

## ACQUISITION OF ELECTRONIC TECHNOLOGY SKILLS FOR SUSTAINABLE JOB CREATION AMONG STUDENTS OF TECHNICAL COLLEGES IN RIVERS STATE

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**Abstract:** The study on acquisition of Electronic Technology skills for sustainable job creation among students of technical colleges in Rivers State was aimed at identifying the Electronic Technology skills required by electronic technology students for sustainable job creation in Rivers State. Two research questions guided the study and two null hypotheses were tested at .05 level of significance. The study adopted a survey research design. The population for the study was 25 respondents (comprising 15 Electronics Technology teachers and 10 Electronics Technology technologists) from the four technical colleges owned and managed by Rivers State Government. There was no sampling as the population was manageable. A thirty-eight item questionnaire was designed to collect data for the study. The instrument was validated by three experts. Cronbach's Alpha reliability coefficient was used to determine the internal consistency of the instrument which stood at an average value of .89. The data collected for the research questions which guided the study were answered using mean and standard deviation whereas the hypotheses were tested using t-test. The results of the study showed that the television receiver skills and the DVD Home Théâtre skills are notable skills capable of creating sustainable job among electronic technology students of technical colleges in Rivers State. It was recommended that students should acquire emerging electronic technology skills to enable them be self-reliant and job creators.

**Keywords:** Electronic Technology, Skills, Skill Acquisition, Sustainable Job Creation, Technical Colleges.

### Introduction:

Technical colleges are education institutions that prepare students for career in a specific field. The aims of technical colleges are to equip students with useful skills and improving their knowledge in their desired areas. It offers practical education for acquisition of skills as well as basic scientific knowledge for effective nation building. According to Excellence and Educational Network (EEN, 2016), technical colleges play vital roles in Nigeria. They train and produce technicians for industries, impart vital technical skills on the youths; help towards the goal of self-employment and job creation, struggle towards technological advancement and skills acquisition among other responsibilities. According to Federal Republic of Nigeria (FRN, 2013), technical colleges' curriculum for each trade consists of five components: General Education, Theory and Related Courses,

Workshop Practice, Industrial Training/Production Work and Entrepreneurial Training. It is stated that for effective participation of students in practical works, the teacher-student's ratio shall be kept at 1:20. Through technical colleges, students acquire skills that made them skilled carpenters, painters, radio and television repairers, auto-mechanists, plumbers, woodwork and electrical/electronic technicians among others.

Skill acquisition involves the training of people in different fields of trade under a legal agreement between the trainers and the trainees for certain duration and under certain conditions. Idoko (2014) defined skill acquisition as the process of demonstrating the habit of active thinking or behaviour in a specific activity. Further, skill acquisition is seen as the ability to do or perform an activity that is related to some meaningful exercise, work or job. The relevance of skill acquisition according to Okwelle and Assor (2022) is to develop skilled personnel and update the relevant skills to meet the requirement in the labour market. Skill is the ability to do something expertly well which must consist of habits that ensure adaptation. Iloka (2010) defined skills as the manual dexterity acquired through repetitive performance of operation. The acquisition of skills involves the formation of relevant habits which is usually preceded by relevant knowledge which facilitates correct thinking, leading to the correct way of doing things. A promising field where youths can acquire skills that can possibly mitigate them from migration is Electronics Technology.

Electronics Technology as one of the technical and vocational areas in tertiary institutions covers electronics maintenance and repairs, electronics appliances, nano-electronics, electronics circuit reading. Electronics measuring instrument, power supply system, electronics instrumentation and control automation, computer, satellite installation and maintenance works among others. College Board (2020) explained that in electronics, the students learn basic skills needed to operate, maintain, install and repair electrical/electronic equipment. Ogbuanya (2017) stated that students may study the behaviour of electrons and the practical uses of which such study can be applied. Electronics measuring instrument are the hub of electronics. Measuring instruments are the heartbeat of electronics technology as nothing can be done in electronics without measurement and testing. Measurement and testing in electronics enable students to know the principle and functions of various types of electronics measuring instruments, their applications and uses; their maintenance and the precaution to be taken when using them. In electronics technology, there are many devices that gain attention on daily basis. Such devices include: projectors, computers, DVD Home Theatre, Television Receiver among others.

Television Receiver is an electronic device used for the purpose of viewing and hearing television broadcasts or as a computer monitor. It combines a tuner, display and loudspeakers. A television receiver is an amplifier and demodulator of a radio-signal, so, it is susceptible to intermodulation distortion (IMF) interference. IMF interference occurs when two or more signals are present in the input of the receiver. Alio (2018) defined television receiver as an electronic device that receives television signals and displays them on a screen. It is synonymous with television or receiving system. At the television receiver, the sound and picture carrier waves are picked up by the receiving antenna, producing currents that are identical in form to those flowing in the transmitter antenna but much weaker. Some of the skills acquirable in television receiver according Njoku and Ewe (2022) are identification of measuring instruments, identification of faulty components/stage, connection of multimeter, testing for functionality before assembly among others. Acquisition of these electronics gives room for sustainable job creation.

DVD Home Theatre is an electronic device in our homes and industries. It is an integrated home theatre package which bundles together a combination of DVD or Blu-ray player, a multi-channel amplifier (which includes a

surround sound decoder, a radio tuner and other features), speaker wires, connection cables, a remote control, a set of five or more surround-sound speakers or more rarely, just left and right speakers, and a low-frequency subwoofer cabinet. This device can not last forever. Hence, some skills are required to repair or maintain it when faulty. Okwelle and Assor (2022) mentioned the skills needed as ability to use the equipment to carry out repairs, fixing faults related to no sound distribution, fixing of USB port, fixing faults in woofer among others. Acquisition of these skills on students of technical colleges in Rivers State would create a fecund ground for sustainable job creation.

Job creation is the process of providing new jobs, especially for people who were previously unemployed or inactive. European Found (2023) viewed job creation as a process that involves the creation of new employment opportunities within an economy. It is a key driver of economic growth and development; and it has far-reaching impacts on social, political and economic outcomes. Creating sustainable jobs requires a long-term approach that takes into account the individual's or community's needs and resources. The World Bank (2012) defined jobs as "all activities that generate actual or imputed income, monetary or in kind including salaried activities". Sustainable work means achieving living and working conditions that support people in engaging and remaining in work throughout an extended working life. In this context, sustainable job creation refers to the process of generating jobs that contribute to sustainable development goals. In another words, we conceptualize sustainable job creation as the job creation process that promotes economic growth, social inclusion and environmental protection. Electronic technology skills have been acknowledged world wide as a potent and viable tool for self-empowerment, job and wealth creation. Creative craftsmanship occurs when an individual creates a new venture, a new approach to an old business idea, using resources in a new way under the condition of risk. It is the processes of bringing together creative and innovative ideas and combining them with management and organizational skills in order to combine people, money and resources to meet identified needs and thereby, create wealth in electronic technology. Wealth creation is the ability of people to generate means and avenues through which an individual, a family or society can meet their various needs ranging from the basic needs to the higher order needs. It should be noted that one's ability to create wealth and/or generate income is dependent on a number of variables (Anioke, 2012). Anioke reiterated that such variables include among others the skills, ability, altitudinal and attitudinal traits of the person. One's level of skill counts a lot in the person's creative disposition. Against this background, the study is undertaken to investigate the electronic technology skills capable of creating sustainable jobs for the students of technical colleges in Rivers State.

### **State of the Problem:**

The high rate of insecurity, unemployment and hunger in our country, Nigeria cannot be overestimated. The incidence of kidnapping, banditry and youth unrest is becoming unprecedented and posing an economic challenge. The poor standard of living, unemployment and unproductivity of various sectors of the economy contributes to insecurity and other social vices. Most of these evils are attributed to lack of job creation among the citizenry. On the foregoing, graduates are constantly roaming the streets of Rivers State and Nigeria at large with various degrees of crimes. The war against insecurity and economic instability cannot be won through the barrel of the gun alone; hence, the need for sustainable job creation amongst students of technical colleges via the acquisition of electronic technology skills.

### **Aim and Objectives of the Study:**

The aim of the study was to determine the acquisition of electronic technology skills for sustainable job creation among students of technical colleges in Rivers State. Specifically the study:

1. determined the television receiver skills for sustainable job creation among students of technical colleges in Rivers State.
2. determined the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State.

### **Research Questions:**

The following research questions guided the study:

1. What are the television receiver skills for sustainable job creation among students of technical colleges in Rivers State?
2. What are the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State?

### **Hypotheses:**

The following null hypotheses were tested at .05 level of significance.

Ho<sub>1</sub>: There is no significant difference between the mean responses of electronic technology teachers and technologists on the television receiver skills for sustainable job creation among students of technical colleges in Rivers State.

Ho<sub>2</sub>: There is no significant difference between the mean responses of electronics technology teachers and technologists on the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State.

### **Method**

The study adopted descriptive survey design. The study was carried out in the four technical colleges owned and managed by Rivers State Government. The population of the study was all the Electronic Technology teachers and technologists (comprised 15 Electronics Technology teachers and 10 Electronics Technology technologists). There was no sampling as the population was manageable. The instrument for the study was a structured questionnaire title: "Acquisition of Electronics Technology Skills among Students of Technical Colleges in Rivers State Questionnaire" (AETSSTCRSQ). The instrument used contained a thirty-eight item structured questionnaire developed by the researchers. It consisted two parts- part A and part B. Part A was designed to elicit information on the background of the respondents using such information as the status of the respondents. Part B was made up of two sections: Section 1 and section 2. Section 1 contained 19 items and section 2 contained 19 items. The instrument was face and content validated by three experts. The reliability of the instrument was determined using Cronbach's Alpha method. The coefficient of reliability was computed from result of a pilot study conducted on 10 Electronics Technology teachers and 5 Electronics Technology technologists at government technical college, Bayelsa State and the reliability index of section 1 yielded .88 and that of reliability index of section 2 yielded .89. The reliability index of the two clusters stood at .89. A five- point likert scale of response categories of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with assigned values of 5, 4, 3, 2 and 1 respectively were used. The instrument was administered and collected by the researchers on the spot and a 100% return rate was recorded. Mean rating of 3.0 and above was regarded as Agree while item with a mean rating less than 3.0, Disagree. Mean and standard deviation were used to answer the research questions. The standard deviation was employed to show the nearness or homogeneity in the

respondents’ opinions. The t-test statistics was used to test the null hypothesis at .05 level of significance. The decision on the null hypotheses was accepted when the calculated t- test value is less than the critical t- test value, otherwise the null hypotheses was rejected.

**Results:**

**Research Question 1:** What are the television receiver skills for sustainable job creation among students of technical colleges in Rivers State?

**Table1: Mean Ratings and Standard Deviation Responses of Electronic Technology Teachers and Technologists on the Television Receiver Skills for Sustainable Job Creation among Students of Technical Colleges in Rivers State.**

S/N	Television Receiver Skills	Electronics Technology Teachers. N=15			Electronics Technology Technologists. N=10		
		X	SD	RMK	X	SD	RMK
1	Identification of measuring instruments	4.00	.34	Agree	4.00	.34	Agree
2	Identification of faulty components/stage.	4.00	.45	Agree	3.80	.34	Agree
3	Identification of test points on circuit diagram	3.20	.34	Agree	3.35	.43	Agree
4	Ability to use measuring instruments	3.30	.44	Agree	3.30	.39	Agree
5	Clearing of zero error	3.10	.45	Agree	3.08	.38	Agree
6	Inserting respective test leads into the appropriate jack	3.30	.39	Agree	3.17	.45	Agree
7	Correct connection of multi-meter	3.00	.44	Agree	4.14	.45	Agree
8	Connection of source to be measured to measuring instrument	3.30	.45	Agree	3.42	.34	Agree
9	Handling of components while measuring	3.40	.35	Agree	3.33	.46	Agree
10	Observation of safety rules while measuring	3.50	.40	Agree	3.43	.45	Agree
11	Completion of measuring task within stipulated time	3.10	.46	Agree	3.62	.34	Agree
12	Clearing of faults using electronic instruments	3.00	.37	Agree	3.70	.36	Agree
13	Calibration of dynamic convergence	3.20	.46	Agree	3.50	.54	Agree
14	Calibration of static convergence	3.30	.49	Agree	3.45	.34	Agree
15	Replacement of faulty components without causing damage	3.20	.46	Agree	4.34	.45	Agree
16	Proper application of flux while soldering	4.00	.30	Agree	4.10	.37	Agree
17	Firmness of soldered joint	3.20	.40	Agree	3.34	.44	Agree
18	Observation of safety rules while repairing	3.10	.46	Agree	3.45	.37	Agree
19	Testing for functionality before assembly	3.20	.30	Agree	3.30	.45	Agree

Cluster mean/SD	3.34	.40	Agree	3.41	.40	Agree
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Source: Field survey, 2024. X=Mean, SD=Standard Deviation, RMK=Remarks

Data presented in Table1 shows that the mean responses of both electronics technology teachers and technologists on all the items numbered 1-19 were agreed as television receiver skills with mean scores ranging from 3.00 to 4.34. The Table shows that the identified skills are capable of creating sustainable jobs among students of technical colleges in Rivers State. The grand mean value of 3.38 also attests to that; while the relatively low grand standard deviation of .40 indicates homogeneity of opinions of respondents.

**Research Question 2:** What are the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State?

**Table2: Mean Ratings and Standard Deviation Responses of Electronics Technology Teachers and Technologists on the DVD Home Theatre Skills for Sustainable Job Creation among Students of Technical Colleges in Rivers State.**

S/N	DVD Home Theatre Skills	Electronics Technology Teachers. N=42			Electronics Technology Technologists. N=90		
		X	SD	RMK	X	SD	RMK
1	Identification of equipment	3.45	.34	Agree	4.10	.45	Agree
2	Ability to use the equipment to carry out repairs	4.03	.45	Agree	3.54	.43	Agree
3	Ability to identify the components/parts	3.33	.34	Agree	4.00	.46	Agree
4	Removal and replacement of the main board	4.00	.45	Agree	3.43	.36	Agree
5	Fixing faults related to no sound distribution.	4.34	.54	Agree	3.54	.45	Agree
6	Disassembling of the DVD player	3.23	.56	Agree	3.45	.45	Agree
7	Fixing the DVD lens problem	3.54	.45	Agree	3.45	.36	Agree
8	Removal and installation of cooling fan	3.40	.54	Agree	3.54	.64	Agree
9	Stereo-speaker removal and replacement.	3.50	.45	Agree	4.34	.54	Agree
10	Fixing faults in power board	3.53	.34	Agree	3.65	.34	Agree
11	Removal and replacement of drives	3.60	.34	Agree	3.54	.65	Agree
12	Fixing no sound distribution	3.45	.40	Agree	3.74	.34	Agree
13	Disassembling of the home theatre player	3.52	.46	Agree	3.45	.54	Agree
14	Resolving speaker sound problems	3.50	.34	Agree	3.65	.34	Agree
15	Repair of audio-video receiver	3.20	.45	Agree	3.54	.35	Agree
16	Fixing striking door problems	3.62	.43	Agree	3.50	.35	Agree
17	Fixing USB compartment	4.20	.54	Agree	3.40	.45	Agree
18	Fixing faults in Bluetooth sensitivity	3.40	.53	Agree	3.54	.54	Agree
19	Fixing faults in woofer	3.45	.40	Agree	3.45	.30	Agree
	<b>Cluster mean/SD</b>	<b>3.59</b>	<b>.44</b>	<b>Agree</b>	<b>3.44</b>	<b>.43</b>	<b>Agree</b>

**Source:** Field Survey. **X=Mean; SD=Standard Deviation; RMK=Remarks**

Data presented in Table2 shows that the mean responses of both electronics technology teachers and technologists on all the items numbered 1-19 were agreed as DVD home theatre skills with mean scores ranging from 3.20 to 4.34. The Table shows that the identified skills are capable of creating sustainable jobs among students of technical colleges in Rivers State. The grand mean value of 3.52 also attests to that; while the relatively low grand standard deviation of .44 indicates homogeneity of opinions of respondents.

**H<sub>01</sub>:** There is no significant difference between the mean responses of electronics technology teachers and technologists on the television receiver skills for sustainable job creation among students of technical colleges in Rivers State.

**Table 3: t-test Analysis on the Television Receiver Skills for Sustainable Job Creation among Students of Technical Colleges in Rivers State.**

RESPONDENTS	N	X	SD	Df	p	t-cal	t-crit	Decision
Electronics Technology Teachers	15	3.34	.40	23	.05	.94	1.96	Accepted
Electronics Technology Technologists	10	3.41	.40					

**DF=Degree of freedom.**

The t-test result in Table 3 above shows that t-calculated value of .94 is less than t-table value of 1.96 at 23 degree of freedom and .05 level of significance. Hence, the null hypothesis is not rejected. This therefore implies that a significant difference does not exist in the mean responses of Electronics Technology Teachers and Electronics Technology Technologists on the television receiver skills for sustainable job creation among students of technical education in Rivers State.

**H<sub>02</sub>:** There is no significant difference between the mean responses of electronics technology teachers and technologists on the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State.

**Table 4: t-test Analysis on the DVD Home Theatre Skills for Sustainable Job Creation among Students of Technical Colleges in Rivers State.**

RESPONDENTS	N	X	SD	Df	p	t-cal	t-crit	Decision
Electronics Technology Teachers	15	3.59	.44	23	.05	1.84	1.96	Accepted
Electronics Technology Technologists	10	3.44	.43					

**DF= Degree of freedom**

The t-test result in Table 4 above shows that t-calculated value of .184 is less than t-table value of 1.96 at 130 degree of freedom and .05 level of significance. Hence, the null hypothesis is not rejected. This therefore implies that a significant difference does not exist in the mean responses of Electronics Technology Teachers and Electronics Technology Technologists on the DVD Home Theatre skills for sustainable job creation among students of technical colleges in Rivers State.

### **Discussion of Findings:**

The study in research question 1 revealed that television receiver skills acquisition is one of the skill areas capable of creating sustainable job among students of technical colleges in Rivers State. This is evident as identification of test points on circuit diagram, calibration of dynamic convergence, testing for functionality before assembly among other skills are capable of creating sustainable jobs among students of technical colleges . This tallied with the findings of Njoku and Ewe (2022) who noted that students can be productive in Nigeria if they acquire some practical skills in Electronics and other related areas in technology. Similarly, the t-test result showed that the t-calculated value is less than the t-critical value at appropriate degree of freedom and significance level. Hence, the null hypothesis was not rejected. This therefore implies that a significant difference does not exist in the mean responses between Electronics Technology Teachers and Technologists on the television receiver skills for sustainable job creation among students of technical colleges in Rivers State.

Also, the study revealed in research question 2 that DVD home theatre skills acquisition is another cardinal skill capable of creating sustainable job among students of technical colleges in Rivers State. This is noticed as fixing of USB port, fixing faults in woofer, fixing faults in Bluetooth among other skills are capable of creating sustainable job among students of technical colleges. This is consistent with the findings of Okwelle and Assor (2022) who averred that students' effectiveness in technical colleges is tied to their ability to acquire some practical and saleable skills in Electronics technology. Similarly, the t-test result showed that the t-calculated value is less than the t-critical value at appropriate degree of freedom and significance level. Hence, the null hypothesis was not rejected. This therefore implies that a significant difference does not exist in the mean responses between Electronics Technology Teachers and Technologists on the DVD home theatre skills for sustainable job creation among students of technical colleges in Rivers State.

### **Conclusion**

Based on the findings of this study, it was concluded that the acquisition of electronics technology skills such as television receiver skills and DVD home theatre skills are capable of creating sustainable jobs among students of technical colleges in Rivers State.

### **Recommendations**

Following the results of the study, the researchers made the following recommendations:

1. Students should acquire emerging electronic technology skills to enable them be self-reliant and job creators
2. Vocational centres should be established in all the local government areas in Rivers State in order to train and re-train the students on various electronics technology skills so as to make them productive citizens of the country.

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