OCCUPATIONAL CONTENTS REQUIRED FOR BOOSTING THE ENROLMENT OF STUDENTS INTO INDUSTRIAL TECHNICAL EDUCATION PROGRMME OF UNIVERSITIES IN ENUGU STATE

By

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Abstract

The study determined occupational contents required for boosting enrolment of students into industrial technical education programme of universities in Enugu State. Three research questions guided the study while three null hypotheses formulated were tested at 0.05 level of significance. The study adopted descriptive survey design. The population for the study was 116 comprising 86 lecturers of industrial technical education and 20 instructors. Purposive sampling technique was employed to select 116 lecturers and instructors from the universities offering industrial technical education in Enugu State. The instrument for data collection was structured questionnaire and three experts validated the instrument while Cronbach alpha reliability method was used to determine the internal consistency of the items and a coefficient of 0.84 was obtained. Mean was used to answer three research questions while t test statistic was used to test the null hypotheses at 0.05 level of significance. The study found out 37 technical occupations, 68 tasks and 15 procedures that could be utilized by lecturers to attract students to industrial technical education programmes of Universities. There was no significant difference in the mean responses of lecturers and instructors on the technical occupations, tasks and procedures that could be utilized by lecturers to attract students to industrial technical education programmes of universities. Based on these findings, it was recommended that all the occupational areas and corresponding tasks identified in this study should be integrated to industrial technical education programme of Nigerian universities. It was also recommended that training procedures determined should be employed by lecturers and instructors for effective implementation of industrial technical education programmes

Introduction

Everyone has vital role to play in economic development of a nation. For someone to play a significant role, he or she must be equipped with knowledge, skills and right attitude to work through industrial technical education. Industrial technical education is a type of education designed to equip someone with skills and basic scientific knowledge required for employment. Federal Government of Nigeria (2004) defined technical education as training or retraining programme, which is given in schools or classes under public supervision and control. Bakare and Adelaja (2013) also viewed technical education as any form of education whose primary purpose

is to prepare persons for employment in recognized occupations. Ogwo and Oranu (2006) stated that technical education is a fractional segment of vocational education. Industrial technical education is offered in the universities as a programme with different special areas which include automechanics, building, electrical/electronics, metalwork and woodwork technology. Acquisition of skills and techniques in industrial technical education enables individuals to earn a living. In some universities, technical and vocational education programmes such as automobile technology, building, woodwork, metalwork and electrical/electronic technology are organized under a faculty of vocational and technical education. Bakare, Amenger and Tiough (2016) stated that each of the areas of technical education in some institutions is called a programme.

Programme is viewed as a series of action or activities that are planned, organized and to be carried out sequentially during training. Olaitan (2009) referred to programme as a planned list of instruction to be executed or carried out in a logical manner during learning or training. Olaitan and Ndomi (2000) described programme as a planned list of instructions to be executed or carried out in a logical manner during learning or training. Any training package in an occupation or job opportunities according to Onuka (2008) is better organized into programme for effective delivery.

Occupation is a job or set of activities someone performs to earn a living. Ogbuanya (2009) defined technical occupation as a type of occupation that involve manipulative skills and application of scientific principles. Bakare, Zakka and Fittoka (2010) described occupation as a trade, a profession or an activity through which one earns a living. Ede (2001) stated that an occupation requires special training and this type of training with suitable contents makes students beneficially competent in it. Content is defined as what the teacher and the students pay attention to when they are teaching and learning. Nwachukwu (2006) defined content as an organized activity to be taught by teacher or learned by students. Kapoma and Namusokwe (2011) described content as a list of subjects, tasks, topics, skills, themes, concepts or works to be covered by teacher and his students.

Contents of industrial technical education are expected to be functional and attractive enough to attract and equip students with needed skills. Unfortunately, enrolment capacity of this programme in Nigerian universities is not encouraging at all. Students seeking admission into universities prefer to study engineering, science, languages and other liberal studies that can only fetch them knowledge instead of technical skills or workplace competences. These students once

again see activities in industrial technical education programme as being obsolete and too manual to their liken. The programme presently lack contemporary contents and could not fetch the employment on graduation. Some of the students lookdown on the programme and termed it as ancient education designed for less privilege people. Development of occupational contents that will reflect modern areas and tasks in industrial technical education is therefore imperative in order to attract more students to the programme. Students do not enroll for technical education programme most especially in Nigerian universities and academic staff within the programme are redundant. In order to boost enrolment of students into industrial technical education programme, there is need to develop functional and attractive occupational contents in industrial technical education programme.

Occupational contents therefore are activities fashioned out of a programme or set of occupational areas to improve skills, knowledge and attitudes of a student. Ede and Ohanu (2013) explained that there are different occupation areas depending on the occupational demand of the society. Some of the occupational areas within industrial technical education programme according to Alaska Occupational Coding Manual (2010) include welding and fabrication, plumbing, electrical installations, furniture making, sheet metal work, pipe fitting, carpentry, fence erection, painting, steam fitting among others. Various tasks are found in technical education areas. Each occupation requires levels of tasks to effectively carry out production or services. Task is a piece of work or assignment especially one that is important. Olaitan and Ali (1997) defined task as logically related set of action required for completion of a job objective. Microsoft (2009) described task as a piece of work that somebody is given to do, usually short in duration or with deadline. The major purpose of the study was to determine occupational contents required for boosting enrolment of students into industrial technical education programme of universities in Enugu State. Specifically the study sought to identify:

1. Technical occupations required for boosting enrolment of students into industrial technical education programme

2. Tasks required for boosting enrolment of students into industrial technical education programme

3. Procedures that could be utilized by lecturers to attract students to industrial technical education programmes of universities

Research Questions

The following research questions guided the study:

1. What are the technical occupations required for boosting enrolment of students into industrial technical education programme?

2. What are the tasks required for boosting enrolment of students into industrial technical education programme?

3. What procedures could be utilized by lecturers to attract students to industrial technical education programmes of the Universities?

Methodology

This study employed descriptive survey design. Descriptive survey design according to Ezeji (2004) is aimed at collecting data and describing the characteristics, features of facts about a given population using questionnaire, interviews, and observation as instrument for data collection. Descriptive survey design was considered appropriate for the study since it elicited information from subjects on the occupational contents required for boosting enrolment of students into industrial technical education programme of universities.

The study was conducted in Enugu State and the population for study was 116 comprising 86 lecturers of industrial technical education and 20 instructors, all from University of Nigeria, Nsukka and Enugu State University of Science and Technology, Agbani Enugu State. Purposive sampling technique was employed to select 116 all the subjects from universities offering industrial technical education in Enugu State. That is, only the lecturers and instructors working with universities running technical education were picked for the study.

Questionnaire having 120 items developed from the literature reviewed was used for the study and experts was used for data collection. The questionnaire was divided into two main part I and II. Part I was used to obtain personal information from respondents, Part II contained three sections A-C, each section was based on the corresponding specific purposes of the study. Each item in the instrument was assigned a four response scale of Highly Required (HR)-4, Required

(R)-3, Moderately Required (MR)-2 and Not Required (NR)-1point. The instrument was subjected to face validation by three lecturers and their suggestions were incorporated into the final draft of the questionnaire. The reliability coefficient of the instrument was determined by using cronbach alpha reliability method and 0.84 reliability coefficient value was obtained. One hundred and sixteen copies of the questionnaire were administered on the respondents at various institutions while 112 copies were collected back representing 89.28 percent return rate

Mean was employed for answering research questions while null hypotheses were tested using t-test, Any item with the mean value of 2.50 or above was considered as required, while any item with the mean value less than 2.50 was considered as not required or disagree. The null hypothesis of no significant difference was accepted for any item whose P- value was greater than 0.05, but rejected for any item whose P-value was less than 0.05.

Results

The results for the study were obtained from the research questions answered and hypotheses tested through data collected and analyzed.

Research Question 1

What are the technical occupations required for boosting the enrolment of students into industrial technical education programme?

Hypothesis one

There is no significant difference in the mean responses of lecturers and supervisors on the technical occupations required for boosting the enrolment of students into industrial technical education programme

The data for answering research question one and testing hypothesis one were presented in Table 1

Tables 1

Mean Responses of the Subjects on the Technical Occupations required for Boosting the Enrolment of Students into Industrial Technical Education Programme

S/N	Technical occupations	Mean	SD	Sig.	Remark, Ho

A	**Automechanics**					
1	Mechatronics installation and maintenance	3.55	0.75	0.34	**Required,**	**NS**
2	Safety airbag installation and maintenance	3.01	0.80	0.32	**Required,**	**NS**
3	Automatic brake system fixing and servicing	3.35	0.71	0.46	**Required,**	**NS**
4	Auto electricity and installation	3.74	0.76	0.32	**Required,**	**NS**
5	Repair and servicing of modern vehicles	3.71	0.83	0.25	**Required,**	**NS**
6	Automobile fault diagnostic equipment	3.52	0.81	0.16	**Required,**	**NS**
7	Installation of securities (tracking) on modern vehicles	3.53	0.78	0.21	**Required,**	**NS**
B	**Building construction**					
7	Block moulding and constructing	3.58	0.78	0.53	**Required,**	**NS**
8	Masonry work	3.50	0.89	0.45	**Required,**	**NS**
9	Plumbing and concreting work	3.63	0.82	0.56	**Required,**	**NS**
10	Floor plan and architectural drawing	2.67	0.76	0.12	**Required,**	**NS**
C	**Electrical/electronic technology**					
9	Cell phone maintenance	3.50	0.71	0.34	**Required,**	**NS**
10	Construction and installation of solar panels					
11	Repair and Servicing of LCD and LED television	3.78	0.88	0.20	**Required,**	**NS**
12	Electrical installation of industries	3.72	0.73	0.33	**Required,**	**NS**
13	Radio and television work	3.65	0.82	0.34	**Required,**	**NS**
14	Coil winding and rewinding	3.77	0.80	0.21	**Required,**	**NS**
15	Home servicing of electrical gadgets	3.63	0.78	0.21	**Required,**	**NS**
16	CCTV installation and servicing	3.87	0.87	0.17		
17	Ipad maintenance and accessories	3.59	0.70	0.26	**Required,**	**NS**
18	PDA servicing and repair	3.67	0.70	0.46	**Required,**	**NS**
19	Electrical installation and modern lighting	3.65	0.89	0.32	**Required,**	**NS**
20	Android smart phones and maintenance	3.81	0.82	0.23	**Required,**	**NS**
21	Computer hardware and installation	3.54	0.72	0.12	**Required,**	**NS**
22	Computer software and installation	3.55	0.89		**Required,**	**NS**
23	Power and machines installation	3.50	0.85	0.36	**Required,**	**NS**
24	Electrical drafting and design of buildings	3.57	0.79	0.45	**Required,**	**NS**
25	Servicing of non ozone depletion refrigerators and air conditioners	3.78	0.85	0.25	**Required,**	**NS**
D	**Wood technology**					
26	Furniture and cabinet making	3.52	0.73	0.32	**Required,**	**NS**
27	Upholsory making and sales	3.66	0.80	0.21	**Required,**	**NS**
28	Carpentry and joinery	3.53	0.82	0.16	**Required,**	**NS**
29	Wood carving	3.76	0.77	0.34	**Required,**	**NS**
30	Wood machining and turning	3.51	0.89	0.54	**Required,**	**NS**
31	Work board manufacturing	3.59	0.78	0.45	**Required,**	**NS**
E	**Metalwork technology**					
32	Welding and fabrication of modern gates, doors and windows	3.60	0.73	0.46	**Required,**	**NS**
33	Foundry and forging operations	3.72	0.89	0.26	**Required,**	**NS**
34	Metal machining	3.55	0.80	0.23	**Required,**	**NS**
35	Railing and fixing doors and windows	3.60	0.76	0.09	**Required,**	**NS**
36	Rail of balconies and fixing of security doors	3.54	0.81		**Required,**	**NS**
37	Design and construction of security doors for finance houses	3.75	0.79	0.31	**Required,**	**NS**

Data in Table 1 reveal that 37 items had their mean values ranged from 3.01 to 3.81 and this shows that the mean value of each item was above the cut-off point of 2.50, indicating that all the technical occupations were required for boosting the enrolment of students into industrial technical education programmes of universities. The Table also showed that the standard deviations of the items were within the range of 0.70 to 0.89; this indicated that the respondents were not far from the mean and one another in their responses. The table indicated that all the

items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of lecturers and instructors on the technical occupations required for boosting the enrolment of students into industrial technical education programme. Therefore, the null hypothesis of no significant difference was upheld for all the 37 technical occupations

Research Question 2

What are the tasks required for boosting the enrolment of students into industrial technical education programme?

Hypothesis two

There is no significant difference in the mean responses of lecturers and instructors on the tasks required for boosting the enrolment of students into industrial technical education programme

The data for answering research question two and testing hypothesis two were presented in Table 2

Tables 2

Mean Responses of the Subjects on the Tasks required for Boosting the Enrolment of Students into Industrial Technical Education Programme

S/N	Tasks	Mean	SD	Sig.	Remark, Ho
A	**Tasks in Automechanics**				
1	Identify relevant tools and equipment	3.51	0.71	0.23	**Required, NS**
2	Identify motor vehicle engine parts and functions	2.90	0.90	0.35	**Required, NS**
3	Maintain auto electrical systems	3.51	0.81	0.61	**Required, NS**
4	Install and service safety airbag of vehicles	3.60	0.90	0.33	**Required, NS**
5	Analysis and maintain faults in automatic brake systems	3.28	0.83	0.14	**Required, NS**
6	Operate mechatronics system correctly	3.21	0.86	0.26	**Required, NS**
7	Maintain mechatronics systems	3.52	0.85	0.53	**Required, NS**
8	Apply automobile fault diagnostic equipment	3.59	0.89	0.42	**Required, NS**
9	Service motor vehicles to expectation	3.63	0.81	0.56	**Required, NS**
10	Identify safety and security system in automobile	3.54	0.73	0.22	**Required, NS**
11	Install security on motor vehicles	3.60	0.81	0.34	**Required, NS**
12	Use various shop tools and equipment	3.78	0.70	0.06	**Required, NS**
13	Maintain auto-electricity systems	3.82	0.93	0.11	**Required, NS**
14	Maintain fuel systems	3.56	0.81	0.34	**Required, NS**
15	Analysis and repair faults in cooling system of automobiles	2.99	0.87		
B	**Tasks in building technology**				
16	Prepare architectural drawing with standard diameters	3.73	0.88	0.35	**Required, NS**
17	Install window and doors correctly	3.60	0.81	0.32	**Required, NS**
18	Form foundation walls	2.81	0.90	0.21	**Required, NS**
19	Set out building from building drawing	3.61	0.83	0.16	**Required, NS**
20	Carry out roofing activities	3.49	0.86	0.34	**Required, NS**

21	Construct ceiling of a building	3.59	0.85	0.54	**Required, NS**
22	Carry out rendering and plastering	3.63	0.89	0.45	**Required, NS**
23	Apply relevant equipment to paint a built house	3.55	0.81		**Required, NS**
C	**Electrical/electronic technology**				
24	Identify tools and equipment for maintaining cell phones	3.61	0.81	0.22	**Required, NS**
25	Maintain faulty cell phones	3.28	7.00	0.23	**Required, NS**
26	Flash and configure malfunctional cell phones	3.55	0.93	0.19	**Required, NS**
27	Upgrade cell phones	3.50	0.81		**Required, NS**
28	Identify various components for making solar panels	3.59	0.90	0.31	**Required, NS**
29	Construct solar panels for commercialization	3.63	0.83	0.32	**Required, NS**
30	Repair and Servicing of LCD and LED television	3.54	0.86	0.21	**Required, NS**
31	Repair and service transistor radio	3.60	0.85	0.16	**Required, NS**
32	Select soldering equipment and consumables for soldering	3.60	0.89	0.34	**Required, NS**
33	Service different types of refrigerators and air conditioners	3.28	0.81	0.56	**Required, NS**
34	Select materials for construction of CCTV	3.33	0.73	0.45	**Required, NS**
35	Identify correct winding for a particular job	3.52	0.81		**Required, NS**
36	Carry out winding correctly	3.59	7.00	0.46	**Required, NS**
37	Carry out hard and software computer installation	3.63	0.93	0.26	**Required, NS**
38	Service and rectify faults in electric machines	3.54	0.81	0.23	**Required, NS**
39	Identify various equipment and appliances to be included in the building	3.60	0.90	0.09	**Required, NS**
40	Draft and design building fittings correctly	3.63	0.83	0.11	**Required, NS**
41	Rewind electric motors	3.28	0.86	0.31	**Required, NS**
42	Service generators correctly	3.28	0.85	0.32	**Required, NS**
43	Identify bad or good electronic components using electronic measuring instruments	3.52	0.89	0.21	**Required, NS**
44	Identify both electrical/electronic safety practices	3.59	0.81	0.16	**Required, NS**
45	Wiring of industrial and residential buildings	3.63	0.73	0.34	**Required, NS**
46	Select appropriate cable	3.54	0.81	0.54	**Required, NS**
47	Install and terminate cables correctly	3.60	7.00	0.45	**Required, NS**
D	**Tasks in Woodwork technology**				
48	Identify and utilize woodwork machines and tools	3.61	0.81	0.46	**Required, NS**
49	Identify safety measures in woodwork shops	3.28	0.90	0.26	**Required, NS**
50	Make ceiling, door frames, using woodwork measuring equipment	3.28	0.83	0.23	**Required, NS**
51	Produce furniture, and cabinets	3.52	0.86	0.09	**Required, NS**
52	Carve wood for commercialization	3.59	0.85	0.32	**Required, NS**
53	Turn wood using appropriate machines	3.60	0.89	0.20	**Required, NS**
54	Manufacture wood beads	3.44	0.81	0.16	**Required, NS**
55	Maintain furniture and building roofs	3.66	0.73	0.34	**Required, NS**
E	**Tasks in Metalwork Technology**				
56	Identify metalwork safety and practices	3.60	0.72	0.45	**Required, NS**
57	State the uses of metals	3.28	0.93	0.22	**Required, NS**
58	Classify metals	3.21	0.81	0.46	**Required, NS**
59	Carry out metal soldering and brazing	3.52	0.90	0.26	**Required, NS**
60	Fabricate and weld metals	3.59	0.83	0.23	**Required, NS**
61	Use metal fasteners	3.63	0.86	0.29	**Required, NS**
62	Apply metal/foundry equipment and tools	3.54	0.85	0.11	**Required, NS**
63	Use sheet metalwork tools	3.60	0.89	0.33	**Required, NS**
64	Rail balconies	3.60	0.81	0.32	**Required, NS**
65	Rail staircase	3.28	0.73	0.21	**Required, NS**
66	Grind metal to specification	3.21	0.81	0.12	**Required, NS**
67	Fix doors and windows	3.52	0.71	0.34	**Required, NS**
68	Construct different security doors	3.59	0.93	0.58	**Required, NS**

Data in Table 2 reveal that 68 items had their mean values ranged from 2.81 to 3.82 and this shows that the mean value of each item was above the cut-off point of 2.50, indicating that all the tasks were required for boosting the enrolment of students into industrial technical education programme. The Table also showed that the standard deviations of the items were within the range of 0.70 to 0.91; this indicated that the respondents were not far from the mean and one another in their responses. The table indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of asks required for boosting the enrolment of students into industrial technical education programme. Therefore, the null hypothesis of no significant difference was upheld for all the 68 tasks

Research Question 3

What procedures could be utilized by lecturers to attract students to industrial technical education programmes of Universities?

Hypothesis three

There is no significant difference in the mean responses of lecturers and instructors on the procedures that could be utilized to attract students to industrial technical education programmes of Universities

The data for answering research question three and testing hypothesis three were presented in Table 3

Tables 3

Mean Responses of the Subjects on the Procedures that could be utilized to Attract Students to Industrial Technical Education Programmes of Universities

S/N	Procedures	Mean	SD	Sig.	Remark, Ho
1	Teach the students appropriate competencies in each occupation	2.95	0.71	0.21	**Required, NS**
2	Explain the facilities to be used by the lecturers for training to each students in each competency area of the programme	2.90	0.70	0.22	**Required, NS**
3	Deliver the competencies step by step in logical order to the trainees.	3.55	0.81	0.41	**Required, NS**
4	Demonstrate the competencies while the trainee observed during step by step teaching	3.50	0.80	0.33	**Required, NS**
5	Request the students to practice what the instructor demonstrated while the instructor observes them	3.28	0.83	0.24	**Required, NS**

6	Correct wrong practices made by the students	3.82	0.86	0.16	**Required, NS**
7	Encourage repetitive practice of knowledge and skills learnt	3.58	0.85	0.31	**Required, NS**
8	Test the practice of a group of related competency towards achieving of the objectives	3.50	0.89	0.26	**Required, NS**
9	Provides the trainee information about their performance	3.63	0.82	0.56	**Required, NS**
10	Encourage visit to other relevant training institutions, write a report and submit to the instructor for a feedback system	3.53	0.73	0.22	**Required, NS**
11	Teach the students money management and investment procedure into their enterprise	3.81	0.71	0.34	**Required, NS**
12	Teach the students the sources of fund for investment into technical occupations of the programme	3.48	0.73	0.26	**Required, NS**
13	Teach the students knowledge of profit and loss account.	3.52	0.93	0.32	**Required, NS**
14	Teach students salvage value of material that can be resold for improving investment into the enterprise.	3.56	0.81	0.34	**Required, NS**
15	Teach the students how to manage risks in the technical occupation enterprise through insurance policy	3.59	0.84	0.25	**Required, NS**

Data in Table 3 reveal that 17 items had their mean values ranged from 2.90 to 3.81 and this shows that the mean value of each item was above the cut-off point of 2.50, indicating that 15 procedures were required by lecturers to attract students to industrial technical education programmes of Universities. The Table also showed that the standard deviations of the items were within the range of 0.70 to 0.89; this indicated that the respondents were not far from the mean and one another in their responses. The table indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of lecturers and instructors on the procedures that could be utilized to attract students to industrial technical education programmes of Universities. Therefore, the null hypothesis of no significant difference was upheld for all the 15 procedures

Discussion of findings

The findings of this study in Table 1-3 revealed that there are (37 technical occupations, 68 tasks and 15 training procedures) for boosting the enrolment of students into industrial technical education programmes of Nigerian universities. The findings of this study agreed with the findings of Bakare, Zakka and Fittoka (2010) in a study on integration of mechatronics in electrical/electronic technology programme of colleges of education in order to ensure occupational quality assurance of graduates in the 21st century Nigeria where it was found that 12 contents and 22 relevant competencies in mechatronics were required to be integrated to electrical/electronic technology programme for occupational quality assurance of graduates in the 21st century Nigeria. The result of this study was in conformity with the findings of Abah (2009) in a study on lecturers' perceptions on the inclusion of mechatronics technology education into the

technical and vocational education programme of Nigerian universities in south east geopolitical zone. This finding was in agreement with the findings of Nwachukwu, Bakare and Jika (2010) in a study on effective laboratory safety practice skills required by electrical and electronics students for effective functioning in the laboratory of technical colleges in Ekiti State, where it was found that 10 safety practice skills were required to use electrical hand tools, 25 safety practice skills in operating electrical and electronic power tools and machines and 10 safety practice skills for working in electrical/electronic workshop.

The findings of the above researchers in their various research activities helped to support the justification of the results of this study on the occupational contents required for boosting enrolment of students into industrial technical education programme of universities in Enugu State

Conclusions

Based on the findings of the study, the following conclusions were drawn:

There is high need to device means of boosting enrolment of students into industrial technical education because it is seen as only types of education that equip individuals with technical skills and knowledge required for workplace. Enrolment of students into industrial technical education programme at university level is not encouraging and this study was now set up to determine occupational contents required for boosting enrolment of students into industrial technical education programme of universities in Enugu State

Recommendations

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

1. All the occupational areas and corresponding tasks identified in this study should be integrated to industrial technical education programme of Nigerian universities
2. Training procedures determined should be employed by lecturers and instructors for effective implementation of industrial technical education programmes
3. Modern training resources should be supplied and used by lecturers and other supporting officers when teaching tasks in various occupational areas within industrial technical education programme

References

Abah, R. O. (2009). Lecturers' Perception on the Inclusion of Mechatronics Technology Education into the Technical and Vocational Education Programme of Nigerian Universities in South East Geopolitical Zone. An Unpublished *M.Ed Project*, Department of Vocational Teacher Education, University of Nigeria, Nsukka.

Alaska Occupational Coding Manual (2010). State of Alaska Department of labor and workforce development. http://www.labor.state.ak.us/estax/home.htm. Retrieved June, 2013

Bakare, J. A., Zakka, B. & Fittoka, B.S. (2010). Integration of mechatronics in electrical/electronic technology programme of colleges of education in order to ensure

occupational quality assurance of graduates in the 21st century Nigeria. *Journal of CUDIMAC, 2(1) 231-239*

Bakare, J. & Adelaja, S.R. (2013). *Special Methodologies in Technical/Vocational Education*. Enugu: Jimmec Press

Bakare, J. Amenger M. & Tiough, D.M. (2015). Private partnership functions required in the management of technical education programmes of colleges of education in Lagos State. A *Conference Paper* presented at national conference of NVA held in Lagos State

Ede, E. O. (2001). *Occupational Analysis and Course Construction in Industrial Technical Education.* Nsukka: Godjikson Publishers.

Ede, E.O. & Ohanu, I (2013). Occupational areas and tasks required for inclusion into industrial technical education to attract skilled and experienced professionals. An unpublished project submitted to office of STEP-B, University of Nigeria, Nsukka

Ezeji, S.C.O.A. (2001). *Basic Principles of Research in Education*. Enugu: Cheston international Press

Federal Government of Nigeria (2004). *National Policy on Education*. Lagos: NERDC press

Kapoma, G.C.& Namusokwe, C. (2011). *When is the Curriculum Content of Social Relevance*. Zambia: Educational resource and informational site

Microsoft (2009). *Tasks*. Retrieved from Encarta publication

Nwachukwu, C.E., Bakare, J.A. and Jika, F.O. (2009). Effective Laboratory Safety Practice Skills Required By Electrical and Electronics Students of Technical Colleges in Ekiti State. *A Paper presented at the Annual Conference of Nigerian Vocational Association at Faculty of Education, University of Nigeria, Nsukka. On Nov 22nd – 25th, 2009.*

Nwachukwu, C. E. (2006). *Designing appropriate Methodology in Vocational and Technical Education for Nigeria.* Nsukka: University Trust Publishers.

Olaitan, S.O and Ali, A (1997). *The Making of Curriculum: Theory, Process, Products and Evaluation*. Onitsha: Cape Publishers Ltd.

Ogbuanya, T.C. (2009). *Energy and Technology of Home appliances*. Enugu: Cheston Agency Limited

Ogwo, B. A, and Oranu, R. N. (2006). *Methodology in Formal and Non – formal Technical / Vocational Education*. Nsukka: University of Nigeria press.

Onuka, A.U. (2008). Development of entrepreneurship skills training modules for enhancing

youth participation in regulated cassava processing occupations in southeast Nigeria. An Unpublished *Ph.D Thesis.* Department of Vocational Teacher Education, University of Nigeria.