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ASSESSMENT OF VOCATIONAL FOOD SCIENCE AND TECHNOLOGY CURRICULUM IN A SOUTHWESTERN NIGERIAN UNIVERSITY FOR GRADUATE EMPLOYABILITY

Prof. ALADE, Ibiwumi A

Dept. of Curriculum and Teaching, Faculty of Education, University of Eswatini, Swaziland.

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ABSTRACT

Despite policy formulations by Nigerian governments in favour of skilled manpower production, the employability deficiencies of graduates of food science and technology in food industries and other work places remains alarming. This study therefore assessed vocational food science and technology curriculum in a South-western Nigerian University for graduate employability. The descriptive survey was guided by four research questions while a purposive sampling technique was used to select the target Department from the College of Food Science and Human Ecology of a university in Nigeria. Simple random sampling technique was used to select two hundred students from 400level and 500level altogether. The findings revealed a percentage of only 22.8 on the actualization of vocational food science and technology curriculum objectives; 95.5% adequacy of academic staff for the curriculum implementation; gross inadequacy in skills acquisition ranging from 4.5% for problem-solving skills acquired to 43.5% for laboratory skills acquired; poor curriculum implementation (12.0%)and inadequate funding (42.0%). The need for re-positioning of food science and technology in vocational terms for more practical exposition and up-to-date professional development of human resources among others are recommended as boosters to make food science and technology more result- oriented.

Keywords: Curriculum, Employability, Food Science and Technology.

INTRODUCTION

One of the major concerns over the years in Nigeria is the employability of graduates from higher institutions. Meanwhile, education as a process of enabling individuals to live as useful and acceptable members of a society remains the backbone of developing and developed countries of the world. It is widely recognized as a key agent of national development either as a way of developing human capacity, increasing skilled work force for modernization or as a source of personal freedom for employment (Oluwasina, Onokpaunu and Odusanya, 2020). As a way of increasing skilled worked force, Nigerian Government at various times has been using it to improve the employability of school going youths. For instance vocational-based programmes remain as catalysts for self-reliance, enhance for securing youth employment and opportunities for development in Nigeria.

Alade (2020) reiterated that vocational technical education among many of the vocational trades and programmes could determine the employability of Nigerian graduates. Vocational-based programmes in this context, are the aspects of the educational process involving, in addition to the general education, the acquisition of practical skills, related sciences and technology essential for economic gains and functional living. To be specific therefore, food science and technology programme which covered food processing and storage technology, food quality control and assurance, food microbiology and bio-technology among others is an essential area termed vocational food science and technology in this paper because of the value inherent in it to create jobs and exploit science and technology for national food sufficiency and development. In order to alleviate the problem of hunger, poverty and unemployment which have continued to haunt many homes in Nigeria, the need arises to assess food science and technology curriculum in the Nigerian university system

*Corresponding Author: Prof. ALADE, Ibiwumi A,

Dept. of Curriculum and Teaching, Faculty of Education, University of Eswatini, Swaziland.

from vocational perspective. This is with a view to giving its curriculum and the programme as a whole a face lift and serve the university students better for market employability.

REVIEW OF RELATED LITERATURE

The goal and interest of higher education through the various courses offered remain the inculpation of skills and attributes to become employable, and not just as providers of skill-related educational activities. However, the argument remains on the extent to which universities through their vocational-based programmes offered to students prepare them for gainful employment and self-reliance. In Nigeria today, there is an increasing rate of poverty, unemployment and other social problems that had bedeviled the Nigerian society and Ogoni people in particular (Deebom and Okwelle,2016).But skill acquisition is the key in the fight for the elimination of hunger and poverty, reduction of elimination of joblessness in the society, and reduction of crime through effective engagement of youths, Deebom and Okwelle added.

For graduate employability, employability skills become crucial. As stated in the Nevada CTE Curriculum Framework (2015) on Food Science technology, it is made it clear that employability skills often referred to as "soft skills" have for many years been recognizable components of the standards and curriculum in career and technical education programmes. The employability skills identified covered expressional qualities and people skills, professional knowledge and skills, and technology knowledge and skills. It is further documented that employability skills are designed to ensure student graduate from educational institutions properly prepared with skills employers prioritize as the most important. Obviously, it is not uncommon to see some employers of labour complaining that a proportionate number of graduates though professionally or technically qualified, are found jobless as a result of their lack of requisite essential employability skills and competencies needed for sustainable living. This many a

time leads to youth restiveness. This is where adequate implementation of vocational-based curriculum becomes essential.

Vocational education indeed remains an aspect of education for equipping would-be graduates for market employability. Vocational educational has been an integral part of national development on human resources development, productivity and economic growth (Abiola, 2017). In order to enhance better university students' preparation for the labour market, attention should be paid to strengthening the bridge between skills-based education and the demand of the employment market. Many a time, the problems of graduate unemployment has been attributed to poor curriculum structure and implementation, as well as policy inadequacies among others. Hence, the need to assess a skill-based curriculum in the University system. Of interest to the researchers is Food Science and Technology offered in a Nigeria University. The Department of Food Science and Technology of the Federal University of Agriculture. Abeokuta (FUNAAB) offers under graduate advanced study as well as professional training leading to the Degree of Doctor of Philosophy (Ph.D), Master of Science (M.Sc) and Post Graduate Diploma (PGD)in several areas of specialization in Post-harvest technology-Food Processing and Storage. Technology, Food Quality Control and Assurance Food Microbiology and Biotechnology and Food Processing Engineering. The programme is designed to increase students' knowledge of fundamental aspects of their programme in order to develop an aptitude to meet the needs of the nation and the development of the food processing sector. Specifically, the objective of food science and technology are to:

- i. Produce competent food scientists and technologists who will take up challenges in the areas of research, training and development needs in the private sector, academic and research institutes.
- ii. Develop high level manpower for increasing the sector of the nation's economy.
- iii. Produce competent scientists with high entrepreneurship orientation who can utilize their scientific and research orientation to create jobs and exploit science and technology for national food sufficiency and development.

Food science and technology ensures the delivery of a safe, nutritious and abundant food globally (Gharendra&Bhaskar,2014).In Nepal for instance, food science and technology is one of the very few courses that promotes interactive learning method. In respect of the Food Science and Technology being focused in this study, expectation is to assess the achievement of the programme objectives, situation analysis of the human and non-human resources, the student's acquisition of food science and technology skills and the constraints militating against the actualization of its curriculum objectives. The study conducted by Finch, Hamilton, Rilay and Zehner (2013) put forward that improvement to new graduates 'employability must focus on learning outcomes which are linked to employability skills development. As a result, the employability of food science and technology students being fostered in this study demands investigation. The application of scientific disciplines to the selection, preservation, processing, packaging, distribution and consumption covered by food science and technology was explored by IFT(2014). This further includes analytical chemistry, biotechnology, engineering, nutrition, quality control, and food safety management. Katsnelson (2012) in his report on food science: a smorgasbord of opportunities stated that worldwide, the areas of good job prospects are product development, quality control, and nutrition and food safety. This has resulted in graduate employment in food processing industries. Subba et al., (2013) reported that food technology graduates have largely fulfilled the needs of different food and nutrition related sectors. The status of food technology graduates examined by Guragain (2014) shows that the majority of the Nepalese graduates are absorbed by the food industries, academic institutions and government sectors. Literature on situation analysis and assessment of food science and technology curriculum in Nigerian environment from vocational perspective is scarce. Meanwhile, this vocational/skill-based curriculum is no doubt yearning for improvement.

THEORETICAL FRAMEWORK

One of the standing principles of the delivery system of vocational and technology-based programmes is to train skilled and entrepreneurial work force that are needed to create wealth and emerge out of poverty. Employability debates therefore centre on the production of graduate who have the employability attributes or competency needed in the world of work. Although, various theories in literature and in different disciplines are used to provide explanations for employability and skill-based programmes for manpower development, in respect of this study, the dispositional approach divided into career identity, personal, adaptability and human capital development recorded by Beukes in years, 2010 is relevant. Career identity implies "who am I", that is, individuals who choose food science and technology as career path. Personal adaptability is the manner in which individuals (Undergraduates) are willing and able to change their personal factors to meet the requirements of food science and technology programme for future work situation. Human capital development refers to the acquisition of knowledge and relevant job skills through food science and technology curriculum intended for work productivity. Thus, through food science and technology curriculum, undergraduates would be empowered to cope with the changing work environment, manage their career more productively and be positively disposed to the challenges and changes in the labourmarket. This would further reduce unemployment saga as food science and technology curriculum and the programme as a whole would be improved in status.

Statement of the Problem

The rate at which youth and graduates from various higher institutions of learning including universities continuously look for employment opportunities increases day by day in Nigeria. Although, university education in Nigeria is not relenting in their reviewed programme and innovations to produce graduates who as more oriented towards work than academics, still a good number of studies and opinions of experts showed that a proportionate number of Nigerian graduates today are faced with the problem of inability to create opportunities for self-employment. As such, increase in unemployment among Nigerian graduates remain unabated.

Despite the hope of Nigerian stakeholders on vocational and technology-based curricula as an integral part of national development strategies to improve graduate employability, the national concern remains that graduates who are expected to acquire employability skills for work placement and wealth creation in the labourmarket are skill loitering around the street as job seekers. To be specific and of interest to the researchers, food science and technology programme in the university system that is expected to produce competent food scientists and technologists; develop high level manpower in food production, and produce competent graduates with high entrepreneurship orientation through its curriculum has attracted much criticisms in term of implementation and the impact it makes on the undergraduates offering the course. This study therefore focused on the assessment of vocational food science and technology curriculum in a Southwestern Nigerian University for graduate employability.

Purpose of the Study

The main purpose of the study was to assess vocational food science and technology curriculum in a Southwestern Nigerian University for graduate employability. The specific purposes were to assess the:

- actualization of vocational food science and technology curriculum objectives for graduate employability in the labourmarket.
- (2) adequacy of human and non-human resources for vocational food science and technology curriculum implementation.
- acquisition of skills in vocational food science and technology curriculum by university students for market employability.
- (4) constraints affecting the actualization of vocational food science and technology curriculum objectives in the university.

Research Questions

The following research questions were answered in the study.

- (1) To what extent are vocational food science and technology curriculum objectives for graduate employability in the labourmarket are being achieved?
- (2) Are the provision of human and non-human resources for vocational food science and technology curriculum implementation adequate?
- (3) Do undergraduate students acquire enough skills in vocational food science and technology curriculum for market employability?
- (4) What are the constraints affecting the actualization of vocational food science and technology curriculum objectives in the university?

Scope of the study

This study is limited to the assessment of vocational food science and technology curriculum in a southwestern Nigerian University for graduate employability. The participants were the undergraduate students of Food Science and Technology Department of Federal University of Agriculture, Abeokuta (FUNAAB), College of Food Science and Human Ecology (COOLFHEC), Food Science and Technology Department.

METHODOLOGY

A descriptive survey research design was adopted for this study. The study did not involve the manipulation of any variable, it only gathered the existing information about vocational food science and technology curriculum being implemented in the study area. The population comprised all the students in the College of Food Science and Human Ecology (COLFHEC) of Federal University of Agriculture Abeokuta (FUNAAB). A purposive sampling technique was used to

select Food Science and Technology Department based on the nature of the Department objectives in respect of vocational acquisition of skills for market employability. Simple random sampling technique was then used to select one hundred (100) students each from the Department among 400 and 500 level students offering Food Science and Technology as a programme of study in the university. The total sampling was two hundred (200).

Food Science and Technology Curriculum Questionnaire (FSTCQ) designed by the researchers based on the existing and reviewed literature as well as consideration given to the subject matter of Food Science and Technology Curriculum was used for data collection. The FSTCQ has two sections, A and B. Section A is on the participants bio-data while section B has four parts, 1 to 4 with appropriate response categories covering Food Science and Technology objectives actualization, adequacy of human and nonhuman resources for the vocational Food Science and Technology Curriculum implementation, acquisition of skills for market employability, and the constraints affecting the curriculum implementation. The FSTCQ was validated by three experts, one in vocational education and two others in Food Science and Technology, and then subjected to test - re - test method reliability within two weeks interval and Pearson Product Moment Correlation (PPMC) was used to determine the coefficient/value (r). The value of 'r' obtained was 0.79.

Appropriate consultations were made from some Departmental lecturers for approval to collect relevant data as well as consent seeking from the Food Science and Technology students who participated in this study. Thereafter, two hundred copies of the validated FSTCQ were carefully administered with appropriate monitoring by the two researchers with the help of two well guided research assistants.

All the completed copies of the Food Science and Technology Curriculum Questionnaire (FSTCQ) were subjected to computation after appropriate coding using descriptive statistics of frequency count, percentages and mean scores. The interpretations of the results were based on 100% and average mean rating of 2.50 and above (accepted) and below 2.50 (rejected).

RESULTS

The results and findings of this study are presented below in accordance with the research questions raised for the study.

Research Questions One

To what extent are vocational food science and technology curriculum objectives for graduate employability in the labour market are being achieved?

Table 1: Achievement of Vocational Food Science and Technology Curriculum Objective for Graduate Employability.

S/N	Objective	Very Achievable (VA) N %	Achievable(V)	Rarely Achievable (RA) N%	Not Achievable (NA) N %
1.	Production of competent food scientists in the areas of research training and developmental needs	66 (33.0)	26 (13.0)	70 (35.0)	38 (19.0)
2.	Development of high level manpower in food production and processing sectors of the nation's economy	31 (15.5)	24 (12.0)	86 (43.0)	59 (29.5)
3.	Production of competent scientists with high entrepreneurship orientation who can utilize their scientific and research orientation to create jobs and exploit science and technology for national food sufficiency and development	40 (20.0)	24 (12.0)	86 (43.0)	50 (25.0)
Ave	erage (%)	22.8%	12 . 3 %	40.3%	24.6%

As shown in table 1, the overall level of achievement of vocational food science and technology curriculum objectives for graduate employability in the labour market is far below average. Only 22.8% is recorded for the study participants 'assessment of actualizing the objectives at a very high level; Achievable (12.3%); Rarely Adorable (40.3%) and Not Achievable (24.6%). Production of competent food science and technologists who will take up challenges in the areas of research, training and developmental needs has a very achievable ratings of 33.0% compared with the other two objectives of the vocational food science and technology curriculum objectives of a very achievable ratings of 15.0% and 20.0% respectively.

Research Questions two

Are the provisions of human and non-human resources for vocational food science and technology curriculum implementation adequate?

Table 2: Adequacy of the Provision of Human and Non-Human Resources for Vocational Food Science and Technology Curriculum Implementation.

S/N	Resource	Adequate Number (%)	Not Adequate Number (%)
1.	Academic Staff	191 (95.5)	9 (4.5)
2.	Administrative/Supportive Staff	74 (15.5)	126 (37.0)
3.	Laboratory Staff/Food Technologists	46 (23.0)	154 (77.0)
4.	Technicians	180 (90.0)	20 (10.0)
5.	Apparatus/Tools and Equipment	173 (86.5)	27 (13.5)
6.	Chemicals	59 (29.5)	141 (70.5)
7.	Products	120 (60.0)	80 (40.0)

The results presented in table 2 shows that the Academic staff being used for vocational food science and technology curriculum is 95.5% adequate, followed by technicians (90.0% adequate), Apparatus/Tools and Equipment (86.5% adequate) and the products of the Department (60.0% adequate). The administrative/support staff, laboratory staff/food technologists and chemicals are not adequate with a very low adequacy level of 15.5%, 23.0% and 29.5% respectively.

Research Question Three

Do undergraduate students acquire enough skills in vocational food science and technology curriculum for market Employability?

Table 3: Skills Acquisition in Vocational Food Science and Technology Curriculum for Market Employability

S/N	Skill	Well Acquired N (%)	Rarely Acquired N (%)	Not Acquired N (%)
1.	Work Related Skills	22 (11.0)	55 (27.5)	123 (61.5)
2.	Employability Skills	36 (18.0)	18 (9.0)	146 (73.0)
3.	Creative Skills	35 (17.5)	39 (19.5)	126 (63.0)
4.	Occupational and Job	35 (7.5) [′]	108 (54.0)	57 (28.5)
Spec	cific Skills	. ,		. ,
5.	Handling Skills	68 (34.0)	64 (32.0)	68 (34.0)
6.	Laboratory Skills	87 (43.5)	63(31.5)	50 (25.0)
7.	Innovative Skills	42 (21.0)	37 (18. 5)	119 (59.5)
8.	Entrepreneurial Skills	39 (19.5)	33 (16.5)	128 (64.0)
9.	Problem-Solving Skills	9 (4.5)	53 (26.5)	138 (69.0)
9. 10.	Communicative Skills	58 (29.0)	87 (43.5)	55 (27.5)

The results shown in table 3 on skills acquisition by undergraduate students through vocational food science and technology curriculum for market employability depict that none of the skills is well acquired because all the ratings by the respondents are below average. Notwithstanding, the acquisition of skills is highest for laboratory skills (43.5%), followed by handling skills (34.0%), while the acquisition of problem-solving skills has a least percentage of 4.5%.

Research Question Four

What are the constraints affecting the actualization of vocational food science and technology curriculum objectives in the university?

Table 4: Constraints Affecting the Actualization of Vocational Food Science and Technology Curriculum Objective.

S/N	constraints	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)	Mean X	Decision
1.	Attitude to Food Science	40 (20.0)	59 (29.5)	40 (20.0)	61 (30.5)	3.79	Accepted
and	Technology						
2.	Insufficient funding	84 (42.0)	60 (30.0)	21 (10.5)	35 (17.5)	2.25	Accepted
by G	overnment						
3.	Epileptic power supply	86 (43.0)	50 (25.0)	40 (20.0)	24 (12.0)	2.88	Accepted
4.	Environmental hazards	75 (37.5)	54 (27.0)	14 (7.0)	57 (28.5)	2.87	Accepted
5.	Poor curriculum	24 (12.0)	54 (27.0)	47 (23.5)	75 (37.5)	2.50	Accepted
Imp	lementation	. ,	,	, ,	, ,		

On the constraints affecting effective actualization of vocational food science and technology curriculum objectives, attitude to food science and technology (X = 3.79), epileptic power supply (X = 2.88), environmental hazards (X = 2.87) and poor curriculum implementation (X = 2.50) were responded to as barriers by vocational food science and technology students in the University surveyed.

DISCUSSION OF FINDINGS

The findings of this study on the actualization of the objectives of vocational food science and technology curriculum showed that the 400level and 5oolevel students offering the course are yet to reach the competency level expected of food scientists and technologists nor adequate training in the research needed in work places and for self-employment needs in the society (Table 1). Likewise, only 20.0% of the participants responded that objectives of producing competent scientists with high entrepreneurship orientation who can utilize their scientific and research orientation to create jobs and exploit science and technology, for national food science and development has been very achievable as also presented in table 1. As a skill-based (vocational) programme, these findings did not actually corroborate the assertion of Abiola (2017) who affirmed that vocational education has been an integral part of national development strategies in many societies because of the impact on human resource development, productivity and economic growth. By Implication, much are yet to be achieved from the objectives of food science and technology curriculum of the University surveyed.

On the provision of human and non-human resources for vocational food science and technology curriculum implementation, the findings of this study made it clear that the academic staff and technicians on ground for the curriculum implementation are adequate with a percentage of 95.5 and 90.0% respectively (Table 2). Thus, the manpower status for the curriculum implementation of vocational food science and technology in the University is commendable. Notwithstanding, the shortage of administrative/supportive staff (15.5%) is still a challenge. Also, while apparatus/tools and equipment as well as products are very adequate with a percentage of 86.5 and 60.0 respectively, the chemicals which are significant consumables for the curriculum implementation are not adequate (29.5%). Although, this results reflect a slight improvement when juxtaposed with past results on resources put in place for curricula implementation, available in literature, yet some of the resource situation in vocational food science and technology curriculum implementation has not attained a satisfactory status. This finding is in agreement with Ekwukoma (2016) who once lamented that some education centres are characterized by gross inadequacy of learning facilities.

The opinions of vocational food science and technology students on their acquisition of skills for market employability in this study revealed deficiency in virtually all the skills identified, thus (Table 3): Work related skills (11.0%); Employability skills (18.0%), Creative skills (17.5%), Occupational and job specific skills (17.5%), Handling skills (34.0%), Innovative skills (21.0%), entrepreneurial skills (19.5%), Problem solving skills (4.5%), and Communication skills (29.0%), while a percentage of 43.5% was recorded for laboratory skills acquisition. It becomes clear that these skills if well acquired could assist the individual (students) to carry out his/her job efficiently and effectively in the workplace after graduation. With these findings on skills deficiencies by the students surveyed, it is a follow up to the study conducted by Finch, Hamilton, Riley and Zehner (2013) who put forward that improvements to new graduates employability must focus on learning outcomes which are linked to employability skills development. Vocational food science and technology students in this 21st century significantly need the identified skills in this study that will make them very employable in the labourmarket.

In this study, the constraints affecting the actualization of vocational food science and technology curriculum objectives include epileptic power supply (43.0%), insufficient funding by government (42.0%), environmental hazards (37.5%), attitude to food science and technology (20.0%) and poor curriculum implementation (12.0%) (Table 4). The implication of this is that young graduates of vocational food science and technology who are taught by staff under the atmosphere of perennial constraints are more or less half - baked inadequate for the challenging labourmarket. The poor curriculum implementation established in this study agreed with the observation of Salau, Saka-Alikinla, Wahab and Ojo (2020) that Nigeria formulates viable policies, but the implementation of such policies has been the major bane to vocational and technical education (VTE) development. Food science and technology is such a skill - based programme, and its status in term of curriculum design and implementation should not be held with levity hands by the concerned stakeholders in the field and its financial agencies including the government.

CONCLUSION

The paper has indeed assessed food science and technology curriculum in a Southwestern Nigerian University for graduate employability as a vocational programme because it is a skill-based course of study. The specific objectives of its curriculum which foster the production of competent food scientists and technologists, development of high – level manpower and production of graduates with high entrepreneurship orientation and capacities are not adequately achieved. This is worrisome, and is not unconnected with many factors ranging from inadequacies in input and the constraints at the implementation phase of its curriculum.

However, the hope inherent in food science and technology curriculum of Nigerian universities including the one surveyed in this study is not lost. It is very glearing that if remedies are provided to the shortcomings revealed by this study, Vocational food science and technology programmes would thrive better and serve the developmental needs of the citizenry.

Recommendations

The following recommendations are put forward for a better output from food science and technology curriculum implementation in Nigerian higher institutions.

- Curriculum reviews of food science and technology programmes should be re-positioned within the broad field of Vocational and Technology Education in Nigeria in order to create a better structure for its vocational exposition in practical terms.
- Concerted efforts by various government sat all levels and private agencies/Non-governmental organizations as well as philanthropists are much needed for better funding of food science and technology curriculum implementation in Nigeria.
- Continuous professional development of human personnel involved in the curriculum implementation of food science and technology for knowledge and skills update in the information and communication technology age would boost the actualization of the objectives.

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