



Assessment Of Technical Competency Needs Of Electrical Installation And Maintenance Work Teachers In Vocational Training Centres For Effective Skills Acquisition Delivery In The North-East Zone, Nigeria

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ABSTRACT

Vocational Training Centre is a one year programme particularly in Yobe State, which is designed to produce technical skilled manpower at craft level who should either take up job opportunities in public and private sector or be self-employed. The entry requirement for the Vocational Training centres in Yobe State, is any O'Level certificate of education. For the programme to be successful, the teachers need to be technically competent. Therefore, this paper intends to assess the technical competency needs of electrical installation and maintenance work teachers teaching in Vocational Training centres in Yobe state, which the assessment is based on the NABTEB module of electrical installation and maintenance work. The study employed a descriptive survey research design. Questionnaires titled "Technical Competency Needs of Electrical Installation and Maintenance Work Teachers in Vocational Training centres" (TECON) was developed by the researcher and used for the data collection. The instrument was administered to thirty five (35) electrical installation and maintenance work teachers in the centres. The results showed that majority of the respondents believed that they needed technical competency retraining in all the three areas of the trade module of electrical installation and maintenance work.

Keywords: cutting speed, feed rate, surface roughness, build – up edge, wearing, cutting fluid.

INTRODUCTION

Vocational Training Centres' programme in Yobe state is a one year single modular programme that is a National Business and Technical Education based curriculum. The objective of the programme is to impart the necessary skills and knowledge in various trades required by the students for self- reliance after graduation (National Directorate of Employment, NDE, 2013). Moreover, electrical installation and maintenance work trade is one of the trade offers in the vocational training centres that aimed at building technical competency for the students. In addition, to examining the students for the acquisition of this competency, students are taught some component subjects such as English, Mathematics, etc but are not included in their final examination. Hence, they do single-modular Nabteb Examination, which often conducted in December.

Therefore, the success for students to realize the objective of vocational training centres largely depends on the quality of their teachers who teach and impart skills. Hence, teacher needs to play crucial roles in

achieving academic objectives. This is supported by the National policy on Education which states that no education system can rise above the quality of its teachers (FRN, 2009). Therefore, the effectiveness or ineffectiveness of teaching is highly linked to teacher competence. Subtly, the effectiveness of all educational programmes is dependent largely on the devotion and competency of teachers who constitute in the educational system (Adamu, 2008).

Therefore, competency is the ability to perform a particular task properly (Spring, 2007). This is supported by James (2013), which states that competency is a cluster of related knowledge, skills, abilities that affects a major part of one's job that can be measured against well-accepted standards, and that can be improved via training and development. Competency of technical persons with executive function shall be verified and attributed on the basis of evidence that the person has the necessary skills required for the scope of work (including practical skills where appropriate), can act competently across the specified range of activities, and has the relevant knowledge and understanding of the underpinning competency (James, 2013).

Teachers' competency is the ability of the teacher to impart the relevant skills, knowledge and methods consistently over time to meet the expected performance of students (Mark, 2011). There are two aspects of teacher's competence, as posited by Mark (2011), the competency in the subject area and the pedagogical competency; the application of methods relevant to effectively participate in the classroom is the pedagogical competency, while the essential skills and knowledge found in the subject area is the technical competency. Kenneth (2012), further stressed that the content knowledge which refers to one's understanding of the subject matter, is a technical competency. While, pedagogical competency is a knowledge of one's understanding of teaching and learning processes independent of subject matter. In the same vein, Golebniak (2012), stressed that two competency exist in teacher's ability: technical and pedagogical competency. Technical competency donate a set of trainable skills and abilities which make a teacher effective in performing a tasks in the content of his subject; pedagogical competency donate developing student's understanding through instructional strategies that are appropriate to the subject matter. However, this study is on the technical competency aspect.

Therefore, the technical competency possessed by teachers enables them to prepare individuals for self-reliant and useful living in the society. Teaching without proper grasp of the subject area is more than a waste of time because the end result can only be the effective spread of ignorance (Adamu, 2008). It is obvious that competent technical teachers lead the implementation of vocational training programme in their trades contained in the National Business and Technical Examination Board, NABTEB. The electrical installation and maintenance work trade has three certifiable modules, namely;

- (i) Domestic electrical installation and maintenance
- (ii) Industrial electrical installation and maintenance
- (iii) Rewinding of electrical machines (NABTEB, 2006).

However, acquisition of technical skills in electrical installation and maintenance work can only be effective if teachers in the trade are competent and knowledgeable in both theory and practical. Students' quickly loose respect and confidence in the teacher who is ineptitude at the trade or occupation he professes to teach. Thus, electrical installation and maintenance work trade teachers have to show mastery in both theory and practice of the trade. Teachers of Electrical installation and maintenance work trade in vocational training centres have varying knowledge and skills depending on their training and teaching experience. Hence, some are experienced teachers with at least six (6) years teaching experience and others are inexperienced teachers with less than six (6) years teaching experience.. Therefore, for Electrical installation and maintenance work teachers to have a consistent technical competency, despite their varying training and teaching experience, they must be refreshing and updating their knowledge and skills in their subject matter.

The existence of staff development programme for the improvement of teaching force is imperative, but such programmes should be specifically related to the instructional objectives (NBTE, 2007). Unfortunately, these programmes are often provided without first identifying the needs of the teachers (Sowande, 2002).The way of indentifying the competency needs of teachers is called Needs Assessment.

This Needs Assessment is a systematic way of identifying educational deficiencies or problems. It focuses not only on solutions for a specific problem or a way to solve a problem but also to identify educational problem areas (Yunus, 2008). The importance of technical competency needs of teachers derived from the needs of teachers, brought about by the curriculum change, advances in substantive knowledge and development of new instructional facilities, which combine to a complex, planned of technical competency needs. The skills and ability of administrative and instructional personnel in education institutions determine to a large extent the quality of the programmes offered (Obiano, 2006). Therefore, electrical installation and maintenance work trade can be effectively imparted at the vocational training centres, if teachers' technical competency needs are identified with a view to providing appropriate solution for the teachers (experienced teachers and inexperienced teachers) in mastering of their subject matter.

One of the objectives of technical education is to provide the technical knowledge and vocational skills necessary for economic development. This will in turn prepare youths for self-reliance. This is supported by the Federal Republic of Nigeria (2009) which stated that the objective of technical education is to provide technical training and impart the necessary skills leading to the production of skilled personnel who will be enterprising and self-reliant. To this end, skills acquisition centres are aimed at training individuals in various skills required for self-reliance.

However, despite the imperative of producing skilled and competent personnel for economic development, the electrical installation and maintenance work trade teachers seem lagging in practical execution in their subject matter in teaching students the trade. As observed by Sani (2011), that there is less skills in subject area by electrical installation and maintenance work teachers teaching in vocational training centres in Yobe State. The inability of many teachers to effectively impart the subject area to students is partly due to deficiencies in teachers' competency. There is obviously needs to identify the needs of those teachers in their subject area, in order to trace their areas of needs and weaknesses and to suggest ways of providing their needs for effective teaching of their students. However, if the teachers' deficiencies are left to unidentified, it will undermine the students' skills acquisition in electrical installation and maintenance work trade and will hamper the achievement objective of skills acquisition centres' programmes.

Research Questions

The following research questions are raised for the purpose of this study.

1. What are the technical competency needs of electrical installation and Maintenance work teachers for effective teaching of domestic electrical installation?
2. What are the technical competency needs of electrical installation and Maintenance work teachers for effective teaching of industrial electrical installation?
3. What are the technical competency needs of electrical installation and maintenance work teachers for effective teaching of rewinding of electrical machine?

Hypothesis

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

Ho₁: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Domestic electrical installation.

Ho₂: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Industrial electrical installation.

Ho₃: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Rewinding of electrical machine.

METHODOLOGY

The population of this study consists of all the 35 electrical installation trade teachers in Vocational Training Centres in Yobe State. This consists of 31experienced teachers and 04 inexperienced teachers in all the 11 vocational training centres, as shown in Table 1Below:

Table 1: Distribution of Electrical Installation Trade Teachers in Vocational Training Centres.(SAC)

S/N	Schools	Zone	Total Number of Teachers	Number of Experienced Teachers	Number of Inexperienced Teachers
1.	Vocational training centre Damaturu	A	4	3	1
2.	Vocational training centre Dapchi	A	1	1	Nil
3.	Vocational training centre Geidam	A	3	1	2
4.	Vocational training centre Goniri	A	4	4	Nil
5.	Vocational training centre Gadaka	B	6	1	Nil
6.	Vocational training centre Nangere	B	4	4	Nil
7.	Vocational training centre Ngelzerma	B	4	4	Nil
8.	Vocational training centre Potiskum	B	3	2	1
9.	Vocational training centre Gashua	C	1	1	Nil
10.	Vocational training centre JajiMaje	C	1	1	Nil
11.	Vocational training centre Nguru	C	4	4	Nil
Total=			35	31	04

Source: Yobe State Science and Technical School Board (2020)

Because of the small size of the population, the entire population was considered for the study, and therefore there was no sample and sampling technique for this study. The instrument for data collection was a structured questionnaire that was developed by the researcher. The instrument was titled “Technical Competency Needs of Electrical Installation and Maintenance Work Teachers in Vocational training centres” (TECON). The instrument was divided into two sections:-Section ‘A’ requested for personal data with respect to educational qualification and Section ‘B’ consisted of 70 items that provide answers to the research questions raised. A four points Rating scale was used to determine the level of competency needed using the response options of Highly Needed (HN) =4, Needed (N) =3, Slightly Needed (SN) =2, and Not Needed (NN) =1

The data generated for this study was analyzed using the statistical package for social sciences (SPSS). The mean and standard deviation were used in answering the three research questions. The hypotheses were also tested using t-test at 0.05 level of significance. For the decision rule, the real limit of numbers was used that any item with a mean of 2.5 and above, responses was regarded as a needed option and any item whose mean falls below 2.5 was regarded as not needed.

RESULTS AND DISCUSSION

Research question 1: *What are the technical competency needs by teachers of electrical installation and Maintenance work in effective teaching of Domestic Electrical Installation?*

Table 2: Mean and Standard Deviation of Responses of Teachers on Technical Competency Needed by Teachers for Teaching Domestic Electrical Installation

S/N	Competency in Domestic Electrical Installation. ability to:-	\bar{X}	SD	Remark
1.	identify common sources of hazard in Domestic electrical installation	3.17	0.98	Needed
2.	state ways of preventing hazard in Domestic electrical installation	3.26	0.95	Needed
3.	use safety equipment essential for domestic installation	3.20	0.90	Needed
4.	follow appropriate procedures in the event of a workshop accident	3.00	1.00	Needed
5.	apply statutory safety regulation for life, properties and environment	3.21	0.81	Needed
6.	identify electrical accessories on working drawing	2.59	0.92	Needed
7.	install the electrical accessories as indicated on the working drawing	2.66	0.97	Needed
8.	identify common types of protective devices	3.29	0.96	Needed
9.	install circuit breaker and fuses in electrical installation	3.17	0.95	Needed
10.	determine current rating of fuses in electrical installation	3.06	0.97	Needed
11.	visually detect electrical loose connection	2.71	0.86	Needed
12.	determine the cable size to be used for electrical circuit	3.24	0.99	Needed
13.	select appropriate wiring type for a building	2.97	0.98	Needed
14.	explain the concept of surface wiring	2.86	0.90	Needed
15.	use surface wiring tools appropriately	3.21	0.99	Needed
16.	carry out simple surface wiring of domestic building	2.91	0.99	Needed
17.	apply the IEE regulation on electrical domestic surface wiring	3.06	0.76	Needed
18.	explain the meaning of conduit	2.74	1.08	Needed
19.	identify types of conduits; flexible , steel and PVC conduits	2.79	1.01	Needed
20.	apply stuck and dice, hacksaw in conduit installation	2.91	0.77	Needed
21.	apply appropriate procedure for preparing conduit installation work	3.12	0.69	Needed
22.	select appropriate tools for conduit wiring	3.09	0.98	Needed
23.	explain the three types of electrical installation test	2.76	1.07	Needed
24.	carry out simple conduit wiring for a domestic building	2.74	1.14	Needed
25.	draw in cable using fish wire	2.65	1.12	Needed
26.	carry out continuity test of a conduit wiring	2.86	0.97	Needed
27.	carry out polarity test of a conduit wiring	2.80	0.01	Needed
28.	carry out earth leakage test of a conduit wiring	2.69	1.11	Needed
29.	identify tools used for cable jointing terminations	2.80	0.87	Needed
30.	Identify primary cells	2.76	0.92	Needed
31.	identify secondary cells	2.74	0.95	Needed
32.	explain the working principle of primary cells	2.88	0.91	Needed
33.	identify tools used in battery charging	2.85	0.96	Needed
34.	identify equipment used in battery charging	3.03	0.98	Needed
35.	prepare electrolyte for battery charging	2.94	0.94	Needed
36.	determine specific gravity of electrolyte	2.83	0.92	Needed
37.	determine charge conditions of a battery	2.97	0.92	Needed
38.	determine discharge conditions of a battery	3.00	0.91	Needed

Data presented in Table 2 shows the responses on competency needed in teaching DEI. Teachers of domestic electrical installation indicated that they needed in all the technical competencies. The table revealed that all the 38 technical competency items have a mean score ranged of 2.75 to 3.46 which is

above the decision point of 2.50. The teachers perceived they needed technical competency in all the items of domestic electrical installation.

Research question 2 : *What are the technical competency needs by teachers of electrical installation and Maintenance work in effective teaching of Industrial Electrical Installation?*

Table 3: Mean and Standard Deviation of Responses of Teachers on Technical Competency Needed by Teachers for Teaching Industrial Electrical Installation Industrial Electrical Installation

S/N	Competency in Industrial Electrical Installation ability to:-	\bar{X}	SD	Remark
39.	explain surface wiring for industrial installation	2.86	1.03	Needed
40.	explain simple conduit wiring for industrial installation	2.91	0.92	Needed
41.	explain the safety measure in carrying out surface wiring for industrial installation	2.97	1.04	Needed
42.	explain the safety measure in carrying out conduit wiring for industrial installation	3.09	0.95	Needed
43.	carry out a surface wiring system of an industry	2.66	0.91	Needed
44.	identify duct wiring of an industry	2.86	0.85	Needed
45.	carry out a trunking wiring system of an industry	3.00	0.87	Needed
46.	carry out a conduit wiring system of an industry	3.14	0.65	Needed
47.	state the advantages and disadvantages of ducts systems in Industrial electrical installation	2.94	0.91	Needed
48.	state the advantages and disadvantages of trunking systems in Industrial electrical installation	3.00	1.00	Needed
49.	use appropriate tools used in duct wiring	3.06	0.84	Needed
50.	use appropriate tools used in trunking wiring	3.09	0.85	Needed
51.	differentiate between motor and generator in electrical machine	2.71	0.99	Needed
52.	understand the use of starter for electric motors	2.80	1.05	Needed
53.	explain open circuit with examples in electrical installation	2.63	1.00	Needed
54.	explain short circuit with examples in electrical installation	2.60	0.95	Needed

Table 3 presents the mean scores and level of technical competency needs of teachers teaching industrial electrical installation in skills acquisition centres in Yobe state, Nigeria. The result of the data analyzed shows the respondents indicated that all the items are needed by IEI teachers for effective teaching.

Research question 3 : *What are the technical competency needs by teachers of electrical installation and Maintenance work for effective teaching of Rewinding of Electrical Machines?*

Table 4: Mean and Standard Deviation of Responses of Teachers on Technical Competency Needed by Teachers for Teaching Rewinding Electrical Machines

S/N	Competency in Rewinding of Electrical Machines. ability to:-	\bar{X}	SD	Remark
55.	apply safety precaution in rewinding of electrical machines	3.27	0.84	Needed
56.	explain winding of electrical machine is	2.76	0.92	Needed
57.	prepare and interpret simple wave winding drawing	2.77	0.88	Needed
58.	prepare simple lap Winding drawing	2.79	0.84	Needed
59.	describe winding insulation material	3.00	0.74	Needed
60.	identify front and back shields	2.76	0.83	Needed
61.	dismantle of machines systematically	3.06	0.89	Needed
62.	identify types conductor used in winding	3.15	0.96	Needed
63.	prepare winding formers	2.94	0.92	Needed
64.	prepare winding coil	2.97	0.72	Needed
65.	fix the winding coil in the slots ensuring that the slots are properly insulated	3.36	0.78	Needed
66.	test continuity and earthing	3.15	0.86	Needed
67.	apply vanish and dry in oven	3.06	0.83	Needed
68.	apply grease to the appropriate parts	3.15	0.99	Needed
69.	test voltage and current with voltmeter and ammeter respectively	3.32	0.91	Needed
70.	assemble the machine systematically; in ensuring that shields are in position	3.26	0.71	Needed

Table 4 presents the responses of the electrical installation and maintenance work

Table 4 presents the responses of the electrical installation and maintenance work trade teachers teaching rewinding of electrical machines on their perceived level of technical competency needs in the 16 technical competency items identified in rewinding of electrical machines. The teachers indicated that they need technical competency in all the items.

Hypothesis 1: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Domestic Electrical Installation.

The result is presented in table 5.

Table 5: Mean Response of the Respondents on Hypothesis 1.

Group	\bar{X}	SD	t-Cal	Level of Signif,	Remarks
Inexperienced	2.90	0.22	-11.42	0.05	Not Significant
Experienced	3.34	0.22			

$N_1=04$

$N_2 = 31$

Table 5 presents the t-test calculated value of technical competency needs of experienced teachers and inexperienced teachers in domestic electrical installation. The result in the table Inexperienced shows that, there is no significant difference between the mean response of experienced teachers and inexperienced teachers in the needs of technical competency in domestic electrical installation. Hence, the t-cal of -11.42 is less than the value of 0.05 level of significance. The null hypothesis (H_{01}) is therefore accepted, that both the experienced teachers and inexperienced teachers needed technical competency improvement in domestic electrical installation.

Hypothesis 2: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Industrial Electrical Installation.

To test null hypothesis 2, the data collected from the respondents were subjected to t-test analysis at 0.05 level of significance. The result is presented in table 6.

Table 6: Mean Response of the Respondents on Hypothesis 2.

Group	\bar{X}	SD	t-Cal	Level of Signif,	Remarks
Inexperienced	2.89	0.75	-1.27	0.05	Not Significant
Experienced	2.92	0.82			

$N_1=04$

$N_2 = 31$

Table 6 presents the t-test analysis of technical competency needs of experienced teachers and inexperienced teachers in industrial electrical installation. The result in the table shows that, there is no significant difference between the mean response of experienced teachers and inexperienced teachers in the needs of technical competency in industrial electrical installation. Hence, the t-cal of -1.27 is less than the value of 0.05 level of significance. The null hypothesis (H_{01}) is therefore accepted, that both the experienced teachers and inexperienced teachers needed technical competency improvement in industrial electrical installation.

Hypothesis 3: There is no significant difference between the mean response of experienced teachers and inexperienced teachers of Electrical installation and maintenance work on their technical competency needs for effective teaching of Rewinding of Electrical Machines.

Data obtained from the respondents were subjected to t-test analysis at 0.05 level of significance, the result is presented in table 7.

Table 7: Mean Response of the Respondents on Hypothesis 3.

Group	\bar{X}	SD	t-Cal	Level of Signif,	Remarks
Inexperienced	3.01	0.68	-1.14	0.05	Not Significant
Experienced	2.95	0.88			

$N_1=04$

$N_2 = 31$

Table 7 presents the t-test calculated value of technical competency needs of experienced teachers and inexperienced teachers in rewinding electrical machines. The result in the table shows that, there is no significant difference between the mean response of experienced teachers and inexperienced teachers in the needs of technical competency in rewinding electrical machines. Hence, the t-cal of -1.14 is less than the 0.05 level of significance. The null hypothesis (H_{01}) is therefore accepted, that both the experienced teachers and inexperienced teachers needed technical competency improvement in rewinding electrical machines.

Findings of the Study

The following are the findings of the study based on the research questions answered and the hypotheses tested.

1. Teachers of domestic electrical installation indicated that they needed technical competency in all the items. Such as, identifying common sources of hazard, ways of preventing hazard, use of safety equipment essential for domestic installation, selection of appropriate tools for conduit wiring, determining charge condition of a battery.

2. The 35 teachers of industrial electrical installation indicated high level of needs of technical competency in all the 16 items as presented in Table 3. The technical competency needed by the teachers in industrial electrical installation includes safety measure in carrying out conduit wiring, identifying duct wiring, use of starter in electric motors, knowledge of open-circuit and short-circuit in electrical installation.

3. The electrical installation and maintenance work teachers needed technical competency in rewinding of electrical machines in all the 16 items. Such as, ability to apply precaution in rewinding, prepare simple wave winding drawing, prepare simple lap winding drawing, identify conductor used in winding, describe winding insulation material, dismantle the machine systematically are needed as perceived by the respondents. Preparing winding coil, fixing the winding coil in the slots, testing of continuity and earthing, applying varnish, assemble the machine systematically.
4. In hypothesis 1, it revealed that, there is no difference exists in the mean response of technical competency needs by the experienced teachers and inexperienced teachers of domestic electrical installation.
5. In hypothesis 2, it indicated that there is no significant difference in the mean response of experienced teachers and inexperienced teachers on the needs of technical competency in industrial electrical installation.
6. In hypothesis 3, it shown that no significant difference exists in the mean response of graduate and non-graduate teachers of rewinding of electrical machines. Therefore, this revealed that both the experienced teachers and inexperienced teachers needed technical competency improvement in rewinding of electrical machines. Hence, the t-test calculated value is less than the level of significance which signified no difference.

DISCUSSION OF FINDINGS

The findings of the study are discussed based on the research question answered and hypotheses tested.

The electrical installation and maintenance work teachers needed technical competency in domestic electrical installation as revealed in research question 1 in Table 2. Such as identifying source of hazard, preventing hazard, use of safety equipment, appropriate procedure for tackling accidents, identification of electrical accessories on working drawing, installing of the electrical accessories as indicated on the working drawing, applying statutory regulation in domestic electrical installation. All the 38 items were found to be needed. Therefore, as far as the finding is concerned technical competency in teaching domestic electrical installation is needed because almost all the respondents perceived that, technical competency in teaching domestic electrical installation are needed.

These responses by the respondents buttressed what Mshelbwala (2008) noted as there is lack of adequate skills in teaching Domestic electrical installation by some vocational education teachers. Mbaga (2011) who conducted a study on the retraining needs electrical installation and maintenance work teachers, indicated that there is low level of possession of technical skills by teachers in domestic electrical installation module. However, effective teaching of any vocational education is rooted in adequate skills and knowledge of the subject matter.

Findings relating to research question 2 as in table 3 revealed that, the teachers needed the technical competency in industrial electrical installation in all the items. Such as the ability to explain safety measures in carry out conduit wiring in an industrial installation, carry out surface wiring in an industry, identify duct wiring in an industry, carry out trunking wiring system of an industry, are needed competency. The respondents also perceived that technical competency in the use of appropriate tools in duct wiring, appropriate tools in trunking wiring, understanding the difference between motor and generator, use of starter in electric motor are needed and so on. The findings also revealed that ability to explain open circuit, short circuit in an electrical installation are needed competency as perceived by the respondents.

These perceptions of the respondents cannot be diverted from what Mbaga (2011) and Halton (2014) when they individually noted that some teachers need skills in industrial installation for effective teaching.

Findings relating to research question 3 in table 4 showed that the teachers needed the technical competency in all the 16 items of rewinding of electrical machines. Such as ability to apply precaution in rewinding, prepare simple wave winding drawing, prepare simple lap winding drawing, identify conductor used in winding, describe winding insulation material, dismantle the machine systematically are needed as perceived by the respondents. Preparing winding coil, fixing the winding coil in the slots, testing of continuity and earthing, applying varnish, assemble the machine systematically are also needed as perceived by the respondents. This shows that in all the 16 items representing 100% are needed as perceived by the respondents.

The findings seem to agree with the position of Terrel (2004) that many electrical teachers need more improvement in winding of electrical machine. This goes in consonance with Ogbu (2004) conducted a research on technical competency needs of Brick/Block laying and Concreting teachers in technical colleges in Enugu and Anambra states of Nigeria, whose discovered that many technical teachers need update in theory and practical in most of the

identified technical competency for effective teaching of their trade. This also proved Mbaga (2011) that many electrical teachers need retraining in rewinding of electrical installation.

Findings relating to hypothesis 1 in table 5 indicated that the value of the calculated t of -11.42 is less than the 0.05 level of significance; therefore, the null hypothesis (H_{01}) was accepted. This implied that no significant difference between the mean responses of experienced teachers and inexperienced teachers of Electrical installation and maintenance work in the technical competency needs in teaching Domestic electrical installation. The result of the findings supports the position of Mshelbwala (2008) and Mbaga (2011) that there is lack of technical competency by some vocational education teachers in teaching of domestic electrical installation.

Findings relating to hypothesis 2 in table 6 showed that the calculated t of -1.27 is less than the 0.05 level of significance, therefore the null hypothesis was accepted, meaning that there is no significant difference between the mean responses of experienced teachers and inexperienced teachers of Electrical installation and maintenance work in the needs of technical competency for effective teaching of industrial electrical installation. The findings is in support of Mbaga (2011) and Halton (2014) that some teachers need skills (technical competency) in industrial installation for effective teaching.

Findings relating to hypothesis 3 in table 7 revealed that the calculated t of -1.14 is less than the 0.05 level of significance as such the null hypothesis is upheld, meaning that no significant difference between the mean responses of experienced teachers and inexperienced teachers of Electrical installation and maintenance work in the needs of technical competency required for effective teaching of Rewinding of electrical machine. The findings agreed with Terrel (2004) and Mbaga (2011) that many electrical teachers need improvements in rewinding of electrical machines.

Moreover, the findings relating to all the three hypotheses agreed with the findings of Diraso (2000) who discovered that no significant difference existed between trained and untrained technical teachers in competency needs in technical skills.

CONCLUSION

The findings of this study served as the basis for making the following conclusions:

The electrical installation and maintenance work trade teachers teaching in the skills acquisition centres in Yobe state needed technical competency improvement in all the items listed in domestic electrical installation, the result revealed that electrical installation and maintenance work trade teachers needed technical competency in all the 16 items of industrial electrical installation and the perception of experienced electrical installation and maintenance work trade teachers in skills acquisition centres do not significantly differ from the inexperienced teachers in terms of needs of technical competency in teaching all the aspects of electrical installation and maintenance work trade.

RECOMMENDATIONS

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

1. The incompetent electrical installation and maintenance work trade teachers that lack the ability and competency to follow appropriate procedures in carrying out domestic, industrial wiring as well as rewinding of electrical machines should be encourage by the employer and other relevant stakeholders to acquire the technical competency training of teaching vocational/technical subjects through, in-service and sandwich programmes.
2. Since it has been found that there is no significant difference in the mean response of experienced teachers and inexperienced electrical installation and maintenance work trade teachers regarding their technical competency needs in teaching subject matter, both should be expose to same training/programmes regarding technical/subject matter competency.
3. Government should also organize workshops/seminars to teachers of electrical installations on the use modern tools and equipment
4. Technical teachers training institutions should continue to imbibe ideas from its teachers for full implementation of the curriculum for the trainees to gain highly adequate technical competency.

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