

STRATEGIS FOR IMPROVING PRACTICAL SKILL ACQUISITION OF ELECTRICAL INSTALLATAION AND MAINTENANCE PRACTICE OF TECHNICAL COLLEGE STUDENTS IN NIGER STATE

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Abstract

Technical education is an important ingredient for the development of manpower and economic growth of any nation. This can only be realised if the required skills are acquired at all levels of the educational system in this country especially from the technical college level, through the proper provision of adequate tools, equipment and facilities and a comfortable learning environment and to also improving the condition of the teachers. This study was designed to find the strategies to be adopted to improve the practical skill acquisition of Electrical installation and Maintenance Practice by technical college students of technical colleges in Niger State. Related literatures were reviewed. Survey research design was employed. A total population of 124 was used for the study comprising principals, Electrical Installation teachers and students of Electrical Installation in TCII and TC III. The reliability of the Instrument was found to be 0.73. Mean and t-test statistics were used. The results of the study revealed that majority of the teachers do not have the required qualification as required by NBTE to teach effectively at the technical college.(i.e. a degree in technical education). There is also a shortage of tools, equipment and materials in the technical college's electrical workshops. It was therefore recommended among other things, that the Niger State Government should encourage the holders of National Diploma and Higher National Diploma to go for A PGD in technical education, while those with NCE to go for a degree. It should supply the technical colleges with enough materials for practical purposes.

Introduction

Historically, Nigeria in the past, prior to the arrival of the missionaries, experiences some sort of technology education in the form of traditional education in which children at that time were expose to real farming, weaving, blacksmithing, painting, sculpture decorating, hair plaiting etc. which enabled them earn a living during that time, there was no problem of unemployment, products of these technologies were even exported to other communities and nations. Traditional technology education in Nigeria was the backbone of whole traditional education. The basic concept of traditional technology education is mainly for skills development, the duration of training varies from one area to the other depending on the vocation to be learnt. Mohammed (1998) stated that Nigerian traditional system of education laid much emphasis on the development of technical skill among the youths. Labor and hard works were glorified and highly esteemed.

Technical education which is that form of education that leads to the acquisition of practical skills that enables an individual to be gainfully employed and be self-reliant, Okoro (2000) is regarded as major bedrock in the development programme for any nation because it occupies a unique position in the social and economic development of any nation, especially now that, technology is the language of development throughout the world. It include the study using knowledge, tools, equipment's and materials leading to the acquisition of skills to increase our potentials and solving problems in the ever-changing world we live in. Since technology is regarded as a tool of development and progress of nations, this led to the quest by several countries of the world for the acquisition and utilization of technology. In Nigeria today, this trend was quite recognized by the introduction of the 6 – 3 – 3 – 4 system of education in the early 1980s during the government of

AlhajiShehuShagari whereby equipment worth billions of dollars were purchased from Bulgaria and Russia for the take – off of introductory technology programme at junior secondary school levels (JSS) in Nigeria. This was done in order to boost the new discoveries and for proper acquisition of practical skills and the production of technical and vocational teachers. Alaberu, (2002) stated that this practical application of these new discoveries in science and technology results in the transformation of the under developed society to an advanced state.

Niger State was not left behind in the establishment of technical colleges for the continuation of courses after the J.S.S. levels. Six technical colleges were established, though one was inherited from Kwara State that is Government Technical College New Bussa, others are Government Technical College Eyagi-Bida, Government Technical College Minna, SuleimanBarau Technical College Suleja, Government Technical College Kontangora and MammanKontagora Technical College Pandogari. These colleges were meant to admit students who successfully completed their JSS and were found to be technically oriented. The colleges prepare students for National Technical Certificate (NTC) Examinations in Electrical Installation and Maintenance Work. Other fields include: Automobile Trades,

Despite Government effort in establishing these technical Colleges, many products of these colleges have little or nothing to show especially in Electrical Installation and Maintenance practice. This was manifested in the way the graduates of these schools pass out without appropriate employable skills and technical knowledge needed for technological take off. Many of them are unemployed, due to lack of appropriate skills from the colleges. Most of the problems associated were traced to lack of qualified teachers, well equipped workshop, lack of instructional material and lack of interest or guide on the side of students. Based on the forgoing facts therefore there was the strong indication that technical subjects were not taught well because there were no competent teachers and facilities that will facilitate technology education.

Statement of the Problem

Technical education is now gaining prominence in Nigeria with the sole aim of enhancing technological advancement of the nation, but the tutors of electrical installation and maintenance work are faced with challenges which tend to affect the effective teaching of the subject in the technical colleges of the state. One of the major problems hindering the teaching and learning technical subjects is its poor public image. Nsofor (1998) stated that technical education has a beautiful objective, but the attitudes of the general public towards it have not been favorable over the years. It was seen as education for the drop outs, never-do-well and the likes. This was manifested by the reactions of most parents at the end of JSS when their wards are posted to various schools based on their abilities. Some parents bluntly reject their wards posted to technical colleges on the ground that their children will be jobless on graduation.

There is no adequate contact between the colleges and industrial activities. Olaitan (1996) stated that this inadequacy results into dearth of skilled and incompetent technicians. However, Harmon (1997) identified three components for school-work transition programmes which included work based, school based and connecting activities. Unfortunately it seems that some of these teachers either lacked the methodsto adopt or the colleges are lacking the appropriate materials and tools for the teaching of electrical Installation at technical colleges in Niger state.

In order to improve the performance of Electrical Installation students of Technical colleges, this study therefore, is to determine the strategies to be employed in the improvement of practical skill acquisition by Electrical Installation and maintenance practice work in technical colleges in Niger state.

Purpose of the Study

The purpose of the study was to determine the strategies to be employed in the improvement of students' practical skill acquisition in Electrical Installation and maintenance work of technical colleges, especially in the area of methodology and availability of practical workshop facilities.

Significance of the Study

The study will be significant in the sense that it enriches the teachers of electrical installation with the most appropriate methods of teaching the course. It provides the electrical installation students with the basic and most appropriate ways of handling of tools and equipment to perform practical exercises. It provides the general public with information as to change their mind towards technical education in general. It provides the Government with information concerning the technical colleges to enable her make necessary provision of facilities to enable the colleges improve performance at the National Technical Certificate Examination.

Methodology

The design used for this study was a descriptive survey design. Nworgu (1988) defined survey design as one in which a group of people or item is studied by collecting and analyzing data only from a few people or items considered to be representative of the entire group. This survey is the most suitable for this study since it was sought to determine the strategies to improve practical acquisition in Electrical Installation in technical colleges of Niger state.

A structured questionnaire was used to determine the opinion of teachers, principals and students of technical colleges in Niger State.

The Area of Study

The area of the study comprised of three technical colleges in Niger state. They are Government Technical College, Eyagi-Bida, Government Technical College, Minna and Suleiman Barau technical College, Suleja.

Population of Study

The population of study comprises of all three principals, 19 Electrical installation work and maintenance practice teachers and the 102 students of Electrical installation Department. There is a total of one hundred and twenty four (124) respondents.

Method of data Collection and Analysis

A structured questionnaire was used for the study. The instrument was administered to the respondents personally by the researcher and two research assistants. The instrument consisted of two sections, Section A was on personal data while the second section dealt with the items addressing the issues of improving practical acquisition of practical skills in Electrical installation. The instrument was validated by experts in technical education in Minna. The reliability was determined using Cronbach alpha and was found to be 0.73.

Presentation and Analysis of Data

Below is the analysis of the data collected in respect of this study. The data were analyzed in accordance with the research questions formulated for the study.

Research Question 1: What were the methods used to improve students of technical college practical skill in electrical installation practical work?

Table 1: The means responses of students on the method used by the teachers to improve practical skills in electrical installation work

S/No	Questionnaire Items	Mean $\bar{X}$	Remarks
1	The teachers use lecture method to teach electrical installation in the class and in the workshop.	2.52	Agree
2	The teachers used demonstration method in the teaching of electrical installation and maintenance work.	2.25	Disagree
3	The teacher allows students to practice some simple electrical work in the workshop.	2.43	Disagree
4	The teachers give students exercises to practice on their own.	2.32	Disagree
5	The teacher allows students to practice the use of measuring instruments on their own.	2.37	Disagree
6	The teacher has the ability to operate the measuring instrument and use them effectively	2.65	Agree
7	Your teacher always use teaching aid during the practical period	2.40	Disagree
8	The teachers give to students' group practical assignments.	2.35	Disagree
9	There is enough period for practical electrical installation work on the college time table	2.55	Agree
10	The teachers have the practical knowledge to teach the subject well	2.26	Disagree
	Grand Mean	2.41	Disagree

From table 1 above, the respondents agreed with items 1, 6 and 9 with average mean of 2.57 on the methods used to improve practical skills in electrical installation work. They disagreed with items 2, 3, 4, 5, 7, 8 and 10 with average mean of 2.38.

Research Question 2: Are the Workshops well equipped for the acquisition of practical skill in electrical installation work?

Table 2: The means response of the teachers on the condition of the workshop for the acquisition of practical skills

S/No	Questionnaire Items	Mean $\bar{X}$	Remarks
11	The workshop is well equipped that motivate students interest to acquire the practical skill	2.42	Disagree
12	The material provided are adequate for effective teaching of electrical installation practical work	2.05	Disagree
13	The facilities provided in the workshop is accurate as recommended by the curriculum designer	2.21	Disagree
14	The measuring instruments provided in the workshop are enough for each students practical work	2.09	Disagree
15	The attitude of teachers towards students in the workshops encourages the students' acquisition for practical skill.	2.84	Agree
16	The population of the student is adequate compared with the equipment available in the workshop	1.91	Disagree
17	The syllabus in Electrical installation in relation to acquisition of practical skill is adequate	2.48	Disagree
18	You have enough training to operate the equipment in the workshop	2.62	Disagree

19	Your department has adequate workshop and functional machines.	1.09	Disagree
20	The time allocated to students practical work in the workshop is enough	2.41	Disagree
	Grand Mean	2.25	Disagree

Table 2 above showed that the respondents agreed with only one item on the condition of the workshop in term of equipment for practical with a mean of 2.84, while they disagreed on all the other items with mean from 1.90 to 2.43.

Research Question 3: What are the strategies adopted for improving the teaching of practical electrical installation to enhance students' performance in the national technical examinations?

Table 3: Shows the mean response of the principals on the availability of materials and equipment for the teaching of electrical installation work

S/No	Questionnaire Items	X	Remarks
21	The curriculum of the electrical installation work is well designed to accommodate practical	3.33	AGREE
22	There is adequate text books in the college library	1.83	DISAGREE
23	The teachers have the required knowledge to teach the subject effectively	3.33	AGREE
24	There is reward for the best electrical installation student at NTC Examination	3.00	AGREE
25	Electrical installation teachers use instructional materials to support their teaching	3.00	AGREE
26	The available resources such as equipment, machines, and tools are well utilized	2.67	DISAGREE
27	Machine and equipment in the workshop are in good working condition	2.40	DISAGREE
	Grand Mean	2.82	Agree

Table 3, above shows that the respondents agreed with items 21, 23, 24, 25, and 26 with mean between 2.67 and 3.33 on the strategies adopted for improving the teaching of electrical installation practice. They disagreed with item 22 and 27 with average mean of 2.15

Discussion of the Findings

The analysis of the result revealed that 124 questionnaires were distributed to the respondents in the three technical colleges of Niger State, with a total of 116 questionnaires were returned constituting 93.5%. The students that responded are in TCII and TCIII.

The study revealed that the principals of the colleges were master degree holders. It revealed that 23% of the teachers have first degrees, 34% have Higher National Diploma and 25% have NCE (Tech) and 23% have National Diploma. From these analyses of the teachers' qualification, it reveals that some of the teachers do not have teaching qualification and as such do not have enough method of teaching.

In a research carried out by Gada (2003) on strategies for improving practical skills in woodwork technology, in Kaura and Jema'a Local Government Area of Kaduna State, also discovered that many teachers did not have the practical knowledge to teach the subject effectively.

Therefore, the discussion of the findings of this study was based on the finding revealed by the items of the research questions. Based on the student response on the method used to improve practical skills in electrical installation practical work, in table 1 it revealed that facilities provided for teaching electrical installation practical work are not well maintained. As in line with the view of Akinlabi (1999) he agreed that 'facilities in vocational and Technical Education are those goods and services that help to facilitate teaching and learning in the educational set up. It was also revealed that the colleges do not have standard workshops which will provide the students with practical background. According to Omole (2003), he stated that "standard workshop in technology education is a place whereby technicians are produced through formal system of training and consequentially acquire the skills for manpower development."

As regards to the use of teaching aids, and the use of measuring instruments during practical period to teach the students, virtually not enough needed number were used, as revealed in the analysis of the data collected from the students. To achieve more knowledge on practical works, teachers should make use of teaching aids as noted by Fajim (2003). "The study of technology, without doubt require well equipped laboratories, workshop, tools, teaching aids and equipment if relevant skills are to be acquired by the students. The importance of adequate qualified teachers cannot be overemphasized, as it is obvious that teachers play vital role in the implementation and determination of a successful achievement of any educational goals. But however, the study revealed from the data collected that some teachers were not qualified to teach the practical aspect of the subject as the response of the students disagree that some teachers have the practical knowledge. In line with Omosemo (1999), she argued that "In teaching and learning situation, the teacher should have the knowledge of the apparatus, teaching materials in order to teach effectively".

Analysis of data collected in table 2 on the acquisition of practical skills in electrical installation work, the findings revealed that the workshops were not equipped for effective teaching of electrical installation as submitted by Oyedemi (2003) who stated that the workshop of our technical colleges should be equipped with modern and relevant equipment.' The findings also reveal that the materials provided were not adequate for effective teaching of electrical installation practical work, Ekong (1999), lamented that "A vital aspect of the teaching and learning of practical work was the utilization of duly selected instructional materials. The finding further revealed that the equipment available in the workshop were not adequate compared with the population of the students. Isah (2003), contended that "Tools, equipment and machines supplied in the workshops of any discipline should be adequate in quantity and quality. The table further revealed that the teachers do not have enough training to operate the equipment in the workshop and also the time allocated to students for practical work is not adequate, which according to Tayo (1999), stated that lack of practical knowledge by the teacher is due to reliance largely on theoretical based course structure. "Also Ivowi (1996) identified the problem of the time acquisition as "lack of adequate engineering and technological infrastructures in our colleges".

Conclusion and Recommendations

From the data collected and analyzed from the study, it was revealed that many teachers were not practically experienced and they do not go on refresher courses as a result do not put in their best. This has led to poor performance on the side of the students during the promotional and final NTC examinations. Other factors include teachers not able to cover their syllabus before the end of the term, inadequate facilities, standard workshops, instructional facilities, libraries and relevant books. This has greatly led to lack of interest on the side of the students and hence led to their poor performance in the final year National Technical Certificate (NTC) examinations.

Based on these findings therefore, the following recommendations were given to guide all concerned for the improvement of the performance of these students both in practical skills and performance in the NTC examinations.

- (i) Government should make teaching profession very lucrative and attractive like is done with medical, oil companies, banks etc. and give regular promotions and advancement for technical teachers.
- (ii) Concerted efforts should be made in making all workshops in technical colleges well equipped, provide adequate instructional materials, standard text books, etc.
- (iii) In-service training should be encouraged and made compulsory to all technical teachers at least two years after employment.
- (iv) Communities where these technical colleges are located should assist the college by providing some facilities that are lacking to show government that they also contribute to learning in their locality.
- (v) Government should encourage teachers with National Diploma and Higher National Diploma to go for a PGD in technical education while those with NCE Technical to go for a degree in technical education.

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