INTERGRATING ENTERPRENEURSHIP EDUCATION INTO SCIENCE EDUCATION: SCIENCE TEACHERS PERSPECTIVES.

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Abstract

The focal thrust of this paper is to explore the perspectives of science teachers towards integrating entrepreneurial education into science education in Afijio, Atiba, Oyo-East and West Local Government Areas of Oyo State, Nigeria. A stratified random sampling techniques was used to select three hundred and twenty (320) science teachers from sixteen secondary schools in the study areas. Three null hypotheses were set to investigate the significance of the teachers perspective towards integrating entrepreneurship education into science education. A self made, validated questionnaire titled "Developing Entrepreneurship Skills through Science Education Questionnaire (DESTSEQ) with a reliability index of 0.63 was used to elicit responses from the subjects of the study. With t-test statistical analysis at 0.05 level of significance, it was deduced that science teachers perspective of entrepreneurship education has a significant influence on integrating entrepreneurship education in science education (t-cal = 23.52, t-crit (0.05) = 1.96, df = 318). The gory implications of integrating entrepreneurship education into science education were highlighted and some plausible recommendations articulated.

Keywords: Entrepreneurs, Entrepreneurial Skills, Entrepreneurship Education, Science Education.

Introduction

An entrepreneur is one who combines and coordinates factors of production and use them to produce goods and services. Griffins (1984) define the entrepreneur as a person who takes risks by introducing new ways of making old products and also introduces new products, he perceives opportunities that other business operators do not see or do not care about. Some entrepreneurs use information that is generally available to produce something entirely new. Schumputer in Encarta (2009) sees the entrepreneur as "an innovator, the person who develops a new product, a new market or a new means of production" it also acknowledged that the entrepreneur is an individual who assumes the responsibility of establishing or running a venture and risk associated with the expectation of making a profit. It is the entrepreneur who decides the product, acquires the facilities and brings together the labour force, capital and raw materials and assembles them in a meaningful, systematic order to produce the products.

Ogundele (2007) identified the top ten characteristics of today entrepreneurs as: recognize and take advantage of opportunity, resourcefulness, creativity, visionary, independent thinker, hard worker, optimistic, innovator, risk taker, leader. The word entrepreneurial is the adjectural form of the word entrepreneur. It is used to qualify a person, a situation, and organization or a group of people who are exhibiting behaviours that are typical of entrepreneurs or intrapreneurs, based on the above. In this context, entrepreneurial, intrapreneurship and entrepreneurship from the holistic point of view exist in convergence in the relationship of the three constructs.

Butter (1990) defines the constructs, entrepreneurial, interpreneurship and entrepreneurship as process of owning and managing a business enterprise with the hope of making profit. Enterpreneurship skills or elements are combination of motivation, vision with judgement,

communication determination, optimism, courage, endurance and the power of creating cooperation which finds markets opportunities (Bolarinwa, 2001 and Ezeudu, 2008).
Ojukwu (2001) and Ogundele (2007) described entrepreneurship development as a programme of human capital development inputs aimed at increasing the supply of adequately trained entrepreneurs who are innovated to make a success out of business. Entrepreneurship education defined by Bolarinwa (2001) as education that provides training, experience and skills that are suitable for entrepreneurial endeavours. For a nation to emerge developed, there should be massive entrepreneurial development across the nation. This should start from homes, primary, secondary and tertiary educational institutions. Entrepreneurial skills development should become a culture as in the case of India and other developed nations of the World (Ogundele 2007). Thus, if entrepreneurship skills development has capacity to enhance the national development, can such skills be instilled in the ming of youths right from secondary schools through science education.

Science education was seen by Oguniyi (1985) as an educational aspect which assists the learners in developing certain attitudes, knowledge and skills regarding the order in nature. Science education aims at producing scientifically literate citizens as well as producing a potential of scientific and technological manpower. Science education has introduced a lot of changed in our world today and it will continue to do so in the future (Ezeudu, 2008, Orukotan, 2007); Okebukola, 2007; Akinkugbe, 2007). It is found that achievement in science education will go a long way in reducing illiteracy and poverty which are impediments for national development.

Therefore, teaching science education should go pari-parsu with the instilling of entrepreneurial skills in the students to encourage the young mind develop traits peculiar to job provider and not job-seekers. The question is do secondary school science teacher perceive science teaching and learning as avenue to develop entrepreneurial skills like alertness to profit opportunities, handling uncertainties, coordinating scarce resources and innovating skills (Swedberg, 2000).

Statement of the Problem

There is vicious cycle of poverty, unemployment and under development plaguing Nigeria economy. The orientation of Nigerian youths cannot grow beyond the level of exposure had in the teaching-learning process. If the cycle is to be broken and Nigeria economy to thrive and be vibrant, there is urgent need to instill entrepreneurial skills in the mind of the youth. The question is do the science teachers perceive teaching and learning Science with this conception of instilling entrepreneurial skills simultaneously?

Purpose of the Study

(i) To Investigate the perception of science teachers towards developing of entrepreneurial skills through science education;
(ii) To determine gender difference in science teachers perception of developing entrepreneurial skills through science education;
(iii) To verify the impact of conference and seminar attendance on science teachers perception of developing entrepreneurial skills through teaching science education.

Research Hypotheses

The following hypotheses were put forth in the course of conducting the study:

Ho_1: There is no significant influence of science teachers perception on the developing of entrepreneurial skills through science education;
Ho_2: There is no significant gender difference in the perception of science teachers towards the developing of entrepreneurial skills in students.
Ho_3: There is no significant impact of conference and seminar attendance on the science teachers perception of developing entrepreneurial skills through science education.

Methodology

Research Design

The survey method of description research design was employed for this study. This is because the sample and variables are already available in the field for systematic data collection and description. (AECT, 2001; Akinsola and Ogunleye, 2004)

Population and Sample

All the science teachers of Physics, Chemistry, Biology, Agricultural science, Mathematics, Home Economics, Integrated science, Physical and Health Education and Computer science of Atiba, Afijio, Oyo-East and West Local Government Areas of Oyo State constituted the population of study. Four secondary schools were randomly selected from each Local Government Area, totaling sixteen (16) schools. Twenty science teachers were purposively selected from each school to represent the study population. In all, 320 science teachers constituted the sample of the study.

Research Instrument

A self-designed questionnaire, developing entrepreneurial skills through science Education Questionnaire (DESTSEQ) was used to collect data from the subject of the study. The instrument has eight positively and eight negatively worded items making sixteen items, in Likert scale format of Strongly Agree, Agree, Disagree and Strongly Disagree.

Validity and Reliability

The research instrument was given to experts in entrepreneurship education for face and content validity. The pilot study was conducted at Akinyele Local Government Area of Oyo State. The collated data were subjected to Cronbach Alpha reliability which yielded an index of 0.63. Therefore the tool was highly valid and reliable.

Method of Data Collection

The standard instrument was taken to the sixteen secondary schools for administration on the study. The researcher as well as the assistants collected the filled questionnaire on the spot ensuring hundred percent retrieval.

Method of Data Analysis

The socio-attributes of the respondents were described in table of frequency distribution and percentages. The t-test analysis tool was used to test the set hypotheses at 0.05 level of significance.

Results and Discussion

Table 1: Socio-demographic Attributes of the Respondents

Gender	Number	Percentage
Male	160	50.00
Female	160	50.00
Total	320	100
Educational Qualification		
NCE	132	42.00
1st Degree and above	188	58.00
Total	320	100.00
Conference/Seminar Attendance		
Attended	89	27.00

No-attendance	231	73.00
Total	320	100.00

Source: Field Survey, 2011.

This study is gender conscious as it involved one hundred and sixty males and one hundred and sixty females in research.One hundred and thirty-two (42%) of the respondents have NCE while higher percentage of the respondents, 188 (58%) have first Degree and above educational qualification.Also, two hundred and thirty-one (73%) of the respondents had never attended any seminar, workshop or conferences of science education while the remaining few percentage of the sample, 89 (27%) had attended science workshop, seminars or conferences.

Hypotheses Testing

Ho 1: There is no significant influence of science teachers perception on the developing of entrepreneurial skills through science education;

Table 2: Teacher perception of developing entrepreneur skills through science education

Teacher's Perception	N	X	SD	t-cal	-0.05 t-crit	df	R.
Has influence	196	51.38	13.42	23.52	1.96	318	*S*
No Influence	124	39.41	17.18				

*Sig (a) P< 0.05.

Table 2 shows t-test analysis of the influence of teachers perception on the developing of entrepreneurial skills through science education. The mean score of teachers perception having influence was 51.38 which was greater than 39.41 of those perceiving no influence. When the data was subjected to t-test statistical analysis, the t-cal value of 23.52 was greater than the t-tabulated, t-critical of 1.96 at 0.05 level of significance. Therefore, the null hypothesis was not accepted.

Ho 2: There is no significant gender difference in the perception of science teachers towards the developing of entrepreneurial skills in students.

Table 3: Science teachers' Perception based on Gender

Gender	N	X	SD	t-cal	-0.05 t-crit	df	R.
Male	160	44.98	44.62	0.74	1.96	318	NS
Female	160	45.13	47.11				

NS at P < 0.05

Table 3 shows the t-test analysis of the science teachers' perception of developing entrepreneurial skills in students through science education. The male teachers perception of 44.98 was lower then their female counterparts of 45.13, when the value was subjected to t-test statistical analysis, the t-calculated value of 0.74 was lower then the t-tabulated value of 1.96 at 0.05 level of significance. Therefore, the null-hypothesis was accepted.

Ho 3: There is no significant impact of conference and seminar attendance on the science teachers perception of developing entrepreneurial skills through science education.

Table 4: Science teacher conference and seminar attendance and perception of developing entrepreneurial skill

Conference, Seminar Attendance	N	X	SD	t-cal	0.05 t-crit	df	R
Have Attendance	89	54.38	11.72				
				16.69	1.96	318	*S
No Attendance	231	37.15	16.3				

*Sig at P< 0.05

Table 4 shows the t-test analysis of the influence of conference and seminar attendance on science teachers' perception of the developing entrepreneurial skills through science education. The mean score of the teacher with attendance in science conference and seminar was 54.38 while those with no attendance was 37.15, when the data was subjected to t-test statistical analysis, the t-calculated value of 16.69 was greater than the t-tabulated value of 1.96 at 0.05 level of significance. Therefore, the null-hypothesis was not accepted.

Discussion of the Findings

From the results presented and tested hypotheses, it was identified that the influence of teacher perception on developing entrepreneurial skills through science education was significant. This is as a result of the fact that the input any teacher made in teaching-learning process is a function of the insight of the teacher (Fraster, 1986, Fisher, Fraser and Wheler, 2001). Whether to teach science theory, practical or both infusing both scientific theory and practical in the concept of entrepreneurial that is money making strategies really dejointed on the perception and innovativeness of the science teachers (Ajeyalemi, 2011, Miller, 2004)

Also the study revealed a non-significant gender influence of the perception of science teachers on the development of entrepreneurial skills through science education. This is owing to the fact that gender issue is a function of the mind being a male or a female have no significant influence on science teachers innovations and knowledge translation into entrepreneurial skills acquisition and teaching in science classes. This study findings corroborated the results of Okeke (2001), David (2011), Nwaji (2011), Okpala (2011), that gender disparity play less on the entrepreneurship skills development.

Likewise, the science teachers perception of developing entrepreneurial skills in students using science education was significantly influenced by the attendance at science oriented conferences and seminars. Scientific conference, seminars, workshops, symposia and training have significance impact on the insight and awareness of science teachers knowledge, innovations and creativeness in teaching-learning process. This findings find support from the results of NERDC (2007), Okeke (2001), Okpala (2011) that science teachers attendance at conferences and workshops enhances their optimum productivity.

Conclusion and Recommendations

If entrepreneurial skills have not been well developed even in many educationally advanced countries where the needed human and material resources have been provided in abundance (Hodson, 1991, Osborned, 1998, Maskill, 2000 in Ajeyalemi, 2011) how mush more would it be a problem in our under-served learning environment? We can savely conclude that entrepreneurial skills are not being developed in the science education of the Nigeria school system due to the science teachers poor perception of integrating the entrepreneurship concepts into science teaching.

Science teachers gender did not influence the perception of the teacher towards integrating entrepreneurship education into science education whereas the science teacher attendance at learned conference and seminars did.

Recommendations

The importance of entrepreneurial skills in science and in science education is debatable, therefore, every effort must be made to implement the various science curricula as intended. A concrete presentation of the abstract science education content is needed for our students to meaningfully learn and vocationally employed. They should be taught entrepreneurial skills through science education. That is, for a meaningful science education and for science to serve the needs of development in Nigeria, the development of entrepreneurial skills in our school science is a sine qua non. Therefore, the following recommendations were put forth :

(i) All the stakeholders, especially government must play their roles in this. The science teachers association of Nigeria (STAN) needs to be more vehement in its demand for minimum provisions for the teaching of science as science.
(ii) Government must provide the necessary human and material resources.
(iii) teachers must be active to their responsibilities and be committed to change.
(iii) Science teacher educators must review their teacher preparation curriculum programmes to ensure that science teacher-trainnees are themselves exposed to all the practical and entrepreneurial activities in the different curriculum during training.
(iv) It may then be necessary to mount intensive continuous education programmes to re-orient science teachers on the proper implementation of the science curricula with the perspective of entrepreneurial skills development.

Whatever the argument for or against the development of entrepreneurial skills through science education it is incontrovertible that engagement of students in practical activities in entrepreneurial skills would make their learning more concrete and aid the acquisition and development of many life-coping skills.

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