Assessment of Possessed Generic Green Skills for Green Jobs of Electrical Installation and Maintenance Work Graduates of Technical Colleges in Nigeria

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Abstract: The purpose of this study is to uncover employers' assessment of possessed generic green skills for green jobs of electrical installation and maintenance work graduates of technical college in Nigeria. The study used 120 out of 140 employers of technical College Graduates in Adamawa State. The instrument used for the data collection was a questionnaire. Mean and standard deviation were used to analyze research data. The hypothesis was tested at 0.05 level of significance. The findings reveal that, in the rewinding of electrical machines modules of electrical installation and maintenance work, technical college graduates have adequate skills to work in the industry except in few areas like: conduct of preventive maintenance and testing faults in electrical filing machines' winding, the ability to locate faults in electrical filing machines' winding, carrying out insulation resistance test, interpreting drawings of electrical equipment where they showed averagely adequate and slightly adequate skills. Similarly, from the data obtained and analyzed, the result indicates that the graduates have adequate skills in industrial installation except in few areas like: Ability to handle power transmission equipment and components, maintain simple power tools, to test simple power tools, to interpret drawings of electrical equipment, to read symbols. Therefore, the researchers concluded that technical college graduates have adequate technical skills for green jobs and to work in the industries.

Key Words: Assessment, Possessed Skills, Generic Green Skills, Rewinding of Machines, Technical College Graduates, Industrial Installation

I. INTRODUCTION

Our civilization has become extremely complex through a process of gradual evolution. Our present requirements are characterized by high technology on the one hand, and basic human survival on the other, depending on where we live. Accordingly, the needs for skills and knowledge as well as the modality of education and training are very important.

The society is moving in a direction that demands high levels of knowledge and skill in electrical/electronics, green skills, entrepreneurship, information and communication

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technology, biotechnology, global business and commercial practices, transport and conveyance, maintenance of law and order and various other aspects of day-to-day living for economic, social and environmental sustainability. In line with this statement (Vaesen & Houkes, 2017) opined that, another point of modern philosophy is the fast development and circulation of technologies, various categories of which—medical robots, fighter planes, the newest versions of our operating system, transportation, agriculture, education, learning systems etc—need extremely specific skills and knowledge for production, maintenance and operation, and partake additional parts as many as possible. (Fägerlind & Saha, 2016; Olaseni & Olawale, 2017) pointed out that vocational and technical education aims at helping the society maintain its material civilization by enabling the individual to maintain steps because of the speedy development both industrially and technologically. Our degrading environment, dwindling energy reserves, shortage of clean water and basic health needs are some of the other problems with tremendous implications on skills development (Belden et al., 2019).

Additionally, speedy growth of the populaces globally has improved consequently is not simply the claim for properties but has triggered many other difficulties that are directly upsetting the standard of living that may including getting hygienic drinking water and sustenance, enough source of energy and power, wears and housing. According to (Akpan & Harry) Vocational education must be seen as an instrument for transforming Nigeria's resources into finished goods and services that will promote higher standard of living, protect the ecosystem, sustain the social and economic value of the society through generic green skills.

Therefore, the main objective of this research is to find out the readiness of the electrical installation and maintenance graduates of technical colleges in Nigeria of their possessed generic green skills for green jobs, but the assessment is best obtained from the employers of graduates of technical colleges and graduates of technical colleges in electrical installation and maintenance work trade, and that forms the bases of the aim of this study.

A. The Concept of Skills Acquisition

Skill acquisition can be described as the form of training given to an individual in order to make him/her perform expertly on the job by using his/her knowledge effectively (Ogundele, Feyisetan, & Shaaba, 2014).

Furthermore (Idris, 2019) observed skill acquisition as the bedrock of modern educational practices needed to fit individuals into the world of work, education for living (life skills) and self-reliance. This implies that acquired skills enable individuals to develop their intellectual, physical, social, emotional and economic capacities. Skill acquisition is best defined from the point of view of the learner as the process of obtaining knowledge of technical and practical nature from an individual, group or institution that can impart such knowledge. Supporting the same view, Skills according to (Bolt-Lee & Foster, 2003) are the art of possessing the ability to power, authority, or competency etc. to execute the job a person is supposed to do successfully, there will important subjects to be used at the time a skill is to be learned. According to (Okoro & Ursula, 2012) the first is the conditions which promote acquisition and the second is the change that will occur when the skill is acquired, similarly skill as a basic ability is the means by which man adjust to life. To this end (NWOKIKE, 2014) categorized skill into three, and one of them is:

Technical skills: - The specialized tasks that enable workers to use their knowledge of the equipment, methods, and processes that are specific to their particular field. These skills are usually trainable and can be taught to others.

B. Green Skills/Green Jobs

Generally, there is almost no single agreed definition of 'green jobs'. Although this phenomenon "green job" has great interest almost in every government, in the academia and the private organizations, many studies defined the term 'green job' differently.

The generally wide recognized definitions come from the International Labour Organization (ILO) and UNEP. The ILO defined green jobs as "the revolution of economies, innovativeness, workforces and labour force into a supportable, low-carbon economy affording environmentally sustainable jobs (Organisation, 2012). l'environnement (2011) defines green jobs as "work in agriculture, industry, services and administration that contributes to preserving or restoring the quality of the environment". UNEP and IOE (2008) further elaborates on its definition by qualifying green jobs as 'good' jobs that meet longstanding demands and goals of the labour movement such as adequate earnings, proper operational settings and employee privileges, such as the permission to establish labour unions.

Today, generic green skills (GGS) are arguably one of the most important dependent variables of interest to educators, businesses, the government, and society as far as green jobs are concerned. Researchers and organizations are now reaching consensus on common definitions and conceptualizations of (GGS). According to Adzmi, Hamid, Awang, Kamin, and Atan (2018), the transition towards green economy, GGS are becoming increasingly essential due to labour demand and skills supply, Various definitions of generic green skills have been provided such as by CEDEFOP, Pavlova, Swinburne University of Technology, Mohd Zolkifli et al., UNIDO and OECD, it is defined as skills for sustainability that cover knowledge, values and attitudes that can support the green growth.

Similarly, Pavlova (2012) pointed out that "several generic green skills are presented below as candidates for the generic green skills list, however, research is required to shape the list more accurately (adjusted from Pavlova, 2011). These skills are; Environmental awareness and attitudes and willingness to learn about sustainable development, issues and challenges of SD; Coordination and management skills for holistic and interdisciplinary approaches towards design solutions to meet economic, social and ecological objectives; Entrepreneurial skills to seize the opportunities of low-carbon technologies; Innovation skills to identify opportunities and create new strategies to respond to green challenges; STEM skills: general understanding of the role of the science, technology, engineering and mathematics' contribution to the process of greening economies and societies; Analytical thinking skills: As professions and manufacturing grows in the direction of a openly supportable model, it will be very essential to recognize the thoughtfulness behind a closed-loop economy and how this is unique from the old-style linear design of economic growth. Same on the definition of the term green skills, Green skills Agreement, Agreement (2009) defines it as; skills for sustainability "Skills for sustainability, also known as green skills, are the technical skills, knowledge, values and attitudes an employee need to have in the workplace to grow as well as supporting sustainably, socially, economically and environmentally in business, industries and the society at large." Agreement (2009). Therefore, in the context of this study the research is based on the technical skills aspects. The technical skills to be considered in this study are: Rewinding of Machines and Industrial Installation skills

C. Statement of the Problem

Electrical Installation and Maintenance Work (E. I. M. W) is a practically oriented trade that requires its graduates to be skillful in conducting installation and maintenance activities, both industrial and domestic (practical). The expectation of the society and the graduates is that of gaining employment in industries, establishing a repair/maintenance shop or going for further studies.

Therefore, in realization of the pivoted role which skilled personnel play in green growth and development of industries and the community, it is necessary that graduates of technical colleges, as sources of skilled technicians in Nigeria or needs of industries, be adequately trained in the appropriate skills and competencies required of them to perform as technical personnel in industries and public places.

In any case, where the products of technical colleges do not possess the skills needed for employment in a given industry or organization, such industries or organizations may decide not to offer them employment. Though technical colleges have been graduating technicians in Electrical Installation and Maintenance Work Trade; little or no effort has been made to assess the level of green skills possessed by these graduates. It has therefore, become imperative to assess the level of generic green skills possessed by the graduates employed in

Adamawa State for green jobs in the industries in order to identify their specific areas of strength and weaknesses for employment in industries and towards making necessary improvement for future training of technicians in technical colleges.

D. Purpose of the study

The main purpose of this study was to determine employers' and graduates of technical colleges' rating of green skills possessed by graduates of electrical installation and maintenance work in Adamawa State. Specifically, the study determined employers' and graduates of technical colleges' assessment of the level of technical skills in Rewinding of machines and industrial installation skills possessed by graduates of technical college in Adamawa state.

E. Research Questions

This study was guided by the research question below:
1. What is the level of generic green skills on Rewinding of machines possessed by graduates of technical colleges in Nigeria?
2. What is the level of generic green skills in Industrial installation possessed by graduates of technical college in Nigeria?

F. Hypotheses

The hypotheses were tested at 0.05 level of significance:

Ho_1. There is no significant difference between the mean ratings of employers of technical college graduates and graduates of technical colleges on the level of skills possessed by electrical installation and maintenance work graduates of technical colleges on Rewinding of machines.

Ho_2. There is no significant difference between the mean ratings of employers and graduates on the level of skills possessed by electrical installation and maintenance graduates of technical colleges in industrial installation.

II. METHODOLOGY

This section deals with the method and procedures that was used in the study. It includes research design, area of the study, population of the study, sample and sampling techniques, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

A. Design of the Study

The design of the study is a descriptive survey. The use of this design is necessary because the study involves gathering of opinions and information from employers of labour on their rating of the effectiveness of electrical installation and maintenance work graduates of technical college in Adamawa state. According to (Omair, 2015), a survey design is preferable when developing information on opinions, attitudes and perception of individuals in a population.

B. Population of the Study

The population for the study was a total of 226. Which constituted 140 Directors/Manager of Works Departments and Supervisors/Technical Officers of Engineering/Technical and 86 graduates in establishments of

Adamawa Sate.

C. Area of Study

The study was carried out in Adamawa State of Nigeria. According to National Geospatial Intelligence Agency (2006), Adamawa state is bordered by the states of Borno to the northwest, Gombe to the west and Taraba to the southwest. It also shares international border with Cameroon at the east. Adamawa state lies between latitude 9°20′N and longitude 12°30′E. It will specifically cover the five educational zones (Michika, Mubi, Gombi, Yola, and Ganye zones) of Adamawa states.

D. Sample and Sampling Techniques

The whole of the 140 of the Directors/Manager of Works Departments and Supervisors/Technical Officers of Engineering/Technical were used as respondents (employers) and also the whole 86 graduates from various establishments were used as respondents (graduates).

E. Instrument for Data Collection

A questionnaire referred to as Assessment of green in Electrical Installation and Maintenance Possessed by Technical College Graduate, Adamawa State (ASGEIMPTCG) on the Skills need of Industrial Establishments was used to elicit relevant information. The instrument for data collection was constructed by the researcher on the basis of the research questions, the items in the instrument were structured into 80 items, under three sections.

Section A contained the category of respondents, while the other sections were organized such that the respondents will express their opinions on five points scale, thus: Very adequate, Adequate, Moderately Adequate, Inadequate, Very Inadequate.

The 80 items were grouped in the following manner: Section A is made up of items 1-3 which sought category of respondents (employer or graduate), Section B consist of items related to Industrial Installation Skills, Section C consist of items related to Rewinding of Electrical Machines Skills.

F. Validation of the Instrument

To ensure correctness of content grammar and appropriateness of the instrument a copy of the questionnaire was given to each, of two experts from the Department of Technology Education, Modibbo Adama University of Technology Yola and two experts from Federal College of Education, (Technical) Gombe

G. Reliability of the Instrument

The instrument has a reliability coefficient of 0.72.

H. Method of Data Collection

The questionnaire was administered to the respondents by the researcher and 5 research assistants who assisted the researcher in administering and collecting back the completed questionnaires.

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The respondents were asked to rate the skills needed by the graduates of Technical colleges by ticking the appropriate item on the questionnaire regarding the technical skills needed and 120 out of 140 respondents (employers) questionnaires and 75 out of 86 respondents' (employee) questionnaires were returned.

I. Method of Data Analysis.

The statistical tool used for the analysis of the collected data was mean and grand mean. The mean and grand mean were used to

answer related research questions, while the z-test was used to test the hypotheses at 0.05 level of significance. The decision rule to accept or reject any item was based on mean of 3.0 and above. All items with a mean score of 3.5 and above were considered adequate in terms of skills possessed by the graduates, while those items with mean score below 3.5 were regarded as inadequate in terms of skills possessed

by the graduates. Hypotheses with z-test calculated value that is equal or greater than table value were rejected, while hypotheses with calculated value of the z-test is less than critical or table value then the null hypotheses were accepted (Uzoagulu, 1998).

III. RESULTS AND DISCUSSION

This section presents the results of data analysis for the study and discusses the findings. The presentation is done in the order of the research questions and hypotheses.

Research Question 1

What is the Level of technical skills in rewinding of electric machines possessed by graduates of technical college in Adamawa state?

Table I: presents the results of the Level of technical skills in rewinding of electric machines possessed by graduates of technical college in Adamawa state.

SN	Items	Employers N_E =120		Graduates N_G=75		Grand mean	
		$\overline{X}_E$	Sd_E	$\overline{X}_G$	Sd_G	Gm	Remark
1	Technical Ability to dismantle electric motor for rewinding	3.83	1.22	3.85	1.09	3.84	Adequate
2	Provide required materials necessary for rewinding of electric motor	3.71	1.21	3.84	1.12	3.76	Adequate
3	Ability to Reassemble electric generators	3.43	1.21	3.45	1.07	3.44	Inadequate
4	Ability to Reassemble electric motors	2.84	1.18	3.72	1.09	3.18	Inadequate
5	Ability to demonstrate knowledge of measuring electrical quantities	3.71	1.25	3.82	1.10	3.75	Adequate
6	Ability to Test electric motors continuity in the windings	3.77	1.26	3.93	1.03	3.84	Adequate
7	Ability to Test electric motors for insulation resistance	3.72	1.23	3.72	1.19	3.72	Adequate
8	Ability to Test electric generators for insulation resistance	3.75	1.20	3.82	1.20	3.78	Adequate
9	Ability to Test electric motors for vibration	3.61	1.33	3.66	1.07	3.63	Adequate
10	Ability to Test electric motors for alignment	3.52	1.21	3.45	1.31	3.50	Adequate
11	Ability to Test electric motors for continuity in the windings	3.66	1.23	3.74	1.08	3.69	
12	Ability to Test electric generators for continuity in the windings	3.61	1.23	3.67	1.12	3.63	
13	Ability to Test electric generators for vibration	3.31	1.22	3.36	1.31	3.33	Inadequate
14	Ability to demonstrate knowledge of recording measurements	3.71	1.19	3.83	1.14	3.75	Adequate
15	Ability to carry out Proper winding of electric motor.	2.50	1.19	2.49	1.36	2.50	Inadequate
16	Ability to carry out inspection of all mechanical parts for soundness.	3.57	1.22	3.59	1.10	3.57	Adequate
17	Ability to carry out detailed inspection of all electrical parts for soundness	1.48	1.22	3.63	1.14	2.32	Inadequate
18	Ability to carry out complete insulation test	3.70	1.26	3.83	1.07	3.75	Adequate
19	Ability to carry out complete well-documented quality assurance systems	3.67	1.21	3.77	1.15	3.71	Adequate
20	Ability to identify required grade of grease for electrical machine	3.70	1.23	3.73	1.22	3.71	Adequate
21	Ability to do proper lubrication of electrical machine	3.83	1.20	4.54	1.05	4.11	Adequate
22	Ability to understand safety codes in the workshop	3.86	1.21	4.07	1.03	3.94	Adequate
23	Ability to work safely with portable electrical appliances	3.81	1.37	3.97	1.07	3.87	Adequate

X_E =Mean ratings of employer, Sd_E = standard deviation of Employers' score, X_G= Mean ratings of graduates, SD_G = standard deviation of Graduates' score, G_m=Grand Mean ratings of Employers and Graduates, N_E=Number of Employers, N_G = Number of Graduates,

The results in the table shows that out of 23 items on the skills in rewinding of electrical machines, the graduates possessed adequate skills in 18 items with Grand Means ranging from 3.50 to 4.11, while their skills were inadequate in 5 items with a Grand Mean below 3.50. the 5 items were items 3, 4, 12, 16 and 18. Therefore, the eighteen items were adequate based on cut-off point of 3.50 as presented in table 4 above.

Hypothesis 1

There is no significant difference between the Mean ratings of Employers and Technical College Graduates on the level of skills possessed by Electrical Installation and Maintenance graduates of technical college in Rewinding of Electric

EIMW II: Electrical Installation and Maintenance Work

Machines Module.

Table III shows the result of z-test analysis on the level of skills possessed by Electrical Installation and Maintenance graduates of technical college in Rewinding of Electrical machines. The two groups had standard error of 0.12 and a z-calculated value of -3.03. The z-calculated value was less than the z-critical value (-3.03 < 1.96) at 0.05 level of confidence).

Thus, the H_{o3} is accepted, therefore there is no significant difference between the mean ratings of employers and graduates.

Table II: Paired sample z-test of difference between Employers and Graduates ratings on the level of skills possessed by EIMW graduates of technical colleges in Rewinding of Electrical machines

GROUP	N	$\bar{X}$	SD	SE	Z-test Calculated	Z-Test critical	Remarks
Employers	120	3.71	1.24	0.12	-3.03	1.96	Accepted Ho$_3$
Graduates	75	3.49	1.14	0.09			

EIMW III: Electrical Installation and Maintenance Work

Research Question 2

What is the level of technical skills in industrial installation possessed by graduates of technical colleges in carrying out industrial installation?

TABLE III: Mean, standard deviation and Grand Mean of employers and graduates' rating of the adequacy of technical skills on industrial installation possessed by graduates of technical college in Adamawa state

	Items	Employers		Graduates		Grand mean	
		$\bar{X_E}$	Sd_E	$\bar{X_G}$	Sd_E	Gm	Remark
1	Ability to have good organization of workshop	3.65	1.23	3.7467	1.10	3.70	Adequate
2	Ability to have good planning of workshop	3.63	1.24	3.7068	1.14	3.67	Adequate
3	Ability to handle mechanical aptitude	3.64	1.19	3.7333	1.07	3.69	Adequate
4	Ability to handle centrifugal water pumps	3.4833	1.25	3.4667	1.16	3.65	Adequate
5	Ability to handle valves.	3.5750	1.22	3.6000	1.14	3.68	Adequate
6	Ability to handle power transmission equipment & components.	3.7333	1.25	2.5210	1.17	3.13	Inadequate
7	Ability to handle power transmission components.	3.7000	1.23	3.8133	1.09	3.75	Adequate
8	Ability to fix bits drilling tools	3.7333	1.21	3.8533	1.09	3.77	Adequate
9	Ability to fix blades of filing tools	3.6167	1.29	3.6400	1.30	3.63	Adequate
10	Ability to maintain simple power tools	3.4500	1.29	2.4390	1.25	2.94	Inadequate
11	Ability to install simple power tools	3.8500	1.86	4.0267	1.07	3.93	Adequate
12	To install repair simple power tools	3.8000	1.20	3.9600	1.07	3.88	Adequate
13	Ability to test simple power tools	3.9000	1.18	3.0000	1.03	3.45	Inadequate
14	Ability to read blueprints for layout of electrical equipment	3.7667	1.24	3.9067	1.15	3.84	Adequate
15	Ability to interpret blueprints layout of electrical equipment	3.7500	1.28	3.8933	1.20	3.82	Adequate
16	Ability to interpret drawings of electrical equipment	3.5000	1.26	3.3733	1.15	3.40	Inadequate
17	Ability to code specifications of electrical equipment	3.7250	1.26	3.8533	1.17	3.79	Adequate
18	Ability to interpret layout for installation of electrical equipment	3.7750	1.25	3.4200	1.16	3.60	Adequate
19	Ability to read a wire table.	3.7917	1.23	3.8667	1.21	3.75	Adequate
20	Ability to determine conductor size required.	3.7250	1.18	3.2607	1.08	3.49	Adequate
21	Ability to read symbols	3.333	1.18	3.0800	0.98	3.21	Inadequate
22	Ability to conduct preventive maintenance.	3.4333	1.20	4.0400	1.03	3.72	Inadequate
23	Technical ability to carry out minor repair of simple electric motor	3.7000	1.21	3.8133	1.09	3.75	Adequate
24	Ability to complete a task on schedule	3.5833	1.29	3.4867	1.26	3.53	Adequate
25	Ability to keep maintenance records	3.4917	1.26	3.6533	1.05	3.46	Adequate
26	Ability to Service bearings in electrical rotating machines	3.7167	1.18	3.8400	1.02	3.78	Adequate
27	Ability to change seals in electrical rotating machines	3.6083	1.20	3.8400	1.29	3.72	Adequate
28	Ability to Overhaul a.c control equipment	3.5583	1.18	1.2500	0.81	2.40	Adequate
29	Ability to Overhaul d. c generators	3.5833	1.16	2.4267	1.01	3.00	Adequate
30	Ability to Overhaul D. C control equipment	3.5417	1.12	3.8400	1.08	3.67	Adequate
31	Ability to Overhaul A. C generators	1.4900	1.19	1.3580	1.00	1.42	Inadequate
32	Ability to Test faults in electrical filing machine windings	3.4833	1.61	3.6400	1.06	3.56	Inadequate
33	Ability to locate faults in electrical filing machine windings	2.4166	1.18	1.4800	0.98	1.94	Inadequate
34	To diagnose faults in electrical filing machine windings	3.8250	1.18	3.6267	1.04	3.72	Adequate

X_E =Mean ratings of employer, Sd_E = standard deviation of Employers' score, X_G= Mean ratings of graduates, SD_G = standard deviation of Graduates' score, $G_{m.}$=Grand Mean ratings of Employers and Graduates, N_E=Number of Employers, N_G = Number of Graduates,

Table 3 shows the results of employers' and graduates on ratings of technical skills in industrial installation possessed by graduates of technical college in Adamawa state**.** This shows that out of 34 items on skills in industrial installation, the graduates possessed adequate skills in 25 items with Grand Means ranging from 3.50 to 3.93, while their skills are inadequate in 9 items with a Grand Mean below 3.50. the 9 items were items 6, 10, 13, 16, 21, 22, 31, 32 and 33.

Therefore, the twenty-five items were adequate based on cut-off point of 3.50 as presented in table 3 above.

Hypothesis 2

There is no significant difference between the Mean ratings of Employers and Technical College Graduates on the level of skills possessed by Electrical Installation and Maintenance graduates of technical college in Industrial Installation Module.

Table IV: Paired sample z-test Analysis of difference between Employers and Technical College Graduates ratings on the level of skills possessed by Electrical Installation and Maintenance graduates of technical colleges in Industrial Installation.

GROUP	N	$\overline{\mathbf{X}}$	SD	SE	Z-test Calculated	Z-Test critical	Remarks
Employers	120	3.55	1.24	0.11	-3.33	-/+1.96	Uphold Ho_2
Graduates	75	3.38	1.10	0.12			

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Table IV shows the result of z-test analysis on the level of skills possessed by Electrical Installation and Maintenance graduates of technical college in Industrial Installation. The two groups had standard error of 0.11 and a z-calculated value of -3.33. The z-calculated value was less than the z-critical value (-3.33 < 1.96) at 0.05 level of confidence). Thus, the H_{o2} is uphold, therefore there is no significant difference between the mean ratings of employers and graduates.

IV. DISCUSSION OF FINDINGS

This section embodies the discussion of the major results arrived at as being illustrated in tables I and II. The discussion of the findings of this study is focused on two research question and two hypotheses.

From the data obtained and analyzed, the result indicated in table I that the graduates have adequate skills in rewinding of electrical machines and table II indicates that there is no significant difference between the mean responses of the employers and the graduates on level of technical skills of rewinding of electrical machines possessed by graduates of technical colleges in Adamawa state. The study shows that the graduates have adequate skills except in some items as indicated in table I above.

The findings of the study are in line with Ram (2009), as he pointed out that, in the electrical industry an industrial electrician is responsible for motor rewinding and repair and have responsibility for reassembly and testing of electric machines following rewinding. This study also agrees with the pattern of On-The-Job Training (OJT), On-The-Job Training (OJT) is job training that occurs in the work place. The new worker learns the duty whereas doing the duty and whereas earning his or her pay check. On the duty coaching is additionally known as hands on coaching. (Cyprus, 2003). This study is also in line with Allen (2011), where he stated that, an industrial electrician plans, installs, tests, inspects, troubleshoots and services all types of industrial electrical equipment that are important in the system of commercial and industrial businesses. It consists of all instruments or machineries directly or indirectly wide-open to electrical power supply, these may include; motors, generators, pumps, illumination systems and various electrical/electronic panels. In a study carried out by Victor (2005), is in contrary to the findings of this study, in expressing his concern on the lack of skills possessed by technical college graduates, stated that, Nigerian youths are facing myriad challenges, many of those who graduated from technical colleges lack the skills to compete in the weak economy and tight labor market.

From the data obtained and analyzed, the result in table 3 indicated that the graduates have adequate skills in industrial installation and that there is no significant difference between the mean ratings of the employers and the graduates on level of technical skills in industrial installation possessed by graduates of technical college in Adamawa state. The study shows that the graduates have adequate skills except in nine items as indicated in table 3 above.

The findings of this study are in line with Allen (2011), where he stated that, an industrial electrician plans, installs, tests, inspects, troubleshoots and service all types of industrial electrical equipment that are useful in the process of commercial and industrial enterprise. The equipment may consist of all gadgets or components that exposed either directly or indirectly to power supply, for instance; motors, generators, pumps, lighting arrangements and any other instrument connected to any electrical/electronic switches.

In another vein, As reported by Pre-Apprenticeship Training (PAT) institute (June 26, 2018) essential skills needed by electricians to work in the field of green economy are; Electrical Installation & Safety Knowledge. In the contrary (Mukhtar & Kantsi, 2019) stated that, there is doubt about the capability of existing technical institutions in providing adequate training that will meet the challenges of the modern industrial environment, because this study shows that the graduates have adequate skills except in nine items as indicated in table 3 above.

The findings of this study are in agreement with the National Board for Technical Education (NBTE) objectives, which stated that, on completion of industrial installation module, the student will be able to: Know different types of industrial installations; Understand the installation of different types of ducts and trunkings applying all relevant regulations and safety precautions.

V. CONCLUSION

This paper assessed the technical (green) skills possessed by graduates of electrical installation and maintenance works trade of technical colleges in Adamawa state. Based on the results of this study as presented above, it is concluded that technical college graduates have adequate skills. On the skills possessed by the graduates on the rewinding of electrical machines, it is concluded that the graduates have adequate skills with inadequate skills in the ability to re-assemble electric generators, re-assemble electric motors and ability to test electric generators for vibration, the ability to carry out proper winding of electric motors, skills to carryout detailed inspection of all electric parts for soundness. In the field of industrial installation, the graduates have adequate skills in industrial installation and the study shows that the graduates have adequate skills except in nine items as indicated above.

In line with these identified inadequacies, some strategies were highlighted, which when sincerely adopted will serve as a means of increasing skill acquisition strategies.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the researcher recommends that, for students to have more skills for generic green skills: -

1. More training conditions in technical colleges should be sufficiently linked with real work situation so that the graduates will have very adequate skills in all the module.
2. Technical College Teachers of electrical installation should pay more attention in the areas where graduates indicated inadequate in order to have adequate or very adequate skills in all areas indicated.
3. Technical education teachers should be allowed to embark on industrial
training to afford them the opportunity of acquiring some industrial-based technical (generic green) skills.
4. Government should see provision of innovative instructional materials as prerequisite for skill acquisition in different vocational subjects.

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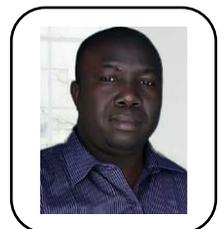
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