

WORKSHOP SKILL PRACTICAL ACQUIRED AND DISPLAYED IN ELECTRICAL INSTALLATION AND MAINTENANCE AMONG TECHNICAL COLLEGE STUDENTS IN ONDO STATE, NIGERIA.

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Abstract

The study focused on workshop skills acquired and displayed in electrical installation and maintenance among technical college students in Ondo State, Nigeria. A descriptive research design of the survey type was adopted for the study. The population for the study comprised two hundred and thirty-nine (239) the sample of the study comprised two hundred three (203) which included 164 students and 39 staff who handled the trade course in year two and year three in the electrical department. Two research questions and one null hypothesis were developed and formulated respectively to guide the study. Data collected were analyzed using the mean and standard deviation. While a t-test was used for testing the null hypothesis, the hypothesis formulated for the study was tested at a 0.05 level of significance. The findings of the study indicated, that the most acquired skill by the students was domestic installation, followed by industrial installation and averagely acquired skill in cable joining while students acquired the least skill in the winding of electric machines. Moreover, findings showed that domestic and industrial installations were the most skilled while the least skilled was in winding electrical machines. It was therefore recommended that the government should intensify efforts in providing adequate training materials that would enable students to acquire and display more skills and students of technical colleges should be encouraged to display skills in electrical installation and maintenance practice, particularly in winding of electric machines.

Keywords: Workshop, Skills Acquired and Skills Displayed, in Electrical Installation trades'

Introduction

The focus of governments at all levels has been on Technical and Vocational Education and Training (TVET) due to its ability to forestall skill shortages and enhance manpower development. The Federal Government of Nigeria (FGN, 2004) conceptualized TVET as a comprehensive term referring to those aspects of the educational process in addition to general education involving the study of technologies and the acquisition of practical skills, attitudes, understanding, and knowledge in various sectors of economic and social life. Oke and Olakotain (2018) stress that the training of students in technical colleges would enable them to acquire vocational and technical skills, explore them as an individual to career awareness by exposing useable options in the world of work, also stimulate creativity or creative thinking skills among the youth (FRN, 2013). The technical and vocational training is based on the production of technicians and craftsmen for the sustainable development of society at large.

School workshops serve as compartments where all practical and training facilities are kept for practical works and manual training of students (Danjuma, 2008; Amenge, 2013). They are places where students can acquire practical skills that would enable them to fit for employment opportunities and be employable in the world of work (Ogundola & Bakara, 2010). To equip students with practical skills, the school's workshop facilities and training materials cannot be overemphasized. Therefore teachers would prepare their students and equip them with adequate practical skills. Likewise, the researcher has observed that inadequate workshop facilities may have some negative

effects on the acquisition of students' practical skills.

Skill is an acquired attitude and behavior after exposure to the principles of operational theories, often applied to workshop practices in the field of electrical installation and maintenance practice. Nwokike (2013) cited in NTEB (2001) reported that the goals of electrical installation and maintenance practice is to give adequate workshop skills that may make students to be fitted in the world market. Skill is the capacity to do something or create things in different ways with a degree of proficiency, resulting from certain attitudinal patterns to speed, and accuracy (Okoro 2006, Nwokike, 2014). Skill acquisition in technical college varies from one trade to another. In electrical installation and maintenance practice, there are various skills that students can specialize in, because it is a broad trade that comprises practical skills, such as; domestic installation, industrial installation, cable jointing, and winding of electrical machines (NBTE, 2001)

The goals of the National Board for Technical Education (NBTE, 2001) on cable jointing is to provide students with the appropriate techniques and knowledge of various procedures of cable jointing, terminations, installation of underground cables, practices of overhead wires, and cable installation. Therefore to achieve these skills, different kinds of tools, equipment, and machines with different types of cable sizes, such as; 1.5mm², 2.5mm², 4mm², and 16mm² among others are needed (IEE, 2005). According to NBTE (2001), the specific goal of Technical College is to provide learners with adequate knowledge and sufficient practical skills that would enable students to wind or rewind both AC and DC rotating motors, with good working conditions and functional

tools, equipment, and machines. Therefore, at any technical college where training materials are not available, the wrong approach will be applied to the teaching and learning process, especially during practical activities. Also, teaching will be inefficient and students will be ill-equipped with practical skills. Electrical installation and maintenance practice being one of the trade courses offered at technical colleges, exposes students to various skills. According to Okechwu and Reagen (2017), Electrical Installation and maintenance practice is a programme introduced to expose students to the practical maintenance of the electrical systems in electrical installation, inspection, and test procedures.

According to the National Board for Technical Education (NBTE) (2001), electrical craftsmen and technicians are expected to acquire practical skills that would enable them to test, diagnose, service, install, and completely repair any fault on electrical machines and equipment, using the manufacturer's manual. NBTE use the most recent publication from NBTE also reported that the goals of electrical installation and maintenance practice are to give training and impact to students the necessary skills that would lead to the production of technicians, craftsmen, and other skilled personnel who will be enterprising and self-reliant.

Therefore, students, who undergo training in electrical installation and maintenance practice are expected to possess the relevant practical skills that would enable them to carry out domestic installation, industrial installation, installation of machines and equipment, maintenance of machines and equipment, winding of electrical machines, testing and inspection of

electrical installation, repair of electrical machines among others.

Acquisition of practical skills according to Awotunde in Azonwu (2017) refers to expertise practical ability, dexterity, and tact. It is on the sequence of actions proficiency executed and usually displaying a flexible habit of acting, creative thinking, and behaving in such a way that the process becomes natural to individuals through repetition and practice. However, despite the goals of electrical installation and maintenance practice, various researchers have shown that technical college students studying electrical installation and maintenance practice have little or no skills to compete favorably with their counterparts around the globe on the field (Nwokike, 2014) ; (Azonwu, 2017)

Hence, it becomes imperative to investigate workshop skill acquisition acquired and displayed in electrical installation and maintenance practice among technical college students in Ondo State, Nigeria.

Statement of the Problem

Technical colleges are designed to prepare individual students to acquire practical skills, basic scientific knowledge, and attitude required as craftsmen and technicians at sub-professional levels. Thus, the pivot on which the practical skills acquired and displayed hinges in Vocational and Technical Education programmes is on facilities. In Ondo State, the researcher observed that electrical installation and maintenance practice students poorly displayed skills in electrical installation and maintenance practice. This might be due to the lack of adequate workshop facilities and the use of obsolete tools and equipment in the workshop. All these put together appear to be the major constraint of effective skills acquired and displayed

by the students in electrical installation and maintenance practice.

Purpose of the Study

The major purpose of the study was to investigate the workshop skill acquisition acquired and displayed in electrical installation and maintenance practice among technical college students in Ondo State, Nigeria.

- examined the skills acquired by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria,
- determined the skills displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria
- investigate the relationship between the skills acquired and skills displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria,

Research Questions

The following research questions were formulated to guide the study.

- What are the skills acquired by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria?
- What are the skills displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State?

Hypothesis

H₀: There is no significant relationship between skill acquired and skill displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State Nigeria.

Methodology

Research Design

A descriptive research design of the survey type was adopted for the study. Hence, the study focused on the observations and perceptions of the existing situation, describing and interpreting what concerns issues, conditions, practices, relationships, views, beliefs, and attitudes that were held on a workshop skills acquisition in electrical installation and maintenance practice among students in technical colleges in Ondo State, Nigeria.

The population was two hundred and thirty-nine (239) respondents from government technical colleges in Ondo State, Nigeria. The sample and sampling techniques consist of two hundred and three (203) which comprises one hundred and sixty-four (164) students, both in year three and year two, and (39) teachers that handle electrical installation and maintenance practice. The samples were chosen through a simple random technique. A structured questionnaire was developed by the researchers, Questionnaire (SADEIMPQ) for students, while Skill Acquired in Electrical Installation and Maintenance Practice Questionnaire (SAEIMPQTP) was designed for teachers. The questionnaire was validated by three experts from the Tests and Measurement, Vocational and Technical Education Department in the Faculty of Education, Ekiti State University, The instruments were structured on a five-point Likert scale type of Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly Disagree (1). The reliability of the instruments was ensured using Cronbach's Alpha reliability coefficient and the scores obtained are 0.78 and 0.75 for SADEIMPQ and SADEIMPQTP respectively. Copies of the questionnaire were distributed to the teachers and students by the

researchers and the research assistants appointed from each of the technical colleges in Ondo State.

Data collected were analyzed, using descriptive statistics, frequency counts, mean and standard deviation of t-test statistics. The research questions were answered, using frequency counts, mean and standard deviation. The hypothesis was tested with t-test statistics. The hypothesis

formulated for the study was tested at 0.05 level of significance.

Results

Research Question 1:

What are the skills acquired by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria?

Table 1: Mean ratings of practical skills acquired by students of electrical installation and maintenance (N = 203)

Skill acquired	Mean	S.D	Ranking
Domestic installation	3.71	0.73	1 st
Industrial installation	3.62	0.79	2 nd
Cable jointing	3.54	0.83	3 rd
Winding of electric machines	3.38	0.84	4 th

The table 1 shows that the mean rating on electrical installation skills acquired by the students ranges from 3.38 to 3.71. The most acquired skill was domestic installation. This is closely followed by industrial installation and average students acquired in cable jointing, while the students acquired the least skill in the winding of electric machines. However, the standard deviation which ranges from 0.73 – 0.84 indicated that the respondents are very

close in their ratings. This implies that practical skills acquired by students of electrical installation and maintenance practice range from domestic installation to the winding of electric machines.

Research Question 2:

What are the skills displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria?

Table 2: Mean ratings on skill displayed by students of electrical installation and maintenance practice (N = 164)

Skill Displayed	Mean	S.D	Level of display	Ranking
Domestic installation	2.94	0.73	Medium	1 st
Industrial installation	2.94	0.79	Medium	1 st
Cable jointing	2.68	0.83	Medium	3 rd
Winding of electric machines	2.58	0.84	Medium	4 th

Table 2 shows that all the items on electrical installation skills were displayed by students at medium level. The mean rating which ranges from 2.58 – 2.94 indicated that domestic and industrial installation were the most displayed skills, followed by cable jointing, while the least displayed skill was in winding of electrical machines. Also, the standard deviation

which ranges from 0.73 – 0.84 shows that respondents were very closed in their ratings. This implies that skills displayed at a moderate level by students of electrical installation range from domestic installation to winding of electric machines.

Hypothesis

H₀: There is no significant relationship between skill acquired and skill displayed by students of electrical installation and

maintenance practice in technical colleges in Ondo State Nigeria.

Table 3: T-test analysis of the relationship between skill acquired and skill displayed by students and teachers in Electrical installation and maintenance practice in technical colleges in Ondo State Nigeria.

Status	N	Mean	R	P	Remark
Skill Acquired	164	4.41	0.960	0.00	significant
Skill Displayed	39	4.40			

$P < 0.05$. ($r = 0.960$, $P < 0.05$).

Data contained in Table 3 revealed that the mean and standard deviation for the skill acquired and skill displayed by the students and teachers of electrical installation and maintenance practice was 4.41(0.00) and 4.40(0.00) respectively. The r- r-calculated value was 0.960. Since the p-value of 0.000 was less than 0.05 level of significance, indicating a positive relationship between skills acquired and skill displayed. This implies that the skills acquired by the teachers and students were the skills displayed by both students and teachers. Thus the null hypothesis was rejected. This implies that there is a significant relationship between the skill acquired and the skill displayed by the students and teachers of electrical installation and maintenance practice in Government Technical colleges in Ondo State, Nigeria.

Discussion and Findings

The findings shown in Table 1 revealed that the skills acquired by the technical college students of electrical installation trades in Ondo State, Nigeria. The findings show that the most acquired skill by the students of electrical installation was domestic installation. Followed by industrial installation and average students acquired cable jointing, while the students acquired the least skill in winding electric machines. These findings align with the position of NBTE (2001) which maintained that

electrical craftsmen and technicians are expected to acquire practical skills that would enable them to test, diagnose, service, install, and completely repair any fault of electrical machines and equipment, using the manufacturer's manual. The findings were in line with the view of Nwokike (2013) who reported that the goals of electrical installation trades are to give adequate training and impact the necessary skills to the students that would enhance their production as qualified Technicians, Craftsmen and other skilled personnel who will be enterprising and self - reliant.

The findings from the study also revealed the skills displayed by students of electrical installation and maintenance practice in technical colleges in Ondo State, Nigeria. The findings were corroborated by the position Nwokike (2013) who noted that students who undergo training in electrical installation and maintenance practice are expected to possess the relevant practical skills that would enable them to carry out domestic installation, industrial installation, installation of machines and equipment, maintenance of machines and equipment, winding of electrical machines, testing and inspection of electrical installation, repair of electrical machines. Also, the findings agreed with the view of Okechuwu and Reagan (2017) that electrical installation and maintenance practice is a programme introduced to expose

students to practical maintenance of electrical systems to be able to display acquired skills. Finally, the findings in the hypothesis revealed that there is a significant relationship between the skill acquired and the skill displayed by the students and teachers of electrical installation and maintenance practice in Government Technical colleges in Ondo State, Nigeria.

Conclusion

Based on the findings from the study, it could be concluded that skills acquired and displayed by students of electrical installation range from domestic installation to winding of electric machines. Practical skills acquired and displayed in electrical installation by students in technical colleges in Ondo State are highly dependent on adequate training materials.

Recommendations

Based on the findings of this study the following recommendations were made:

- The government should intensify efforts in providing adequate training materials that would enable students to acquire more skills in electrical installation and maintenance practice.
- Students of technical colleges should be encouraged to display skills in electrical installation and maintenance practice, particularly in the winding of electric machines.

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