultural development of any Nation. It is dynamism and the introduction of new technologies has influenced new discoveries and development in biological knowledge.

Therefore, sound education is needed for reveal biology skills which are necessary for providing entrepreneurship skills which is aimed at making individual being gainfully self-employed (Aniama Salome, 2017) science and technology offer a lot in the socio economic and cultural development of any nation. Its dynamism and the introduction of new technologies have influence new discoveries and development in biological knowledge. The great potential biology has a discipline cannot be over emphasized this goes to said that achieving the millennium goals a been giant economic will require among other things indicating in the students of biology at all levels of entrepreneurship skills. This focus is currently being lacking in the Nigerian educational system leading to

production of many graduates who are not either gainfully employed or self-employed. This is in line with Offorma (2005) advice as she said that for Nigeria to become a key player in the world economy of the 21st century, the educational system should provide job creators and job seekers. Togoe (2012) stated that education is the process of conveying usable information to a group of learners. Similarly, (UNESCO 2011) quality education is one that satisfies basic learning needs and enriches the level of learners and their overall experience of learning therefore to achieve education, relevant knowledge, skills and attitude that are necessary for national development must be taught to the student for sustainable development. Education should be given top priority because it does not open the door to lift them out of poverty but through economic growth and national productivity.

Statement of the Problem

Biology education is one of the science subjects taught at secondary and tertiary levels of education in Nigeria. And these levels be it secondary, tertiary or university. Teachers often concentrate on imparting the incentive development aspect of biology in other words the theoretical aspect has been taught to the students leaving out the educational aspects. This is so because the product of biology, this school will be employed by the government in the past schools but as a result of global economic aspect where government cannot longer employ the products of this school. This has further increased unemployment and poverty. For instance, in Borno state since the inception of the present administration, the embargo placed on employment is still on going and subsequently graduates in various fields of studies is on increase yearly. Therefore, it is against the background that the study entices to identify biological skills needed to be acquired by the students and the level of their awareness to enable them become gainfully self-employed on leaving school.

Objectives of the Study

1. To examine entrepreneurship opportunities available in biology education to combat economic recession.
2. Determine the level of pre-service teachers' awareness of the availability of entrepreneurship skills in Biology.
3. To determine the interest of pre-service Teacher in acquiring the entrepreneur's skills for self-employment.

Research Questions

1. What are the bio entrepreneurship skills available to biology students to aid ameliorate economic recession?
2. What is the level of awareness of biology student's bio entrepreneurship opportunities?
3. What is the extent of biology student interest in acquiring of entrepreneur skills for bio-entrepreneurship venture?

Scope of the Study

The study on strategy for combating in Nigeria economic recession through the use of biology education entrepreneur skills in some selected Tertiary Institution in Borno state,

Nigeria a The selected tertiary institution is: Umar Ibrahim El- kanemi College of Education Science and Technology (UIECST) Bama, Sir Kashim Ibrahim College of Education Maiduguri (KICOE) and Waka College of Education Biu. (WACEB)

Significance of the Study

The study titled strategies for combating economic recession in Nigeria through the use of biology education entrepreneurship skills in Borno state tertiary institution the findings of the study useful to significance to teacher, students and provosts of college of education. Pre- Service Teachers would benefit by acquiring bio empowerment skills so that they can be self-employed. Teacher would benefit from the skills so that they would teach students to be self-reliant and gainfully employed be sustainable. Education Ministry would benefit from the findings by engaging teacher to focus on teaching biology for entrepreneur skills development as this would no doubt reduces graduates' unemployment and foster economic development in the country. The curriculum planner would benefit by redesigning the school curriculum to suit the current need of entrepreneurial education in the country as it provides avenue for reducing unemployment in the Nation.

Methodology

The study adopted the survey design, the target population of the study comprised of all students offering biology in the 3(three) selected colleges of education. Namely, College of Wakabiu, Sir Kashim Ibrahim College of Education Maiduguri; and Umar Ibrahim El-kanemi College of Education, Science and Technology Bama. The population of the students offering biology for these colleges was 600. The grand population of 600 students across the three selected colleges of education was used as a sample for the study. In each of the selected college, fifty percent (50%) of the population was randomly selected. Therefore, a total number of 200 students each from the selected colleges were involved in the study and they were picked from the List of prospective NCE pre-teachers graduates' college numbers indicating their year of entry. Data was collected using questionnaire derived from four research questions of the study titled " Role of Bio entrepreneur skills opportunities in Biology education in eliminating the economic crisis in some selected tertiary institutions in Borno state the modify four rating state was used to score the items of the questionnaire. The ratings of the response were strongly agreed (SN)=4, Agree = 3, disagree and strongly disagree = S(DA) the questionnaire has two section, A and B. Section A is on personal data of the respondents while section B sought information on the bio entrepreneur skills available in biology education in tertiary institutions of Borno state.

The face and content validation was done by expert in science education curriculum. Various corrections and suggestions made were used to modify the instruments.

The test - retest technique was used to gauge the clarity and the relevance of the research instruments. the instrument was tested in the college of education which was not part of the study, and then retested after a period of interval in the same college as pilot study. 50

responses were used as row data to obtain the correction coefficients between the corresponding data pilot for the law time.

The questionnaires were administered, and the instrument yielded a coefficient value of 0.85. The 50% of the targeted population in each of the selected college of education (100) were administered with the questionnaires. The data obtained, were analysed using descriptive statistics, frequencies and percentages.

Results and Discussion

Research Question 1: What are skills necessary in order to obtain Bio- entrepreneurial ship

Table 1: Skills Necessary for Acquiring Bio-entrepreneurial ship in Biology Education

S/N	No of Items	Yes	%	No	%
1	Possess of higher education in the depth knowledge of Bio	150	75	50	25
2	Creative ability	156	78	44	22
3	Hard works	130	65	70	35
4	Leadership skills	110	55	90	45
5	Ability to share and communicate effectively	144	75	56	25
6	Improvisation	160	80	40	20
7	Utilisation of opportunities	126	63	74	37
8	Innovative	190	95	10	5
9	Accounting skills	177	88	23	12
10	Ability to proffer solution to problems	140	70	60	30
11	A good personally disposition	133	67	07	33
12	Foresight ability	170	85	30	15
13	Ability to formulate good decision	170	85	30	15

Source: Ministry of Higher Education

The table above shows that 150 respondents represents (75%) says yes of the item one of the question. i.e. students of biology must have depth knowledge of Biology. while only 25% responded negatively. Analysis of responses on the table to item two on leadership and discipline skills. 50% of the respondents agreed with the research question while 90 represents 35% percent of the respondents reported disagreed. Similarly, on creativity, the analysis revealed that 156 (78%) agreed that creative skills are necessary for acquiring entrepreneurship, while only 44 (22%) reported No. The table also revealed that 130 (65%) reported Yes, while 70 (35%) reported No. On improvisation skills, 160 (80%) agreed while 40 (20%) of them disagreed that improvisation is necessary for acquiring bio- entrepreneur skills. On utilization of opportunities, analysis on the table shown that 126 (63%) reported Yes while 74 of the respondents (37%) disagreed. The table also revealed that 190 (95%) agreed that innovative skills is needed for acquiring bio-entrepreneurship. Accounting ability reported (88%) of positive responses while the

negative responses was only (12%). On the ability to proffer solution to problems, 140 of the respondents (70 %) reported Yes while 60 (30%) of them disagreed with the question. Analysis on the table also revealed that 133 (67%) agreed that a good personality is necessary for acquiring bio-entrepreneur skills while 77 (23%) of them reported No. that on the ability to share opinion and communicate effectively. The table revealed that 75% of the respondents agreed that sharing and communication ability is necessary for bio entrepreneur skill acquisition where as 25% of them, reported No. Also on foresight ability, 170 (85%) respondents agreed that it is necessary while only 30 (15%) disagreed On item number (8) that planning and organisation ability is necessary.

The results in table also revealed that 85% of the respondents agreed on the ability to formulates good entrepreneur decision is necessary for acquisition of skills in biology as a course of study aware of the entrepreneur skills area.

Table 2: The level of Awareness of different Bio-entrepreneurships Opportunities in Biology Education

S/N	AREAS	Response	no	Total
1	Micro biology/ parasitology	20.1%	180.9%	100%
2	Medicinal biology	11.55%	189%	
3	Environmental biology/ ecological students	12.5	94%	
4	Bio geography	90.45%	175%	55%
5	Bio chemistry	15.75	110%	
6	Waste managed conversation	178.5%	92.5%	95%
7	Hydro biology	105%	91.5%	
8	Economic botany	105%	190.95%	95%
9	Food technology	157.5%	40%	
10	Biology	189%	185.92%	91%
11	Genetic engineering	105%	190%	90%

The table 2 above reveals that 90% of the respondents reported not aware of micro biology/ parasitology as entrepreneur skills areas in biology education where only 10% of the students are aware on the medicinal biology for entrepreneurs skills development, the table2 reveals that 94% of the respondents are aware while on 8% reported un aware on environmental biology and ecology areas of vital skills acquisition area in biology the results in the table results shows that 88% of the respondents agreed that they are aware where 12% of the respondents were unaware of the skills. This is certainly to the other findings in the study. The table also reveals that 90% of the respondents were unaware of bio geography skill, for entrepreneurship development while only 10% the respondents reported aware of biochemistry skills in body study for entrepreneur development. 93% of the respondents reported unaware. While only 7% of them agreed awareness on were the management entrepreneur skills potentials, 92% of the respondents reported unawareness while only 8% of them attested awareness. Similarly, hydrobiology/

aquatic biology, 95% of the respondents attested unawareness of the entrepreneur skills while only 5% of them reported that they are aware on economic botany. 77% of the respondents reported that they were unaware of availability of entrepreneur skills in the area where as 23% of them, agreed, awareness, similarly on food technology, areas for skill development. 80% of the respondents a great of unawareness while 20% of them shown awareness on Genetic engineering, 88% of the respondents showed unawareness of the knowledge area between entrepreneurship skills, whereas only 12% of them reported awareness.

Student offering Biology as a course of study in the college of education showed the entrepreneurship skills development in the subject areas.

Research Question 3: What is the extent of Biology pre-service teachers' interest in acquiring entrepreneur skills?

Table 3: Analysis of responses on Pre-service teachers' interest in the acquisition of Bio-entrepreneurships skills

	Yes	Percent	No	Percent	Total %
College A	88	93%.	12	7%	100
College B	90	95%	10	10%	100

The table 3 shows the majority of the students represents 93% reported that they have interest in acquiring the entrepreneur skills available in some of the cities in biology education, only four of them, represents 7% show level of interest. The also revealed that 95% of respondents indicated that they have interest in acquisition of Bio- entrepreneur skills, while, only 5% of the respondents indicated no interest. Therefore, biology teacher should encourage student interest through instructional practice as strategy to reduce the problem of unemployment and economic crisis in Borno state, in particular and Nigeria as a whole.

Discussion of Findings

The study assessed the role of bio entrepreneur skills in some of the areas in biology education in eliminating economic crisis in Bornostate; The study raised three research questions namely; what are the bio-entrepreneur skills available in biology education? what is the level of awareness of bio entrepreneur skills areas in biology? And what is the extent of pre service teachers' interest in acquiring the entrepreneur skills?

Therefore, the finding of the study based on research question one (1) on table (1) on type of entrepreneur skills available on biology education and whether these skills are necessary for the development of entrepreneurship in students, reveal that most of the respondents agreed for this study. That all the skills listed in table 1are necessary for the development of entrepreneur skills in biology students as shown by higher percentage of response to each item of the research question based on skills. This finding is in line with

that of Amama (2017) in a study that biology is a development of Nigeria. Utilisation of biological science education for empowerment. A global challenge records that biology is a powerful tool for economic, social, and political development of Nigeria. Hence there is need to build into the biology curriculum Bio entrepreneur skills necessary for bio entrepreneurship ventures.

From the above findings, evident that make biology teaching cash product will help alleviate the problem of economic crisis. The second findings revealed that the majority of the respondents attested that they have interest in acquiring bio entrepreneurial skills. This may not be unconnected with the fact because of economic recession, government at both state and federal and no longer employ our teaching graduates from educational system. Hence any skills that will enable students to be self-employed focus their attention, graduate, self-employment will no doubt reduce the burden of the economy of Nigeria. These findings collaborate with the findings of Anyanwu (2010), in study empowering youths for sustainable development. Ascension of entrepreneurship skills need of youths who view entrepreneurship as the ability to be creative utilising opportunities available for both self-sustenance and contributing to the needs of other.

This finding is also in line with the findings of Amama(2017) who sees entrepreneur skills acquisition as an improvement in both the labour and the business sector, since it is very important to develop positive interest in whatever field of endeavour one want to engage. The third findings indicate that 95% of the respondents reported unawareness of the entrepreneurship areas in biology education; the awareness level was recorded low in the stud. The implication is that if students were unaware of the areas in biology where students can create job for himself, the level of poverty will increase. Therefore, teachers of biology will blend the contents and the instructional practising as a powerful strategy for eliminating current economic crisis.

Conclusion

Based on the findings of the study, it was concluded that economic crisis in Borno state in particular and, Nigeria at large left all sectors in doom, especially the educational system where thousands of graduate were unemployed which may subsequent create other societal problems to this end. So therefore if the strategy of Bio entrepreneurship skills in biology education area are incorporated into biology curriculum and taught alongside with the cognitive aspect of the subject, it will no doubt boost production and accelerate economic development of Borno state, tertiary institution provides flat form where many unemployed graduates of biology becoming self-employed, thereby reducing the effect of the economic shrinkage in the country.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Biology teachers at all levels should make teaching of biology cash productive.
2. Accusation of bio entrepreneur skills should be made compulsory and art of the curriculum. Government at all level should assist financial educational institution

- for the purpose of training the students, the bio entrepreneurship area in raising the subject of the study.
3. Government should encourage the students acquiring the bio entrepreneurship skills will take up development fund to enable them to set up their own business for self-reliant

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