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Assessment of the Technical Skills Acquired by Students of Technology Education for Employment Generation in Rivers State, Nigeria

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Abstract: The study which used descriptive survey design was conducted to assess the technical skills Acquired by Technology Education Students for Employment Generation in Rivers State, Nigeria. The population of the study was 302 technology education students from Rivers State University, Port Harcourt. Purposive sampling technique was used to obtain from the population, 97 full-time final year students of technology education which served as the study sample. Three research questions guided the study. A self-structured 30-item questionnaire designed by the researchers and titled "Technology Education for Skills Development Questionnaire, (TESDQ)" was used to elicit information from the respondents. The instrument was face-validated by three experts in technology education from Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Rivers State. The instrument's reliability was ascertained via Cronbach's Alpha method in which a reliability coefficient of 0.89 was obtained. Mean and standard deviation were statistical tools used to analyze the research questions. The findings of the study revealed amongst others that technology education students in Rivers State do not acquire relevant technical skills for employment generation in Rivers State due to unavailability of training materials and competent personnel. Based on the findings, it was recommended that Government should provide adequate training facilities and competent instructors in technical departments in all the tertiary institutions in the state for effective training of students.
Keywords: Technology education, technical skills, employment generation, students.

Introduction

Technology is the systematic use of scientific knowledge to proffer solutions to real life practical problems on a daily basis. It can also be seen as the information, techniques and tools with which individuals utilize the available resources of their environment to satisfy the needs of mankind. According to Akaninwor (2010), technology could be seen as the effect of man's determinations to do things extra competently. Thus, from the foregoing, technology could be described as the appropriate application of scientific and technical knowledge and skills to proffer solutions to the numerous insatiable needs of man. Technology connotes the right use of technical and engineering tools, materials, apparatus, processes and systems by man to solve daily issues of mankind. One major goal of technology is to bring about improvement in the world. Technology connotes the study, mastery and utilization of manufacturing methods and industrial arts to bring about viable industrial advancement in the world. One way of advancing technological innovations across the globe is through technology education.

Technology education which comprised both general and specific education elements deals with the application of technological skills and expertise in the industry to meet targets (Akaninwor, 2010). Similarly, Tom and Pedro (2019) described technology education as a bulk of knowledge distinct from but linked to the sciences with precise accreditation requirements. Industrial technology education continued Tom and Pedro therefore involves a broad spectrum of knowledge and actions which offer chances to apply several academic notions through hands-on and minds-on applications capable of giving global relevance to these academic concepts. Technology education offer courses in broad areas of specialization such as mechanical and metal work technology, electrical/electronic technology, building and wood work technology among others. These courses are designed to promote the inculcation of requisite theoretical knowledge as well as practical skills in the students for increased productivity and sustainability upon graduation. Technology education connotatively, implies the education for the acquisition of life skills.

Skill as defined by Okorie (2000) refers to human capacity to perform any activity with dexterity and competence. Skills can be seen as special abilities in a given occupation acquired through learning and practice (Samuel, 2017). In the same vein, Ogbuanya and Bakari (2014) described skill as that referring to individual's capability to regulate the components of behavior, thinking and feeling within definite contexts and within a specific task domain so as to perform tasks excellently. Skills therefore denote special abilities gained through committed learning and practice which enable an individual to become proficient in his or her work roles in a

chosen occupational field. Thus, for students of technology education to achieve high level of competence in their respective fields of specialization, they need to develop their technical expertise for employment generation.

Students of technology education can create employment for themselves and others if they possess relevant skills from the programmes of study. Again, the technology education students also need to put to use the acquired skills else they will not be able to remember how to use it anymore if they are not practicing. It is one thing to possess relevant skills and yet another to practice those skills for proficiency in order to secure paid employment or becoming self-employed. Skill development therefore can be seen as a lifelong development of relevant skills crucial for global improvement in the quality of life in core areas of health, environment, energy, natural resources, among others both in this present time and in the future. Developing technical competence in electrical/electronics, mechanical and building technologies is critically indispensable for employment generation in Rivers State, South-South, Nigeria.

Hence, technology education students first of all need to acquire relevant technical expertise via technical vocational education and training (TVET) and then develop these skills until they become experts in using them to achieve maximum productivity. Some of these skills which technology education students need to develop include skills in auto mechanics, radio and television maintenance and repair, troubleshooting of electronic circuits, block laying, automobiles, carpentry, phone repair, building design, electrical installation, computer system maintenance, welding, fabrication, foundry, machine operations, among others. These skills and many more not stated in this study can best be developed through technical vocational education and training (TVET).

Technical Vocational Education and Training (TVET) refers to the form of education aimed at preparing the learners for industrial technical works for economic and industrial sustainability (Nande, Awua & Mlumum, 2017). Similarly, Man (2005) defines TVET as the methodical and well-ordered transmission of knowledge, skills and values for the development of workers which leads to increased productivity and sustainability in the global arena. Furthermore, the United Nations Education Scientific and Cultural Organization (UNESCO) as cited in Badawi (2013) refers to TVET as a comprehensive term denoting those features of the educational processes involving, in addition to general education, the study of technologies and related sciences and the acquisition of skills, attitudes, understanding and awareness in occupational fields in various sectors of economic and social life. In the same vein, Adepoju (2014) termed TVET as a scholastic training which involves knowledge, skills, competencies, capabilities, capacities, and all other structural experiences for acquiring jobs in several sectors of the economy or that capable of promoting self-reliance. Furthermore, Raimi and Akhuemonkhan (2014) opined that for Nigeria to meet up with industrialized nations in terms of technological advancement and sustainability, adequate human and material resources must be developed and deployed into TVET as a viable educational orientation directed towards meeting up the correct trained workforce required for active the industrial work roles. TVET emphasizes the need to apply relevant skills acquired as well as knowledge and attitude developed over time through training for quality employment in a given occupation or cluster of inter related jobs in any field of social and economic activity (Oluwale, Jegede & Olamade, 2013). Furthermore, Ayonmike and Okeke (2015) viewed TVET as that branch of education that uses information technology and globalization to impart technical and vocational skills to prospective industrial workers either at the foundational level or as entrepreneurs. Ukula in Sofoluwe (2013) stated that TVET as a branch of education is very beneficial since its contents enable trainees to possess skills, attitudes and knowledge necessary to carry out excellent work roles both socially and economically which are of immense benefit to the society. TVET ensures the provision of skills and knowledge which serve as veritable tools for industrial and technological advancement of any nation (Goel, 2010). In his submission, Afeti (2010) opines that Technical vocational education and training is very crucial in the training and development of skilled entrepreneurial workforce required in modern technical work environment. In addition, Okoye and Okwelle (2013) report that TVET is mainly for those who will not only acquire it but also profit at it. Thus, it is therefore, very important to state and note that one of the goals of TVET as enshrined in the Federal Government of Nigeria's National Policy on Education (NPE) (2013) is to oversee the provision of trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels. In essence, human capacity building in skill-based technological areas is best achievable through TVET. This fact is corroborated by Ezeani & Urama (2014) who submitted that TVET is crucial for the industrial and technological growth of the Nigeria. Furthermore, Owo (2017) reports that TVET had trained many youths in Rivers State in carpentry, woodwork, electrical installation, electronic maintenance and repair, auto mechanics, welding, bricklaying, phone repairs among other skills which enhances their self-reliance and entrepreneurship. From the foregoing, technical vocational education and training is seen to have great potentials of reforming the individuals in the areas of knowledge, skills and desirable attitudes so as to be found fit for legitimate work. TVET is a vehicle that conveys manpower development from the training institutions to the work environment

leading employment generation and poverty alleviation. Consequently, it is expedient for all technology education students in tertiary institutions to strive to acquire life skills that can fetch them sustainable income throughout their lifetime. This is proved to be a sure way of overcoming the menace of poverty which is prevalent mostly among youths in Nigeria.

Statement of the Problem

Technology education ensures that relevant skills, necessary for job creation and self-development are imparted to students for national development. However, from recent observations, it was seen that technology education graduates in Nigeria are found to be lacking in the area of skills acquisition making it uneasy for them to secure paid employment in the world of work or become self-reliant after graduation. This development increases the rate of criminal activities in the society. According to Igberadja (2014), the Nigerian labour market reports that Nigerian graduates do not possess the requisite employable skills due to poor implementation of educational curriculum. In a related study, Okwelle and Owo (2017) report that most technical courses in Nigerian institutions are taught almost theoretically due to poor state of practical training facilities. This menace of inadequate skills acquisition by technology education graduates for employment generation informed the researchers' desire to carry out this study to assess the skills acquired by technology education students for employment generation in Rivers State, Nigeria.

Purpose of the Study

The main purpose of the study was to assess the technical skills acquired by technology education students for employment generation in Rivers State, Nigeria. Specifically, the study sought to:

1. Determine the skills acquired by mechanical technology students for employment generation in Rivers State, Nigeria.
2. Determine the skills acquired by electrical/electronic technology students for employment generation in Rivers State, Nigeria.
3. Determine the skills acquired by building technology students for employment generation in Rivers State, Nigeria.

Research Questions

The following three research questions were posed by the researchers to guide the study:

1. What are the skills acquired by mechanical technology students for employment generation in Rivers State, Nigeria?
2. What are the skills acquired by electrical/electronic technology students for employment generation in Rivers State, Nigeria?
3. What are the skills acquired by building technology students for employment generation in Rivers State, Nigeria?

Materials and Methods

The study adopted descriptive survey design. The study population was 302 technology education students from Rivers State University, Port Harcourt and Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt. Purposive sampling technique was used to obtain from the population, a study sample of 97 full-time final year students of technology education from the two institutions. Three research questions posed by the researcher guided the study. A self-structured 30-item questionnaire designed by the researchers and titled "Technology Education for Skills Development Questionnaire, (TESDQ)" was used for data collection from the respondents. The instrument was constructed on a 5-point Likert's scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree which correspond to numerical values of 5,4,3,2 and 1 respectively. The instrument was face-validated by three experts in technology education from the University of Uyo, Uyo, Akwa-Ibom State. The instrument's reliability was ascertained using Cronbach's Alpha correlation method in which a reliability coefficient of 0.83 was obtained. The questionnaire was distributed to respondents by the researchers and two research assistants who also helped to retrieve the filled questionnaire from the students. Out of the 97 copies of the instrument distributed to the respondents, only 82 copies were successfully retrieved and used for data analysis. Mean and standard deviation were the statistical tools used to answer the research questions. The researchers used standard deviation to show homogeneity in the responses of the respondents. Thus, it was decided that an item with a calculated mean value equal or greater than 3.00 (3.00-5.00) was accepted as a skill possessed by technology education students for employment generation in Rivers State. While any item whose mean value was below the criterion mean of 3.00 was rejected.

Results

The results of the study were presented in line with the research questions that guided the study:

Research question 1: What are the skills acquired by mechanical technology students for employment generation in Rivers State, Nigeria?

Table 1: Skills Acquired by Mechanical Technology Students for Employment Generation in Rivers State.

S/N	Item Statement	$\overline{X_1}$	SD	Decision
1	Technical drawing skills	4.08	0.43	Agreed
2	General welding skills	4.22	0.86	Agreed
3	Metal cutting skills	2.81	0.91	Disagreed
4	Air conditioning and refrigerator servicing skills	2.31	0.73	Disagreed
5	General plant operation and maintenance skills	2.10	0.94	Disagreed
6	Skills in Autotronics	2.78	0.88	Disagreed
7	Skills in the production of technical products	2.25	0.69	Disagreed
8	Automobile repair and maintenance skills	2.61	0.80	Disagreed
9	skills in bolt and nuts design	2.02	0.97	Disagreed
10	Workshop safety and practice skills	3.98	0.95	Agreed
11	Skills in computer controlled vehicle.	2.16	0.81	Disagreed

Table 1 above showed that mechanical technology students lacked relevant skills needed for employment generation in Rivers State. This is clearly seen from the Mean responses of the students which were below the criterion mean of 3.00 except for items 1, 2 and 10 whose mean values were obtained as 4.08, 4.22 and 3.98 respectively. The standard deviation values obtained for these items ranging from 0.43 to 0.97 revealed homogeneity in the responses of the students.

Research Question 2: What are the skills acquired by electrical/electronic technology students for employment generation in Rivers State, Nigeria?

Table 2: Skills Acquired by Students of Electrical/Electronic Technology Education for Employment Generation in Rivers State, Nigeria.

S/N	Item Statement	$\overline{X_1}$	SD	Decision
1	Radio and television maintenance and repair skills.	3.59	0.88	Agreed
2	Electronic circuit troubleshooting skills.	2.89	0.92	Disagreed
3	Electrical workshop safety skills.	4.22	0.95	Agreed
4	Electronic circuit design skills.	2.85	0.83	Disagreed
5	Electronic components building skills. .	2.76	0.91	

				Disagreed
6	Digital circuit design skills.	2.10	0.85	Disagreed
7	Information and Communication Technology (ICT) skills.	3.93	0.97	Agreed
8	Skills in using electronic devices for measurements.	2.62	0.86	Disagreed
9	Electrical installation skills	3.97	0.88	Agreed
10	Skills in electronic signal analysis.	2.91	1.03	Disagreed
11	Coil winding skills.	2.98	0.94	Disagreed

From table 2 above, it was observed that students of electrical/electronic technology do not acquire relevant skills for employment generation in Rivers State. This was indicated by the mean values of all the items which were less than the criterion Mean of 3.00 except items 1,3, 7 and 9 whose mean values were above the criterion Mean of 3.00. Standard deviation values ranging from 0.83 to 1.03 revealed closeness in the responses of the respondents.

Research Question 3: What are the skills acquired by building technology students for employment generation in Rivers State, Nigeria?

Table 3: Skills Acquired by Building Technology Education Students for employment Generation in Rivers State, Nigeria.

S/N	Item Statement	$\overline{X_1}$	SD	Decision
1	Architectural stonemasonry skills.	2.50	0.76	Disagreed
2	Carpentry and joinery skills.	2.19	0.85	Disagreed
3	Block and brick laying skills.	3.95	0.86	Agreed
4	Wall and floor tiling skills.	4.17	0.95	Agreed
5	Plumbing and pipe-fitting skills.	2.76	0.92	Disagreed
6	Plastering and drywall systems.	4.19	0.97	Agreed
7	Concrete construction work.	4.26	0.94	Agreed
8	Painting and decoration skills.	4.11	1.04	Agreed

The result according to table 3 revealed that building technology students acquire skills in block and bricklaying, wall and floor tiling, wall plastering, concrete construction, painting and decoration for employment generation in Rivers State as seen in the mean values of the items which were all above the criterion mean of 3.00. However, the Mean values of items 1, 2 and 5 which were 2.50, 2.19 and 2.76 respectively fell below the criterion Mean of 3.00. This result indicated that students of building technology in Universities in Rivers State do not acquire adequate skills in architectural stonemasonry, carpentry and joinery and plumbing and pipe-

fitting very crucial and necessary for employment generation in Rivers State. Standard deviation values ranging from 0.76 to 1.04 indicated homogeneity in the students' responses.

Discussion

The results as presented in table 1 above revealed that mechanical technology students do not possess adequate skills for employment generation in Rivers State. This finding agrees with Oduma (2007) who opines that TVET institutions in Nigeria experienced infrastructural decay in the areas of inadequate workshops, laboratories, machines, computers, tools and other educational resources thereby making technology students suffer in the practical aspect of their training. However, the finding of the study is in contrast with Owo (2017) who opine that technical vocational education and training enabled several youths in Rivers State to acquire welding and fabrication as well as auto-mechanic skills for employment generation in Rivers State.

Table 2 revealed that electrical/electronic technology students do not possess adequate skills capable of creating jobs or making them become self-employed. This finding differs from Nande *et. al*. (2017) who stated that TVET as an instrument for employment and wealth creation that inculcates in learners, adequate technical skills and knowledge for productive work in a chosen occupation. Similarly, this finding corroborates Owo (2017) who posit that TVET has trained many youths in electrical and electronic maintenance and repair skills for employment generation in Rivers State.

The result as shown in table 3 revealed that technical vocational education and training equips technology education students with relevant building technology skills for employment generation in Rivers State. This finding corroborates the reports of the national policy on education (NPE) (2013) that one of the goals of technical vocational education and training was to provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels for job creation and self-employment. Similarly, this finding agrees with Goel (2010) who states that TVET provides relevant skills and knowledge to the learners for the economic and technological advancement of any nation. This study also corroborates the views of Owo (2017) who posits that technical vocational education and training has trained many Rivers youths in building construction and bricklaying for employment generation.

Conclusion

One cardinal goal of technology education is the inculcation of relevant life skills in the students for employment generation. Therefore, both the industrial and economic development of any nation depends on the effective skill training of students in engineering, science and technology with a view to producing skilled workforce needed to champion developmental strides. Thus, technology education programmes of universities in Nigeria should be directed towards the development of students' technical expertise for employment generation via appropriate administration and implementation of technical vocational education and training to ameliorate the adverse effects posed by unemployment and poverty in Nigeria.

Recommendations

1. Government should provide relevant training facilities in all technology institutions' workshops for effective training of students.
2. Government should properly fund technology and engineering programmes of tertiary institutions in Nigeria for increased productivity and technological advancement of the nation.
3. Parents should also join in the crusade for the promotion of technical vocational education and training by encouraging their children to enroll into any of its programmes.
4. Technology education students should strive to acquire relevant skills from any of the TVET programmes they enrolled in and ensure effective utilization of the skills and competences acquired for their self-development through employment generation.

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