APPLICATIONS AND MAINTENANCE TECHNIQUES OF ELECTRICAL TOOLS AND EQUIPMENT FOR INSTRUCTIONAL DELIVERY IN EKITI STATE TECHNICAL COLLEGES

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Abstract
Electricity is an integral utility in modern society with links to everything from a human's subconscious fear of dark to the practical need for working illuminations in an industrial world. For safe utilization of electricity, Electrical Installation and Maintenance Practice (EIMP) were introduced into Technical Colleges. Application and maintenance techniques of electrical tools and equipment for effective instructional delivery were empirically investigated in this paper. This study was guided by a research question. The instrument used for the study was Application and Maintenance Technique of Electrical Tools and Equipment for Instructional Delivery Question ("AMETEDQ"). It was discovered that as important as electrical installation and maintenance practice is to human needs, majority of things needed to keep it fit for its function were not provided or installed. For up keep and preservation of equipment and systems that supply electricity to our residential, industrial or commercial building as well as sustenance of functional instruction in technical colleges. It was recommended that stakeholders of technical colleges should make funding of these institutions a priority. Electrical installation and maintenance practice should be equipped with tools and equipment that will enable them embark on all techniques of maintenance and technical college should be made compulsory for Nigerian children so that the acquisition of entrepreneur skills can be enforced which will drastically reduce current dependence of government employment among others. A reliability co-efficient of 0.68 at 0.05 significant level was obtained which was considered high enough for the study.

Background
It is axiomatic that if there is no tendency for failure or malfunctioning of a system, there is no need for maintenance because there is no system that does not need maintenance. All manufactured tools and equipment generally have a very good, useful and durable life provided a culture of maintenance is kept and observed by the users.

Maintenance as explained by Olaitan, Nwachukwu, Igbo Onyemachi and Ekong (1999) means taking specific approved steps and precautions to care for a piece of equipment or facility to ensure that it attains its specific maximum functional self-life. In practice they identified three types of maintenance as preventive, predictive and corrective maintenance.

Culturally, maintenance involves such activities as:

1. Regular routine-checks of equipment, machinery and facilities ensuring adequate, cleaning and lubrication.
2. Proper storage system and good inventor y
3. Making adequate checks when there are danger signals and
4. Prompt repair of equipment, machinery and facilities.

Olaitan et al (1999) stressed that when these activities are practiced in the laboratory or factory it will facilitate the respect for honest labour and straighten the ideas of the dignity of labour. Furthermore, maintenance culture involves the acceptance of any society or community to practice maintenance as an integral aspect of her philosophy. This fact has been a missing link in Nigeria as a society. It is this gap that creates "I don't care syndrome" into the minds of the citizens regardless of their status. Practical evidence include packing off of railway, telecommunication, textile industries, etc. a situation that violently increase unemployment and aggravate other gross indiscipline.

Electrical technology as revealed by Hughes (2011) is a subject which is closely related to the technologies of machines, heat, light and sound. Talking about electrical technology as a subject, it will be too involving for this write up to deal either in part or whole with the subject. Rather this study deals with electrical technology at grassroots, which has always been the interest area to all and sundry because of the peculiar nature of electricity.

All occupations have their tools and equipment which make them to be useful and adaptable to human use. Application and maintenance technique of electrical tools and equipment for effective instructional delivery aimed at showing the involvement of electrical stakeholder in providing maintenance of electrical tools and equipment with other relevant learning experiences that will aid uninterrupted instructional delivery. The stakeholders in this regard are the laboratory technologists and technicians as well as the electrical teachers that are involved in passing instruction to the student in technical colleges which is the centre focus of this study. This study is very essential at this crucial period when everything in life revolves around electricity.

Electricity as described by Dictionary.com (2014) is an integral utility in modern society with links to everything from human's subconscious fear of dark to the practical need for working illuminations in an industrial world. It is very important to us (human beings) because it enables us to use machines such as T.V sets, ovens, air conditioners and fans which make our life easier. It is also responsible for modern technology. To crown it all, essayforum.com (2014) submitted that a vast of numbers of machines which are inverted nowadays cannot be operated without electricity e.g clipper, pepper grinder, up to cranes in industries. Practically, electricity is found very useful in the following four major areas: industry, public health, media and communication.

In view of the importance of electricity to the society, the electrical installation and maintenance practice as indicated by National Board for Technical Education NBTE (1987) the programme is intended to provide the trainee with the knowledge and skills to enable them to install, maintain and repair domestic and industrial equipment and machine. This is sequel to the Federal Republic of Nigeria "FRN" (2004) which mandated all students as part of her education policy the acquisition of technical and vocational skills for commercial and economic development of the nation.

Technical colleges as the principal vocational institutions in Nigeria is fully responsible for training of candidates in various trades in which electrical installation and maintenance practice is one. With the recent splitting of courses in technical colleges into core, related and education courses, the usual practical period that enables students to engage in one practical work or others were scraped. Related and education course are mainly theory that focuses more on social issues rather than technological information that call for repair installing or analyzing. Apart from introduction of irrelevant courses inadequate learning materials and acute shortage of manpower trailed all trades in technical colleges including electrical installation and maintenance practice. Many candidates graduate without practical experience due to incompetency. Electrical installation and maintenance practice students are no longer seen practice after graduation, instead they now engage in "Okada" business. This is a serious problem as the situation will continue to compound the already critical unemployment, and the social vices that is being experience in the society as a result of joblessness. This situation is a serious threat to economic growth and development of Nigeria as a developing nation.

Statement of the Problem

The inability of electrical installation and maintenance students to practice effectively when in the school and after graduation reveals that the environment for training Electrical Installation and Maintenance Practice is no more replica of the environment they are to work after graduation. This situation is indeed a

serious threat to economic growth and development of the nation since the inception of the National Policy on Education, particularly on vocational technical education about three decade ago. Things suppose to have been taking a positive dimension on self employment and self reliance but the reverse has being the case. This situation has left much to be desired.

Purpose of the Study

This study intends to investigate the non performance of Electrical Installation Practice students after graduation in Ekiti State technical colleges. Specifically, the student intend to:

(1) Verifying if the training environment is a replica of environment where students will work after graduation
(2) Investigate the problems associated with training of Electrical Installation and Maintenance Practice trade
(3) Identify the instructional material needs of Electrical Installation and Maintenance Practice trade.

Research Questions

The following research questions was raised to guide the study

(1) To what extent is the training environment of Electrical Installation and Maintenance Practice trade is a replica of where students are to work after graduation?
(2) What are the difficulties associated with the training of Electrical Installation and Maintenance Practice trade?
(3) What are the instructional material needs of Electrical Installation and Maintenance Practice trade?

Design of the Study

A survey research design was employed in the study. The design is considered suitable because it focuses on people, their opinions, attitudes, motivation and behaviour (Osuala, 2000).

Area of the Study

The study was carried out in the technical colleges that provide training for electrical installation and maintenance practice in southwestern region, Nigeria. Private technical colleges and those in other regions were not studied.

Population of the Study

The population of the study comprises all the 15 electrical teachers, 15 technicians and 10 workshop attendants in the electrical installation and maintenance practice trade in all the technical colleges. In all, a total of 40 respondents were used for the study no sampling was carried our since the population is of manageable size.

Instrument for Data Collection

The instrument used for data collection is Application and Maintenance technique of Electrical Tools and Equipment for Instructional Delivery Questionnaire ("AMETEDQ")

"AMETEDQ**"** consisted 10 items which elicits information from the respondents. It was based on 4 Likert scale of Adequately Provided –AP, Provided-P, Inadequately Provided –IP and Not provided – NP

Validity

"AMETEDQ" was validated by two lecturers in the department of Technical Education, Ekiti State University, Ado-Ekiti. Their content and input were carefully incorporated.

Reliability

Reliability of "AMETEDQ" was established through a test-retest method. Copies of the instrument were first administered on 40 electrical stakeholders outside the study area. The same was repeated on the same people a week after the first administration. The reliability of the instrument was determined by

computing the correlation of co-efficient. A value of 0.68 was obtained at 0.05 level of significant, which was considered high enough.

Method of Data Collection

The instrument was carefully administered by the researcher and his research assistant collectively. A period of three days was given to the respondents after which the instrument was returned. The collection was done collectively by the researcher and his assistant who ensures 100% returning rate.

Method of Data Analysis

A simple percentage statistical tool was used. The data for this study were analyzed and presented based on the research question generated to guide the study.

Research Question 1

Table 1: Responses of Respondents on the Replica of Environment of Training Electrical Installation and Maintenance Practice student and where they are to work after graduation.

S/N	ITEM STATEMENT	AP(%)	P(%)	IP(%)	NP(%)	DECISION
1.	Maintenance techniques like preventive, predictive and corrective	0	0	10	90	NP
2.	Electrical installation and maintenance in the school	0	0	5	95	NP
3.	Millennium compliance study environment for Electrical Installation and Maintenance Practice	0	0	85	15	NP
4.	Related practical work after theoretical class work	0	0	5	95	NP
5.	Visit to industry for Electrical Installation and Maintenance practice work weekly or termly	0	0	15	85	NP
6.	Hazard incentive for Electrical Installation and Maintenance Practice students	0	0	0	100	NP
7.	Industrial work experience for Electrical Installation and Maintenance Practice students	0	0	15	85	NP
8.	Practical exhibition like industrial trade fare for products	0	0	10	90	NP

The above table reveals that all respondents submitted that items that would have bring about a replica environment of technical training of Electrical Installation and Maintenance Practice student and where they are to work after graduation were not provided. Items 3 and 7 of the table reveals that visit to industry of Electrical Installation and Maintenance Practice and Industrial work experience were inadequately provided which implies that they are poorly provided. Other items i.e 1,2,4,5,6, and 8 reveals complete non provision of the requirement that could have made school training of Electrical Installation and Maintenance students are replica of the industry or environment where they would work after graduation.

Research Question 2

Table 2: Response of Respondents on the problems associated with the training of Electrical Installation and Maintenance Practice students

S/N	ITEM STATEMENT	AP(%)	P(%)	IP(%)	NP(%)	DECISION
9.	Fund as the basic need for practical instruction in Electrical Installation and Maintenance Practice	0	0	15	85	NP
10.	Adequate information on the importance of courses in technical colleges	0	0	15	85	NP
11.	Atmosphere that can arouse interest of students for high enrolment in technical course at technical colleges	0	0	05	95	NP
12.	. Administration standard that can allow competition for school certificate holders enrolment in Electrical Installation and Maintenance Practice	0	0	0	100	NP

13.	Readily available job for Electrical Installation and Maintenance Practice students after graduation	0	0	0	100	NP
14.	Hazard incentives for teachers and students of Electrical Installation and Maintenance Practice	0	0	0	100	NP
15.	Instructors and Workshop/Laboratory assistant's trip on seminar, workshop and in service trainings	0	0	5	95	NP
16.	Means of societal recognition of Electrical Installation and Maintenance Practice trade in technical colleges	0	0	0	100	NP

Result

Table 2 above shows the responses of the respondents on the problems associated with the training of Electrical Installation and Maintenance Practice trades in technical colleges. Items 9,10,11 and 15 reveals inadequate provision of what would have alleviates problems associated with the training of Electrical Installation and Maintenance Practice students. In other words, items 12,13,14 and 16 reveals absolute absence of provisions for situation that would have enhance problem free trading of Electrical Installation and Maintenance students. With the higher percentage of not provided of items 9,10,11 and 15 as revealed on table 2, one can conclude that the percentage of inadequately provided is insignificant to that of not provided. This implies that what would have reduced training difficulties in technical colleges particularly Electrical Installation and Maintenance Practice trades were not provided at all in technical colleges. This is evidenced in items 9-16 which consecutively reveals 85%, 85%, 95%, 100%, 100%, 100%, 95% and 100 percent of the non provision of situation desired for problem free training of Electrical Installation and Maintenance Practice Students in technical colleges.

Research Question 3

Table 3: Reponses of Respondents on the instructional material needs of Electrical Installation and Maintenance Practice trade.

S/N	ITEM STATEMENT	AP(%)	P(%)	IP(%)	NP(%)	DECISION
17.	Tools and equipment for practical work	0	0	75	25	NP
18.	Materials for practical work	0	0	85	15	NP
19.	Standard laboratory for Electrical Installation and Maintenance Practice practical work	0	0	5	95	NP
20.	Demonstration site for power related practical works	0	0	0	100	NP
21.	Cost estimate demonstration market	0	0	0	100	NP
22.	Complete installation testing laboratory	0	0	0	100	NP

Result

Table 3 above reveals the responses of the respondents on the instructional materials needs of Electrical Installation and Maintenance Practice trade in technical colleges. As it can be seen items 17-22 reveals non provision of instructional material that would have catered for effective instructional delivery in Electrical Installation and Maintenance Practice trades in technical colleges. This neglect or non provision is the foundation of incompetence experience among the graduates of Electrical Installation and Maintenance Practice.

Discussion

The results of the finding of the study from table 1 to table 3 reveals information for discussion. Table 1, revealed that environment for training Electrical Installation and Maintenance students is not at replica of where they are to work after graduation. Consistently, evidence abound from Research question 1 that maintenance technique like preventive, predictive and corrective as well as Electrical Installation and Maintenance are not provided in the schools. This confirms Olaitan et al (1999) that vocational education is

not functional because of lack of maintenance culture. This affects Electrical Installation Practice as a trade. Non availability of tools and equipment for practical and related practical work after theoretical class work are seen as factors that negates the replica of study environment and work environment as required by vocational technical education (Boffy 1990). Practically, visit to industry as a co-training partner to Electrical Installation and Maintenance Practice training institutions has not been possible for trainees because of death of industries in this state of study. It is in consonants with Olaitan (1996) non availability of industries in most areas where technical colleges are sited create problems for making the training area a replica of the industry. Apart from other pressing issues which negates the replica of institution of study and work area, students industrial work experience scheme has not gone far in achieving its goal because of distance, time and period of the scheme.

For the sake of this paper, problems associated with the training of Electrical Installation and Maintenance Practice student include non availability of fund, denying of needed incentives to training providers, lack of adequate information on the importance of course in technical colleges, non arousing atmosphere for enrolment competition, poor admission standard, lack of jobs for Electrical Installation and Maintenance Practice grandaunts, denial of hazard incentives for Electrical Installation students, and non recognition of technical colleges by the general society constitute a great problem for training Electrical Students, in Ekiti State in particular and Nigeria as a whole. Without meeting or solving the above problems enumerated it will difficult to meet the demand of the recommendation of UNESCO (2004) on how technical education can produce a desired goal for societal needs.

Finally, instructional material are found to be absolutely or inadequately supplied to technical school especially in Electrical Installation and Maintenance Practice trades. The table 3 reveals areas where these instructional materials were short supplied or not supplied at all. This situation calls for urgent provision of instructional materials raised in the item statements.

Conclusion

To guarantee readily available job for graduates of Electrical Installation and Maintenance Practice from our technical colleges, a conducive means must be created which must work in concert to make the technical college as a study environment a replicate of the area where the Electrical Installation and Maintenance Practice will work after graduation. Different maintenance practice available (preventive, predictive and corrective) done in the industry must equally be carried out in schools. Maintenance in training school must be maintenance outside the school. Efforts need to be intensified for meeting the millennium goals on technical college in general and Electrical Installation and Maintenance Practice in particular.

In the same vein, fund as a barrier for adequate preparation of Electrical installation and Maintenance Practice Students and denial of trainers of right incentives actually compounded the problem of producing competent Electrical Installation and Maintenance Practice graduates. Non availability of job for Electrical Installation and Maintenance Practice graduates and poor attitude of the general society contributes to the problems responsible for inadequate performance of Electrical Installation and Maintenance Practice students. Finally, for effective instructional delivery in Electrical Installation and Maintenance Practice trade, and technical college in general, issues of dearth of instructional material need to be addressed.

Recommendations

Based on the study, the following recommendations are made

1. Stakeholder of technical colleges should make funding of these institutions a priority
2. Electrical installation and maintenance practice should be equipped with tools and equipment that will enable them embark on all techniques of maintenance
3. As demanded by the millennium goal, all technical colleges should be made conductive for learning. The school environment must be millennium goal compliant.
4. Awareness should be created on the importance of electricity to the society so that others can join in funding the technical colleges

5. Teachers, instructors, laboratory or workshop attendants should be allowed to attend trainings that will enable them to refresh their knowledge.
6. Technical college should be well equipped for all Nigeria children so that the entrepreneurial skill can be instill in the students which will be of help to self-employment
7. Technical college should be made compulsory for Nigerian children so that the acquisition of entrepreneur skills can be enforced which will drastically reduce current dependence of government employment.

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