



## The Electrical Installation and Maintenance Skills Required for Self-Reliance among Students of Electrical Technology in Colleges of Education

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### ABSTRACT

When one possesses adequate skills in carrying out a task, he/she does the work accurately within the minimum possible time and the work done will always attract the attention of people. This research was set to investigate the electrical installation and maintenance skills required for self-reliance among electrical technology students of Colleges of Education. Majority of electrical technology students are completing the programme with very poor skills performance in electrical installation and maintenance which is capable of not earning them a living. Three specific objectives guided the research. The research adopted a survey research design and the research was carried out in Colleges of Education in Cross River and Akwa Ibom States. The targeted population of the study as respondents comprised of electrical technology lecturers and students. Purposive sampling technique was used to select only electrical technology lecturers and students. A well-structured questionnaire was used to collect data for this research titled 'Electrical Installation and Maintenance Skills Questionnaire (EIMSQ)'. Cronbach Alpha reliability coefficient formula was used to determine the reliability of the instruments which yielded a reliability coefficient of 0.76. Data collected from the respondents was analyzed on four-point scale using mean and standard deviation to answer the three research questions, t-test statistics was used to test the null hypotheses at 0.05 probability level of significance. Decision was taken as follows: if the calculated value is greater or equal to the table value, the null hypothesis will be rejected. On the other hand, if the calculated value is less than the table value, the null hypothesis will not be rejected. The findings of the research revealed amongst others that Industrial Installation and Electric Motor skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States, Nigeria. It was recommended that practical skills in Industrial Installation and Electrical Motors should be carried out consistently as it is required for self-reliance among electrical technology students of colleges of education. Practical skills in Winding of Electrical Machines should be taught in an equipped workshop.

**Keywords:** Electrical Installation and Maintenance, Skills, Self-Reliance, Electrical Technology

### Introduction

Technical and vocational education is the bedrock of nation's wealth and development. It is a type of education that is aimed to produce skilled and technical manpower necessary to restore, revitalize, energize, operate and sustain the national economy and substantially reduce unemployment. According to FGN (2013), technical and vocational education is a form of education involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. This specialized education offered in technical institutions is saddled with training of middle level manpower, including Colleges of Education.

Electrical technology is one of the courses offered in the Department of Technical Education in Colleges of Education and other tertiary technical institutions. It equips individuals with knowledge and skills required for self-reliance and technological advancement. It widens the intellectual horizon of the individual in the field of electricity as well as equips them with innovative spirit and skills, which are necessary for knowledge transfer and self-reliance. Electrical technology consists of the following trade areas: Domestic and Industrial Installation; Cable Joining, Battery Charging and Repairs; and Winding of Electrical Machines. Skill can be defined as ability in carrying out task (Ogbuanya & Ohanu, 2010). It is also called dexterity in doing work.

Electrical installation and maintenance work are one of the units that constitute the field of technical education. Electrical Installation and Maintenance Work comprises a blend of both theory and practical that leads to the production of goods and services by the use of tools, equipment and materials. Electrical Installation and Maintenance Works as a discipline which aimed at training students on the general properties and use of tools in order to help them in materials selection for particular job, train them on how to differentiate the technique and approaches for a specific work and teach them how to



utilize the safety rules and regulations in the workshops. In colleges of education, based on the objectives of technical education, the Nigerian Certificate in Education (NCE) Technical programme was designed to include a multi-dimensional and multi-disciplinary curriculum, which contains various programmes in which learners acquire various technical skills. One of the programmes is electrical installation and maintenance work. As stipulated in the National Commission for Colleges of Education (NCCE, 2012) minimum standards, the NCE(T) curriculum in electrical installation and maintenance work is designed in modules which include Domestic Installation, Cable Jointing, Battery Charging and Repairs, Electrical Drawing, Industrial Installation and Electric Motors, Winding of Electrical Machines, Solid State Devices and Circuits.

Electrical Installation and Maintenance is aimed at providing to the trainees with the knowledge and skills to enable them carry out all types of industrial/factory electrical installations and maintenance. Furthermore, the general objectives to train graduates include to:

1. Know different types of industrial installations.
2. Understand the installation of different types of ducts and trunking applying all relevant regulations and safety precautions.
3. Understand the principles of operation of AC and DC machines and their applications.
4. Understand various methods of controlling electrical machines.
5. Know methods of maintaining electrical machines and equipment.
6. Know the installation of all types of electrical machines.
7. Diagnose faults in machines, equipment and installations.
8. Know the installation of MICC cables.

**Winding of Electrical Machines Skills:** The modules are aimed at providing the trainees with the knowledge and skills to enable them wind or rewind AC and DC rotating/static machines up to 10KVA. Furthermore, the general objectives to produce trainees who should be able to:

1. Understand and apply all statutory regulations during electrical winding work.
2. Identify and select appropriate tools and equipment used for winding jobs.
3. Acquire skills for dismantling machine for rewinding them.
4. Acquire skills for preparation and interpretation of winding drawings.
5. Understand the rewinding of burnt static/rotating machines.
6. Know the skimming/undercutting of armature, commutators and slip rings.
7. Inspect rewound electrical machines and equipment and test for continuity, insulation, correct rotating voltage.

**Solid-State Devices and Circuits Skills:** The module is aimed at making the trainees to understand the basic electronics concepts and apply this information to simple circuit. More so, its general objectives are to produce graduates who shall be able to:

1. Understand the basic principle, characteristics and application of common electronic devices.
2. Understand the principles of construction and operation of power supply and be able to construct simple power supply unit.
3. Know the basic principles of design of electronic circuits.

However, the above skills would lead to self-reliance if it is been possessed by electrical technology graduates. Skills is the proficiency displayed by someone in the performance of a given task efficiently such as using electrical hand tools. Electrical skills are often associated with the use of tools, equipment related to work as well as all technical matters for self-reliance.

Self-reliance in this research is viewed as Oborah (2006) outlined the objectives of entrepreneurship development to include the following:

1. To provide meaningful education for the youths, which could make them self-reliant and subsequently encourage them to derive profit and be self-dependent.
2. To provide small and medium sized companies with the opportunities to receive qualified graduates who will receive training and tutoring in the skills relevant to the management of the small business centers.
3. To provide graduates with the training and support necessary to help them establish a career in small and medium sized business.
4. To provide graduates with training in skills that will make them meet the manpower needs of the society.
5. To provide graduates with enough training that will make them creative and innovative in identifying new business opportunities.
6. To provide graduates with enough training in risk management to make uncertainty almost possible and easy.
7. To stimulate industrial and economic growth of rural and less developed areas.

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## Statement of the Problem

Electrical Installation and Maintenance is a vocational education programme that requires the training of students in Technical Colleges, Colleges of Education and Universities. The basic aim of electrical installation and maintenance in colleges of education is to give training and impart the necessary skills leading to the production of craftsmen, technicians, technologists and other skilled personnel who will be enterprising and self-reliant (Obed and Amadi, 2016). Furthermore, NBTE (2011) explained that the module is aimed at providing to the graduates with the knowledge and skill to enable them carryout all types of industrial/factory electrical installations and maintenance.

Contrary to achieving the above goal, majority of electrical technology students have been completing the programme with very poor skills performance in electrical installation and maintenance and inadequate skills which is incapable of earning them a living. In this regard, the employers of labour responded by non-demand of the graduates of colleges of education. Employers prefer to develop their own in-house craftsmen instead of employing colleges of education graduates (whom the term half-baked graduates). The above underscores the justification to assess Electrical Installation and Maintenance Skills required for Self-Reliance among Graduates of Electrical Technology in Colleges of Education.

### *Purpose of the Study*

The general objective of the research is to assess the electrical installation and maintenance skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States. Specifically, the research seeks to investigate the following:

1. Industrial installation and electric motor skills required for self-reliance among electrical technology students of colleges of education.
2. Winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education.
3. Solid State Devices and Circuits skills required for self-reliance among electrical technology students of colleges of education.

### *Research Questions*

Three research questions were formulated to guide the study

1. What are the industrial installation and electric motor skills required for self-reliance among electrical technology students of colleges of education?
2. What is the winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education?
3. What are the solid-state devices and circuits skills required for self-reliance among electrical technology students of colleges of education?

### *Hypotheses*

Three hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

**H<sub>01</sub>** There is no significant difference in the mean ratings of lecturers and students on industrial installation and electric motor skills required for self-reliance among electrical technology students of colleges of education.

**H<sub>02</sub>** There is no significant difference in the mean ratings of lecturers and students on winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education.

**H<sub>03</sub>** There is no significant difference in the mean ratings of lecturers and students on solid-state devices and circuits skills required for self-reliance among electrical technology students of colleges of education.

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## Methodology

### *Design of the Study*

This research adopted a survey research design. According to Gall, Gall and Borg (2007), a survey research is a method of data collection in which questionnaires or interview is utilized in collecting data from a sample that has been selected to represent a population to which the findings of the data analysis can be generalized. The survey research design was considered suitable because the study elicits data/information on Electrical Installation and Maintenance skills required for self-reliance among electrical technology students of colleges of education.

### *Area of the Study*

The study was carried out in Cross River and Akwa Ibom States. Cross River and Akwa Ibom States has companies that needs the graduates of electrical technology. More so, the area has technical institutions that offer electrical installation and maintenance works.

### *Population of the Study*

The targeted population of the study was 225 respondents, comprising 58 lecturers/instructors and 167 students of electrical technology in colleges of education.

### *Sample and Sampling Techniques*

Purposive sampling technique was used to select only electrical technology lecturers/instructors and students. This gave a total sample size of 225 respondents.

### *Instrument for Data Collection*

A structured questionnaire instrument with title 'Electrical Installation and Maintenance Skills Questionnaire (EIMSQ)' was used to collect data. The instrument was developed after the review of relevant literature on industrial installation and maintenance skills, winding of electrical machines and solid-state devices and circuits skills. The instrument contains four sections A-D. Section A elicited information on personal data of the respondents. Section B elicited data on industrial installation and electric motors skills required for self-reliance. Section C elicited data on winding of electrical machines skills required for self-reliance. Section D elicited data on solid state devices and circuits skills required for self-reliance.

### *Validation of the Instrument*

The instrument was face validated by three experts, one from department of Vocational Education, University of Uyo, Uyo and the other two from the Department of Technology Education, University of Calabar, Calabar. The experts were requested to read through the questionnaire items in terms of clarity and appropriateness based on the research questions under investigation. The expert's comments and suggestions shall be utilized to structure the final questionnaire instrument to be use in the research.

### *Reliability of the Instrument*

To establish the reliability of the instrument, 30 copies of the questionnaires was trial-tested among colleges of education in Benue State, hence they do not form part of the main population of the project. On the return of the instruments the Cronbach Alpha reliability coefficient formula was used to determine the reliability of the instrument which yielded a reliability coefficient of 0.76. This indicated that the instrument was reliable. The Cronbach Alpha reliability coefficient method was used because it gives a generalize formula which deals with multiple scores items.

### *Method of Data Collection*

The researchers administered the questionnaire personally together with the help of eight research assistants. The researchers informed the research assistants on the procedures required in administering the questionnaire instruments. The completed copies of the questionnaires were also retrieved by the researchers and the eight assistant researchers within a week, to help maximize the return rate of the questionnaires for data analysis.

### *Method of Data Analysis*

The data that was collected from the respondents was analyzed on four-point scale using mean and standard deviation to answer the three research questions. As well as to use t-test statistics to test the null hypotheses at 0.05 probability level of significance. Decision was taken as follows: If the calculated value is greater or equal to the table value, the null hypothesis will be rejected. On the other hand, if the calculated value is less than the table value, the null hypothesis will not be rejected.

## **Presentation of Results**

### **Research Question 1**

What are the industrial installation and electric motor skills required for self-reliance among electrical technology students of colleges of education?

**Table 1:** Mean ratings and Standard Deviation of lecturers/instructors and students on Industrial Installation and Electric Motors skills required for self-reliance among electrical technology students of colleges of education

S/N	ITEMS	Lecturers/Instructors			Students		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
	Ability to:						
1.	Interpret electrical working drawings of a factory	3.17	0.93	A	3.00	0.82	A
2.	Carry out simple surface wiring for industrial installation	3.89	0.65	SA	3.10	1.08	A
3.	Carry out conduit wiring for industrial installation	3.07	1.09	A	3.44	0.65	A

4.	Show how to install MICC cable	3.42	1.11	A	3.88	0.94	SA
5.	Apply the safety measures as provided by statutory regulations	2.99	1.19	A	3.05	1.11	A
6.	Identify, select and maintain tools and equipment used for ducts and trunking system	3.53	1.11	SA	2.61	1.40	A
7.	Identify types of bus-bar trunking and recognize the necessity for accurate marking out.	3.23	0.86	A	3.23	1.19	A
8.	Explain how to bend, set, shape, file and fabricate accessories using appropriate tools.	3.50	0.67	SA	3.90	1.16	SA
9.	Explain how to join lengths of ducts and trunkings using rivets, screw or adhesives	3.79	1.10	SA	3.00	0.85	A
10.	Apply the necessary safety measures as provided for by statutory regulations.	3.59	0.85	SA	3.33	0.93	A
11.	Differentiate between DC and AC motors	2.88	1.35	A	3.03	0.97	A
12.	Differentiate between DC and AC generators	3.64	0.60	SA	3.22	1.08	A
13.	Test for correct rotation, short circuit and earth fault.	3.49	0.86	A	2.90	1.48	A
<b>Ground Mean</b>		<b>3.12</b>	<b>0.38</b>	<b>SA</b>	<b>3.20</b>	<b>1.02</b>	<b>SA</b>

Data in table 1 revealed that the respondents had a ground mean of 3.12, 3.20 and standard deviation of 0.38, 1.02. Furthermore, the items mean ranges between 2.99-3.89 and 2.61-3.90 with standard deviation of 0.60-1.39 and 0.65-1.48. The homogeneity of the standard deviation showed that the respondents were not too far in their ratings. Therefore, the respondents agreed that Industrial Installation and Electric Motors skills are required for self-reliance among electrical technology students of colleges of education.

### Research Question 2

What is the Winding of Electrical Machines skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States?

**Table 2:** Mean ratings and Standard Deviation of lecturers/instructors and students on Winding of Electrical Machines skills required for self-reliance among electrical technology students of colleges of education.

S/N	ITEMS	Lecturers/Instructors			Students		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
Ability to:							
1.	Apply the prevailing statutory regulation as it concerns the use of conductors, soldering	3.42	1.53	A	3.58	1.05	SA
2.	Apply the statutory regulation as it concerns setting of winding machines	3.15	1.22	A	3.74	1.13	SA
3.	Identify and use the following tools: Hammer, Screwdrivers, Spanner, winding machine.	3.70	0.98	SA	3.37	1.29	A
4.	Prepare and interpret wave winding drawing	3.86	1.04	SA	3.71	1.48	SA
5.	Prepare and interpret lap winding drawings	3.66	1.09	SA	3.37	1.49	A
6.	Determine Coil span per pitch, per phase, pole.	3.15	1.34	A	3.02	0.90	A
7.	Draw the position of coil ends on commutator/slip rings for fixed brush in a developed winding diagram.	3.46	1.40	A	3.28	0.87	A
8.	Winding/connections: Gauge of winding conductor, pole pitch, number of slots	3.00	1.22	A	3.43	0.93	A
9.	Describe winding insulation materials, explain classes of insulation materials	3.64	1.11	SA	3.66	0.60	SA
10.	Connect the winding using the prepared data, test for continuity and earthing and apply varnish and dry in oven	3.04	0.89	A	3.68	1.05	SA
<b>Ground Mean</b>		<b>3.39</b>	<b>1.19</b>	<b>A</b>	<b>3.14</b>	<b>1.07</b>	<b>SA</b>

Data in table 2 revealed that the respondents had a ground mean of 3.39, 3.14 and standard deviation of 1.19, 1.07. Furthermore, the items mean ranges between 3.15 – 3.86, and 3.02-3.74 with standard deviation of 0.89-1.53 and 0.60-1.49. The homogeneity of the standard deviation showed that the respondents were not too far in their ratings. Therefore, the respondents agreed that winding of electrical machines skill are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

### Research Question 3

What are the solid-state devices and circuit skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States?

**Table 3:** Mean ratings and standard deviation of lecturers/instructors and students on solid-state devices and circuit skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

S/N	ITEMS	Lecturers/Instructors			Students		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
	Ability to:						
1.	Explain intrinsic materials, extrinsic semi-conductors	3.22	0.87	A	3.15	0.97	A
2.	Explain the suitable concept of semi-conductor diode	3.37	1.34	A	3.33	0.61	A
3.	Determine gain power from load line and identify transistor parameters	3.58	0.81	SA	3.82	0.53	SA
4.	Select transistor equivalent replacement by using transistor manuals	3.07	1.71	A	3.33	1.04	A
5.	Investigate the principles of operation of photo-electric devices, photo resistors, photo transistors	3.09	0.65	A	3.05	1.08	A
6.	Describe the construction and operation of devices	3.43	0.78	A	3.20	1.20	A
7.	Explain the integrated circuit (IC) as a means of packaging electronic circuit.	3.91	0.98	SA	3.36	1.13	A
8.	Test various types of semiconductors devices and describe the functional parts of oscilloscope.	3.40	0.96	A	3.73	0.96	SA
9.	Construct a stabilized low-voltage DC power supply unit	2.87	1.44	A	2.93	1.19	A
10.	Explain the difference between regulators and stabilizers	3.98	0.68	SA	3.33	1.17	A
	<b>Ground Mean</b>	<b>3.39</b>	<b>1.02</b>	<b>A</b>	<b>3.32</b>	<b>0.98</b>	<b>SA</b>

Data in table 3 revealed that the respondents had a ground mean of 3.39, 3.32 and standard deviation of 1.02, 0.98. Furthermore, the items mean ranges between 2.87-3.98 and 2.93-3.82 with standard deviation of 0.65-1.71 and 0.53-1.20. The homogeneity of the standard deviation showed that the respondents were no too far in their ratings. Therefore, the respondents agreed that solid state devices and circuits skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

### Hypotheses

**H0<sub>1</sub>** There is no significant difference in the mean ratings of lecturers and students on industrial installation and electric motor skills required for self-reliance among electrical technology students of colleges of education.

**Table 4:** The t-test analysis of difference in the mean ratings of lecturers/instructors and students on industrial installation and electric motors skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

Respondents	N	$\bar{X}$	SD	P-Value	Df	t-cal	t-crit	RMK
Lecturers/Instructors	58	3.84	0.35	0.05	101	-1.83	1.96	No Sig.
Students	167	3.93	0.56					

Result in table 4 revealed that the t-cal (-1.83) is less than t-crit (1.96) which indicates that the hypothesis stated is accepted. Therefore, there is no significant difference in the mean ratings of lecturers/instructors and students of colleges of education on industrial installation and electric motors skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

**H0<sub>2</sub>** There is no significant difference in the mean ratings of lecturers and students on winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education.

**Table 5:** The t-test analysis of difference in the mean ratings of lecturers/instructors and students on winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

Respondents	N	$\bar{X}$	SD	P-Value	Df	t-cal	t-crit	RMK
Lecturers/Instructors	58	3.89	0.52	0.05	101	-1.85	1.96	No Sig.
Students	167	3.66	0.44					

Result in table 5 revealed that t-cal (-1.85) is less than t-crit (1.96) which indicates that the hypothesis stated is accepted. Therefore, there is no significant difference in the mean ratings of lecturers/instructors and students on winding of electrical machines skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

**H0s** There is no significant difference in the mean ratings of lecturers and students on solid-state devices and circuits skills required for self-reliance among electrical technology students of colleges of education.

**Table 6:** The t-test analysis of difference in the mean ratings of lecturers/instructors and students on Solid-State Devices and Circuits skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

Respondents	N	$\bar{X}$	SD	P-Value	Df	t-cal	t-crit	RMK
Lecturers/Instructors	58	3.87	0.49	0.05	101	-1.44	1.96	No Sig.
Students	167	3.63	0.62					

Result in table 6 revealed that t-cal (-1.44) is less than t-crit (1.96) which indicates that the hypothesis stated is accepted. Therefore, there is no significant difference in the mean ratings of lecturers/instructors and students on Solid-State Devices and Circuit skills required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.

### Findings of the Study

1. The findings of the study revealed that Industrial Installation and Electric Motors skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.
2. The findings also revealed that Winding of Electrical Machines skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States.
3. Finally, the study showed that Solid-State Devices and Circuits skills are required for self-reliance among electrical technology student of colleges of education in Cross River and Akwa Ibom States.

### Discussion of Findings

The findings of the research revealed that Industrial Installation and Electric Motors skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States. The finding is in line with Chiorlu, Ogundu and Obed (2016) who explained that competencies of students' optimum performance in industrial installation and electric motor skills in colleges of education are designed to lead the beneficiaries to self-employment, economic self-sufficiency and employment generation through short or long-term training and the venue for acquiring practical skills by colleges of education electrical technology students is the workshop.

The findings also revealed that Winding of Electrical Machines skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States. The findings are in line with Ede and Ariyo (2014) who posited that considering the various importance of skills in everyday life and also the overall objective of technical and vocational education (in which winding of electrical machines is one) which offers training in skill for self-reliance, self-sufficiency and employment into the world of work, winding of electrical machines skills becomes an important subject to be taught to students.

Finally, the research showed that Solid-State Devices and Circuits skills are required for self-reliance among electrical technology students of colleges of education in Cross River and Akwa Ibom States. The findings are inline with Olaitan and Hassan (2010) who found out that Solid-State Devices and Circuit skills are required by students in carrying out electrical workshop practices. This is also in line with Sowande (2002) that technological skill competencies are required by electrical technology students in the use of machine tools for self-reliance.

### Recommendation

1. Practical skills in Industrial Installation and Electric Motors should be carried out consistently as it required for self-reliance among electrical technology students of colleges education in Cross River and Akwa Ibom States. Practical skills in winding of electrical machines should be taught in an equipped workshop. Also, solid-state devices and circuits skills should be taught with appropriate tools and equipment in the colleges of education in Cross River and Akwa Ibom States.
2. Government should provide adequate infrastructural facilities like goods and power. Electricity supply should be given priority to solve the problems of epileptic power supply in Cross River and Akwa Ibom States.
3. Engineering/Technology Education and teachers/lecturers/instructors in secondary and tertiary institutions must be given due attention by the government. Practical aspects of practical oriented courses/subjects should be taught with relevant tools and equipment in a well-equipped workshop.
4. Government should encourage local entrepreneur to establish manufacturing industries to produce local materials for cars, computers, electronics, equipment, television to reduce importation of manufactured goods in the country.

5. Government should set-up entrepreneurial technical and vocational training centre to produce the required skilled personnel to cater for the local demands of skilled personnel in Cross River and Akwa Ibom States. Entrepreneurial centres in our institutions in Nigeria must be equipped and utilized to assist the colleges of education and other institutions to bridge gap created by the theoretical nature of our entrepreneurial technical and vocational education and training programme in our institutions.
6. Government should set-up a joint curriculum of entrepreneurial, technical and vocational education to x-ray the possibilities of mismatching skills knowledge and initiatives or the acquisition of skills for self-reliant and job creation.

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