



Safety Practice Skills Required Of Electrical/Electronics Students For Effective Operation In Technical College Workshops In Rivers State

K.R.E Okoye, Ph.D. & *Ihi John Chukwuermekwa

**Department of Technology and Vocational Education
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria
*ihijohn12@gmail.com**

ABSTRACT

Electrical/electronics trade is one out of the numerous trades offered in Technical Colleges. Studies have shown that irrespective of availability of safety rules and regulations, accidents still occur during workshop practical sessions; hence, this study determined safety practice skills required of students for effective workshop operation. Two research questions guided the study and two null hypotheses were tested at 0.05 level of significance. Descriptive survey design was adopted, and a population of 61 electrical/electronics teachers drawn from 5 technical colleges in Rivers State was studied. There was no sampling since the population was manageable. A 5 point scale questionnaire containing 20 items in two clusters (B1-B2) was used for data collection. The instrument was validated by three experts; Cronbach alpha reliability test was used to establish the internal consistency after pilot testing which yielded overall coefficient of 0.82. A total of 61 copies of the instrument was administered and retrieved. A descriptive statistics of mean and standard deviation were used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. The findings revealed that all the 20 items studied were required for effective workshop operation in the Technical Colleges in Rivers State. One out of the two stated hypotheses was accepted while one was rejected. Based on the findings, the researcher concluded that there is need for students to develop the identified safety practice skills in using electrical hand tools, operating electrical equipment/machines, and then apply them while working in the workshops and after graduation. There is also need for workshops, conferences and seminars for teachers of electrical electronics on safety practice skills required of students for effective workshop operations.

Keywords: Technical College, Electrical/Electronics, safety practice skills, workshop

INTRODUCTION

Technical Colleges are educational institutions aimed at producing the young manpower for the country's economic growth and development and charged with the responsibility of producing craftsmen and technicians. Okechukwu and Reagan (2013) opined that Technical Colleges are designed to prepare individuals to acquire practical skills, basic scientific knowledge and attitude required as craftsmen and technicians at sub-professional levels. In furtherance to this, they are regarded as the principal vocational institutions in Nigeria that give full vocational training intended to prepare students for entry into various occupations as operatives or artisans and craftsmen. Similarly, United Nations Educational, Scientific and Cultural Organization and National Board for Technical Education (2011) reported that the aim of technical college curriculum is to give training and impart the necessary skills leading to the production of craftsmen, technicians and other personnel who will be enterprising and self-reliant. Federal Republic of Nigeria (FRN) (2013), opined that the range of trade subjects offered in Technical Colleges should be as wide as possible to include but not limited to: Mechanical Trade, Electrical trade, Computer Craft Practice, Building Trade, Woodwork Trade, Hospitality, Textile Trade, Printing Trade, Beauty Culture Trade. The

electrical trade as one of the trade subject offered in Technical Colleges covers electricity/electronics subjects. (FRN, 2013) highlighted three subjects that are subsumed into electrical trade to include; Electrical installation and maintenance work; radio, television and electronics work, and appliances repairs. In addition, UNESCO and NBTE (2011) stated that the curriculum of each trade as listed above, including Electrical/Electronics is broadly divided into three components such as; general education which accounts for 30% of the total hours required for the trade; Trade theory, trade practice and related studies which account for 65%, and Supervised Industrial Training/work experience which accounts for about 5% of the total hours required for the trade. The trade practice and supervised industrial training/work experience in the curriculum require workshop exercises and practices for the practical part of the training to be acquired by the students.

Workshop is a place where the learners may experiment, test, construct, dismantle, repair, design, create, produce electrical and electronics equipment, components and goods (Okorie as cited in Ofonmbuk and Ekereobong, 2012). Electrical/electronics workshop is therefore, a place where electrical and electronics equipment and materials for practical lessons are kept and utilized for training in skill acquisition (Mammam, as cited in Yekinni, 2016). The workshops are very essential in technical colleges for imparting requisite practical skills needed by students to develop in their chosen career, and also for teachers to effectively improve on skills they have acquired. For the effectiveness of practical session in a workshop, training equipment, instruments, tools and consumables, (UNESCO and NBTE, 2011) are needed to be at students and teachers' disposal. Students need to interact with these instructional resources for proper habit formation under the guidance of teachers. Most of the equipment, tools, instruments and consumables require skills, competencies, and care when handling them. During the course of interactions with these materials, mistakes which could result from ignorance, lack of knowledge, carelessness and other possible factors could occur which may result to accidents.

Accident according to the National Safety Council as cited in Okon (2011) is mishaps in industrial establishments causing bodily injuries to a person which could make him unfit to resume his duties in the next 48 hours. Okon further defined accident as an unwanted, unexpected event which cannot be anticipated in advance. According to Deebom and Ojoba (2018), the increase in accident cases in electrical/electronics workshop in Rivers State, during various workshop operations call for more advanced instruction on accident prevention that requires increased emphasis on safety practice skills. Timing and Alobi in Okon (2011) stated that emphasis should be placed on safety education because of sophisticated machines and equipment which are becoming increasingly complicated and digitalized. Therefore, the acquisition safety practice skills by electrical/electronic students is a step towards reducing high rate of accidents in their transition to the world of work.

Safety, according to Olaitan, Nwachukwu, Igbo, Onyemaechi and Ekon as cited in Dung (2015), is the art of taking precaution for the avoidance or reduction of accidents in order to protect people and property, safety is the ability to perform every simple task involved in a job without causing damage to tools, equipment or materials used in performing the task. They further stated that safety is the state of being certain that adverse effect will not be caused by some agents under defined condition. Safety practices therefore are those activities that seek either to minimize or to eliminate hazardous conditions that can cause bodily injuries (Okon, 2011). Also safety practice is the effort directed at preventing or eliminating accidents in the workshop by the teachers, students and school administrators.

Skills, according to Okorie as cited in Dung (2015) are a manual dexterity through repetitive performance of an operation. Skill is a well-established habit of doing something and it involves the acquisition of performance capabilities. Safety practice skills according to Iyagbaye and Onu (2018) therefore are those individualized skills that students apply in observing already laid down safety rules and regulations while working in the workshop. Safety practice skills include the personal ability of the student to apply the safety rules and regulation that have been passed through to him/her through safety classes and briefings. These skills vary from one individual to the other. Students of electrical/electronics in technical colleges requires safety practice skills for effective workshop operations. Sequel to this, the study of Dung (2015) highlighted safety practice skills

required of electrical/electronics students in technical colleges in the following area; safety practice skills in using hand electrical tools; operating electrical equipment/machines; installing electrical equipment, wiring electrical equipment as key areas in which skills in practicing safety rules and regulation is highly needed for effective operations in the workshop.

Successful application of safety practice skills demands that teachers, workshop supervisors and college administrators should think and act responsibly at all times in every society. The electrical/electronics teacher who is the link between the students and the college should have the skills of manipulating tools and machines safely without fear of being involved in accident. Electrical/electronics teachers in technical colleges most of whom have taught this trade for years have different experiences of the manipulative safety practice skills required of the students in different workshop operations. According to O' Naill, (2016), experience is the knowledge or skills in a particular job or activity which one gains because the individual has done that job or activity for a long time. Experienced electrical/electronic teachers are those who have been trained pedagogically and technically in electrical/electronics and have been teaching for 10 years and above while less-experienced electrical/electronics teachers are those with pedagogical and technical skills that have teaching experience between 0 – 9 years (Okon, 2011).

Guarnieri as cited in Yekini (2016) asserted that most graduates of technical colleges do not possess adequate safety practice skills necessary for safe operation in industries and for effectiveness in the job environment. Ogide (2017) reported that average of five (5) accidents do occurs in electrical/electronics workshops in technical colleges in Rivers State every academic session. Similarly, Deebom and Ojoba (2018) also reported that in many electrical/electronic workshops in technical college in Rivers State today, the rate of accidents which causes damage to facilities and workshop users is alarming irrespective of the availability of wide range of safety rules and regulations at student's disposal. This findings are in line with, Yekini (2016) who said that wider scales of accidents take place in Technical College workshops due to carelessness or lack of safety practice skills by students and teachers. This study was therefore designed to identify the safety practice skills required of electrical/electronics students for effective operation in Technical College workshops in Rivers State.

Statement of the Problem

A healthy school environment is that which supports the health and safety of students, teachers and other members of the school system. Technical Colleges being a type of post-primary school are established to specifically train students for skills acquisition through practical know-how in the school workshop. To this effect, teachers and students often interact with tools, equipment, machines and consumables to enable students acquire the practical skills. Most of the electrical tools, equipment and machines operate with high voltage that requires safety practices to avoid accident in the workshop. Severally, cases had been reported of students being involved in workshop accidents and other workshop hazards irrespective of availability of safety rules and regulation in the technical college curriculum.

Nichols as cited in Deebom and Ojoba (2018) reported that National Safety Council estimated that, more than 24,000 accidents were sustained by students in a year in United State of America. The authors stated further that those figures represent only accidents which were reported, and caused property damage or resulted in the loss of at least one half day of the school by the students. The authors further reported that the actual accident figures for students in vocational/technical institutions would be much greater in number nowadays if all accidents were reported. Locally, Osang, Obi and Ewona (2013) reported that between 2008 and 2012, four thousand and fifteen (4015) accident cases occurred in eighteen (18) secondary schools in eighteen (18) local governments in Cross River state. Also within two years, 2,033 accidents occurred in Technical Colleges in Delta State. In Rivers State, Ogide (2017) reported that average of five (5) accidents occurs in electrical/electronics workshops in Technical Colleges in Rivers State every academic session. Deebom and Ojoba (2018) also confirmed that in many electrical/electronic workshops in technical college in Rivers State today, the rate of accidents which causes damage to facilities and workshop users is alarming irrespective of the availability of wide range of safety rules and regulations at student's disposal. Some students in the workshop often sustain injuries, damage tools and render machines non-functional during practical work. In addition, Students are often exposed

to hazards due to lack of the necessary skills in application of safety instructions to guide them during practical exercises.

Following this, Technical Colleges in Rivers State specifically electrical/electronics departments are faced with cases of accident which have led to injuries, loss of lives and properties. This deserved adequate attention which this study addressed. This study was therefore designed to determine the safety practice skills required of electrical/electronics students for effective and safe operation in Technical College workshops in Rivers State.

Purpose of the Study

The main purpose of the study was to ascertain the safety practice skills required of electrical/electronic students for effective operation in Technical College workshops in Rivers State. Specifically, the study determined;

1. Safety practice skills required of electrical/electronics students for effective use of electrical hand tools in Technical College workshops.
2. Safety practice skills required of electrical/electronics students for effective operation of electrical equipment/machines in Technical College workshops.

Research Questions

The following research questions guided the study:

1. What are the safety practice skills required of electrical/electronic students for effective use of electrical hand tools in Technical College workshops?
2. What are the safety practice skills required of electrical/electronic students for effective operation of electrical equipment/machines in Technical College workshops?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean response of electrical/electronics teachers on the safety practice skills required of electrical/electronics students for using electrical hand tools for effective operation in Technical College workshops based on their years of experience (0 – 9 years; 10 years and above).
2. There is no significant difference in the mean responses of electrical/electronics teachers on the safety practice skills required of electrical/electronics students for operating of electrical equipment/machines for effective operation in Technical College workshops based on their years of experience (0 – 9 years; 10 years and above).

METHODS

The study was conducted in Rivers State Nigeria. A descriptive survey research design was adopted for the study. According to Ofoha (2011) a survey design involves the collection of extensive data from the population for the purpose of describing and interpreting an existing situation under study using a questionnaire. According to Nworgu (2015), the descriptive survey covers those studies, which aim at collecting data on, and describing in a systematic manner, the characteristics, features or facts about a given population. In view of the foregoing, it is important to point out that the descriptive design was found appropriate for conducting this study. The design is considered appropriate for the study because the study was aimed at finding out the opinions of electrical/electronics teachers on safety practice skills required of electrical/electronic students for effective operation in Technical College workshops in Rivers State. The population of this study was 61 electrical/electronic teachers in the 5 Technical Colleges in Rivers State. There was no sampling since the population was manageable. A structured questionnaire titled "Safety Practice Skills Required for Effective Operation in Technical College Workshops Questionnaire" (SPSREOTCWQ) was used. The questionnaire was structured based on the research questions that guided the study. The questionnaire has two sections, A and B. Section A contains personal data of the respondents. Section B contains 20 items in two clusters of B1, B2, in accordance with the research questions. Cluster B1 was meant to gather information on safety practice skills required of electrical/electronic students for using electrical hand tools for effective operation in Technical College workshops; cluster B2 was meant to elicit information on safety practice skills required of electrical/electronic students for operating electrical equipment/machines for effective operation in Technical College workshops. The instrument was structured on a five point scale of Highly

Required (HR); Required (R); Moderately Required (MR); Slightly Required (SR); and Not Required (NR) with nominal values of 5, 4, 3, 2, and 1 respectively. The face validity of the instrument was conducted using the opinions of three experts. After the validation, the comments of experts indicated that the instrument was fit and appropriate for the study. To establish the internal consistency of the items in the instrument, a pilot test was conducted using 20 electrical/electronic teachers from selected technical colleges in Bayelsa State which was not part of the study area but share similar characteristics with Rivers State. Cronbach Alpha was used to analyze the data to establish the internal consistency of the instrument. The computation showed that Clusters B1, B2, obtained the following reliability co-efficient: 0.84, 0.80, respectively. Thereafter, the correlation co-efficient of all the clusters put together was analyzed and 0.82 was obtained from the items which the researcher considered high enough to adjudge the instrument as reliable for the study. The researcher personally administered copies of the instrument. A period of 2 weeks was used for the distribution and collection of the instrument.

In answering the research questions, descriptive statistics of mean and standard deviation were used to analyze the data collected for the study. The item by item analysis was conducted employing the real limit of the scale values assigned to response categories of the instrument as follows:

Keys	Rating Scale	Real Limits
Highly Required	5	4.50 – 5.00
Required	4	3.50 - 4.49
Moderately Required	3	2.50 – 3.49
Slightly Required	2	1.50 – 2.49
Not Required	1	0.01 – 1.49

Inferential statistics of t-test was used to test the null hypotheses at 0.05 level of significance. In testing the null hypotheses, when the calculated t-value (t-cal) is less than the table t-value (t-critical), the null hypotheses was accepted, but when the calculated t-value (t-cal) is greater than or equal to the table t- value (t-critical), the null hypothesis was rejected. The analysis was done with the application of a computer software programme called Statistical Package for Social Sciences (SPSS) version 20.

RESULTS

Research Question 1

What are the safety practice skills required of electrical/electronic students for effective use of electrical hand tools in Technical College workshops?

Data to provide answer to research question one in respect to item 1-10 were analyzed and presented in table 1.

Table 1. Mean and Standard Deviation on Safety practice skills required of electrical/electronics students for effective use of electrical hand tools in Technical College workshops

S/N	Safety Practice Skills on the Use Of Hand Tools.	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	\bar{X}_T	SDT	RMK
1	The ability to study accurate sketches and drawings of the electric circuit of the hand tools before making use of them.	4.38	0.64	4.11	0.82	4.24	0.73	R
2	The ability to select appropriate hand tools for electrical operations.	4.33	0.70	4.44	0.84	4.39	0.77	R
3	The ability to choose the appropriate electrical hand tools that are most needed for the operation.	4.29	0.75	4.31	0.71	4.30	0.73	R
4	The ability to inspect, repair and replace faulty electrical components in the hand tool before using them.	4.29	0.62	4.36	0.76	4.33	0.69	R
5	The ability to apply correct grade of lubricant to lubricate moving parts of electrical hand tools to avoid malfunction during operation.	4.38	0.77	4.64	0.48	4.51	0.63	HR
6	Avoiding absent mindedness when using electrical hand tools.	4.42	0.58	4.19	0.71	4.31	0.65	R
7	The ability to Secure work in a vice manner whenever possible; not holding small work with hand when using a power screw driver or other power tools.	4.54	0.58	4.22	0.79	4.38	0.69	R
8	The ability to keep the cutting tools sharp to ensure good smooth cutting.	4.67	0.63	4.47	0.69	4.57	0.66	HR
9	The ability to follow the correct procedure for using every tool.	4.33	0.91	4.22	0.68	4.28	0.79	R
10	The ability to apply tools guards when using rotating tools.	4.46	0.72	4.56	0.69	4.51	0.71	HR
	Grand	4.40	0.29	4.35	0.25	4.38	0.70	R

\bar{X} = Mean, SD = Standard Deviation, RMK = Remark

The data presented in Table 1 indicates that, respondents have aggregate mean values ranging from 4.24 to 4.57 and a grand mean of 4.38; aggregate standard deviation values ranging from 0.63 to 0.74 and grand standard deviation of 0.70. This indicates that respondents are homogeneous in their responses and their responses on Safety practice skills required of electrical/electronics students for effective use of electrical hand tools indicate that, item 1, 2, 3, 4, 6, 7 and 9 are required because they have individual mean between 3.50 and 4.49; while item 5, 8 and 10 are highly required because it has mean higher than 4.50. Therefore all the items are required for effective workshop operation in Technical Colleges.

Research Question 2

What are the Safety practice skills required of electrical/electronic students for operating electrical equipment for effective operation in Technical College workshops?

“Data to provide answer to research question two in respect to items 11-20 were analyzed and presented in Table 2.

Table 2

Mean and Standard Deviation on Safety practice skills required of electrical/electronic students for operating electrical equipment for effective operation in Technical College workshops

S/N	Safety Practice Skills on Equipment/Machines Operation.	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	\bar{X}_T	SD _T	RMK
11	The ability to carry out inspection on the cord of electrical equipment before use to ensure that it is free and well-connected.	4.17	1.16	3.03	0.88	3.60	1.02	R
12	The ability to replace the cord of any equipment if worn or damaged to avoid short circuiting.	3.92	0.93	3.81	0.95	3.87	0.94	R
13	The ability to keep extension cord away from heat, oil/chemicals, and sharp edges to avoid electrocution.	3.63	1.01	3.69	1.01	3.66	1.01	R
14	The ability to ensure that extension cords are of the correct amperage and has the proper plug is required.	4.17	0.87	3.86	0.89	4.02	0.88	R
15	The ability to safely remove faulty machine parts for servicing/repair before operation is required	4.04	0.91	3.42	1.07	3.73	0.99	R
16	The ability to ensure equipment are earthed and insulated.	4.13	0.90	3.36	0.83	3.75	0.87	R
17	The ability to read the equipment manual before operating the equipment.	3.92	0.97	3.06	1.37	3.49	1.17	MR
18	The ability to conduct visual inspection of machine parts before operating them.	3.75	0.94	2.56	1.18	3.12	1.06	MR
19	Ability to adhere to “Do not operate any machine if you cannot stop it:” principle.	4.46	0.77	4.14	0.93	4.30	0.85	R
20	The ability to always wear hand gloves and other PPE to protect the hands and other parts of the body.	4.21	0.72	4.33	0.86	4.27	0.79	R
	Grand	4.04	0.34	3.53	0.27	3.79	0.31	R

\bar{X} = Mean, SD = Standard Deviation, RMK = Remark

The data presented in Table 2 shows that, respondents have aggregate mean values ranging from 3.12 to 4.30 and a grand mean of 3.79; aggregate standard deviation values ranging from 0.79 to 1.17 and grand standard deviation of 0.31. This indicates that respondents are homogeneous in their responses and their responses on Safety practice skills required of electrical/electronic students for operating electrical equipment for effective operation in Technical College workshops indicate that, item 11, 12, 13, 14, 15, 16, 19 and 20 are required because they have individual mean between 3.50 and 4.49; while item 17 and 18 are moderately required because they have mean between 2.50 and 3.49. Therefore all the items are required for effective workshop operation in Technical Colleges.

Hypotheses Testing**Hypothesis 1**

There is no significant difference in the mean responses of electrical/electronics teachers on the safety skills required of electrical/electronics students for using electrical hand tools for effective operation in Technical College workshops based on their years of experience (10years and above and 0-9 years). The test of hypothesis one is presented in Table 3.

Table 3: Summary of Results of Testing Null Hypothesis 1 with t-test Statistics

Group	N	\bar{X}	SD	df	t-cal	t-cri	Decision
10 Years and above	25	4.40	.29	59	0.77	2.00	Accepted
0-9 Years	36	4.35	.246				

The result in Table 3 shows that t-cal is 0.77 and t-cri is 2.00 at 0.05 significant level. This indicates that t-cal (0.77) is less than t-cri (2.00). As a result, the stated null hypothesis that, there is no significant difference in the mean response of electrical/electronics teachers on the safety skills required of electrical/electronics students for using electrical hand tools for effective operation in Technical College workshops based on their years of experience (10years and above and 0-9 years) is accepted at 0.05 level of significant.

Hypothesis 2

There is no significant difference in the mean responses of electrical/electronic teachers on the safety skills required of electrical/electronics students for operating of electrical equipment/machines for effective operation in Technical College workshops based on their years of experience (10years and above and 0-9 years).The test of hypothesis two is presented in table 4.

Table 4: Summary of Results of Testing Null Hypothesis 2 with t-test Statistics

Group	N	\bar{X}	SD	df	t-cal	t-cri	Decision
10 Years and above	25	4.04	.34	59	6.08	2.00	Rejected
0-9 Years	36	3.53	.276				

The result in Table 4 shows that t-cal is 6.08 and t-cri is 2.00 at 0.05 significant level. This indicates that t-cal (6.08) is greater than t-cri (2.00). As a result, the stated null hypothesis that, No significant difference in the mean responses of electrical/electronic teachers on the safety skills required of electrical/electronics students for operating of electrical equipment/machines for effective operation in Technical College workshops based on their years of experience (10years and above and 0-9 years) is rejected at 0.05 level of significant.

Therefore, there is significant difference in the mean responses of electrical/electronic teachers on the safety skills required of electrical/electronics students for operating of electrical equipment/machines for effective operation in Technical College workshops based on their years of experience (10years and above and 0-9 years)

DISCUSSION OF FINDINGS

The findings of the study were organized and discussed in line with research questions and the hypothesis that guided the study.

What are the Safety practice skills required of electrical/electronics students for effective use of electrical hand tools in Technical College workshops

Table 1 shows that the identified safety practice skills required of electrical electronic students includes; the ability of individual student to study sketches and drawings of tools adequately, select appropriate hand tools, inspect and repair components of electric hand tools, lubricate the moving parts of electric hand tools adequately and concentrate while using electric hand tool. Other skills include; the ability to hold the work piece in a vice while using electric hand tool, using the right

procedures, application of tool guard while using electric hand tools. These findings are in line with Dung (2015) who opined that irrespective of available safety rules and regulation provided by teachers and other relevant stakeholders, students of electrical/electronics still need to acquire adequate skills/competence in it practice. This finding also agreed with Okon (2011) who also opined that using appropriate tools, keeping tools in good condition, following the right procedures for work are necessary for effective workshop operation.

However, the present study disagreed with Williams (2012) who maintained that teachers alone are generally responsible for creating a safe and healthy instructional setting for integrating hazard recognitions and control. The findings of the present study revealed that students also are responsible alongside their instructors in creating a safe and healthy instructional setting, through the acquisition of adequate safety practice skills. The present study revealed that student must acquire the required safety practice skills identified in order to comply with standard laboratory safety practice. The work of Okon was specifically on metal work students and that of Dung was safety practice skills required for installation students only. The present study bridged the gap by identifying safety practice skills in installation, operation of machines and equipment, and handling of tools which was not covered by the work of Okon and Dung.

What are the Safety practice skills required of electrical/electronic students for operating electrical equipment/machines for effective operation in Technical College workshops

In Table 2 show that the respondent rated high the ability of individual student to replace damaged cord of the equipment to avoid short circuiting, keep extension cord of machines and equipment away from oil and other dangerous chemicals as well as sharp edges to avoid electrocution. Other identified safety practice skills includes; the ability of students to use the correct cord/plugs of the right ampage, removing and servicing faulty parts of machines, ensuring adequate earthing and insulation system of machine and equipment, putting on adequate PPE in line with IEE regulation before operation.

The findings of the present study is in line with Okon (2011) who laid emphases on the need for students not to operate any machine/equipment they can't stop, the need for students to wear adequate protective wear and the need to keep the work environment safe. This is also in line with Timing and Alobi as cited in Okon (2011) stating that, emphasis should be placed on safety education because of sophisticated machines and equipment which are becoming increasingly complicated and digitalized. Consequently, acquisition of these safety practice skills by electrical/electronic students before graduation may likely reduce high rate of accidents in their transition to the world of work. The present study differs from that of Williams (2012) who sees only the teachers as responsible for keeping the work environment safe. The findings of the present study reveals that students also have the responsibility of keeping the work environment safe alongside other stakeholders through the application of safety practice skills.

The study also revealed that, there was no significant difference in the mean response of electrical/electronics teachers on the safety skills required of electrical/electronics students for using electrical hand tools for effective operation in technical college workshops based on their years of experience (10years and above and 0-9 years). The study went further to reveal that, there was a significant difference in the mean responses of electrical/electronic teachers on the safety skills required of electrical/electronics students for operating of electrical equipment/machines in technical college workshops based on their years of experience (10years and above and 0-9 years).

CONCLUSION

Based on the findings of the study, the following conclusions were drawn:
In order to avoid accidents and waste of materials while working with electrical hand tools, equipment, and machines in Technical College workshop in Rivers State, there is need for students to develop safety practice skills in using electrical hand tools, operating electrical equipment/machines, and then apply them while working in the workshops and after graduation. Acquisition of safety practice skills by the students' right from school could reduce if not totally eradicates accidents or rate of damages of expensive materials and machines in the workshops. Also,

all the safety practice skills identified are required by electrical/electronics students in Technical college workshops for effective operation in the workshops in Rivers State.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made;

1. The teachers of electrical/electronics should assist electrical/electronics students to effectively develop the safety practice skills identified when using electrical hand tools, operating electrical equipment/machines, in Technical College workshops.
2. Workshop and seminars should be organized regularly for teachers of electrical/electronics in Technical Colleges in order to build their capacity on safety practice skills required by students for effective operations in workshop
3. All the identified safety practice skills should be used to update the existing electrical/electronics curriculum for Technical Colleges.
4. The teachers, parents, administrators, government and all relevant stakeholders should contribute to the promotion of safety practice among students of electrical/electronics in Technical Colleges.

REFERENCES

- Deboom. T.M and Ojoba, L.O. (2018). Implementation of safety practice for quality in instructional delivery in electrical/electronic workshops in Rivers State. *International Journal of Latest Research in Humanities and Social Science (IJLRHSS)*, 1 (10) 26-33.
- Dung, C.J. (2015), *Safety Skills Required By Technical College Electrical Installation Students in Handling Equipment in Plateau and Kaduna States*. Unpublished Masters' thesis, Department of Vocational Teachers Education, University of Nigeria, Nsukka. X+76
- Federal Republic of Nigeria (2013). *National Policy on Education*. Lagos: NERDC press.
- Nwogu, B.G (2015). *Educational Research: Basic issues and Methodology (3rd edition)* Nsukka: University Trust publishers.
- Ofonmbuk, I. M., and Ekereobong, S. U. (2012). School workshop safety practice and students skill acquisition in electrical installation works in technical colleges in Akwa Ibom state. *Mediterranean Journal of Social Science*, 3(13), 118 – 126.
- Ofoha, D. (2011). Assessment of the implementation of the secondary school skill- based curriculum to youth empowerment in Nigeria. *Edo Journal of Social Science*, 3 (13), 118-126.
- Ogide, C. (2017). *Causes and effect of workshop accident on the academic performance of electrical/electronics students in Technical College workshops in Rivers State*. Unpublished masters' thesis, Department of Vocational Technical Education, Rivers State University, Port Harcourt.
- Okechukwu, A., and Reagan, N. R. (2013). Electrical installation and maintenance practice for work skills improvement needs of technical college graduates for employment in Rivers State. *Journal of Technical Technology and Vocational Education*, 1(1), 1-8.
- Okon, O. E. (2011). *Safety practice skills required by metal work students of technical colleges for effective operation in the workshop in Akwa Ibom State. (Unpublished M.Ed thesis)*. University of Nigeria, Nsukka.
- O' Neill, M. (2016) *Collins English Dictionary (3rd edition)*.collins.co.uk. Harper Collins <http://www.collinsdictionary/english/experience>.Retrieved 16th November 2018
- Osang, J. E., Obi, E. O., and Ewona, I. O. (2013). Evaluation of the Effect of Workshop/Laboratory Accidents and Precautionary Steps towards Safety Practice. *Journal of Electronics and Communication Engineering*, 6 (3):16 – 22.
- UNESCO and NBTE, (2011). *Electrical Installation and Maintenance Work: National Technical Certificate and Advanced National Technical Certificate Curriculum and Course Specification*. UNESCO-Nigeria Project, Kaduna.
- Williams, W. (2012). *An accident prevention programme for school shops and laboratory*. Chicago: National Safety Council.
- Yekini, S. A. (2016). Methodological needs of electrical/electronics workshop accident prevention in technical colleges in South Western part of Nigeria. *Journal of Information Engineering and Applications*, 6(9), 44-52.