



Pedagogical Skills Improvement Needs of Electrical Installation and Maintenance Work Trade Teachers for Effective Teaching in Technical Colleges in Kano State

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ABSTRACT

The study investigated pedagogical skills improvement needs of electrical installation and maintenance works trade teachers in technical colleges in Kano State. Three research questions and three null hypotheses were formulated to guide the study. A descriptive survey research design was used for the study. The population of the study was made up of 48 electrical installation and maintenance work trade teachers in all the six technical colleges in Kano State. The entire population was used in the study. The instrument used for data collection was structured questionnaire containing 80 items and titled “Pedagogical Skills Improvement Needs of Electrical Installation and Maintenance Work Trade Questionnaire (PSINEIMWTQ)”. The questionnaire had a four point rating scale. Three experts validated the questionnaire and its reliability coefficient was established using Cronbach alpha having a value of 0.92. Mean, standard deviation and grand mean were used to analyze data relating to the research questions and t-test was used to test the hypotheses at 0.05 level of significance. The findings of the study includes among others: The electrical installation and maintenance work teachers needed pedagogical skills such as Ability to examine the electrical installation curriculum program module, Ability to use relevant instructional methods to link the previous experience with new lesson, Ability assess the learner’s performance, significance difference did not exist in the mean response of graduate and non-graduate teachers of electrical installation and maintenance work on the needs of pedagogical skills in instructional planning, instructional management and instructional evaluation. Based on these findings, therefore, it was recommended, among others, that teachers of electrical installation and maintenance work in Kano State technical colleges should be encouraged to undergo training, seminars, and workshops by the government on the technical skills needed for effective instructional planning, instructional management and instructional evaluation.

Keywords: Electrical Installation and Maintenance, skills improvement needs

INTRODUCTION

Technical Colleges were designed to produce craftsmen and Master Craftsmen for industries and government establishments and craftsmen who shall be self-reliant economically, and usher in the desired technological advancement which is very much required for the elevation of the country from a “consumer nation” to a “producer nation”, from a “developing nation to a developed nation”. Acquisition of appropriate technical skills is necessary to cope with the challenges presented by the needs of our industries; this plan can only be achieved by training and re-training of technical teachers in technical colleges (Mohammed & Raymond, 2019).

The curriculum for technical colleges is structured in the foundation and trade modules. The programme offered in technical colleges include engineering trades, construction trades, miscellaneous trades and business studies while engineering trades comprise of electrical installation and maintenance work (EIMW) trades, mechanical engineering trades, fabrication and welding trades, agricultural equipment and implement mechanic works trades, radio and television trades and others (National Business and Technical Examination Board, NABTEB 2016). The curricula of Technical Colleges are centred on craft/engineering trades and agriculture which includes Agric-Mechanisation, Motor-mechanics, Building Construction, Woodwork, Metalwork, Plumbing, and Electrical Installation and Maintenance Work Trade among others (Hassan, Dauda and Badawi, 2019). In Kano State there is increased demand for Training the unemployed youths with Vocational and Technical skills for self-employment and this led to the establishment of 27 new technical colleges making total of 32 technical colleges where electrical installation and maintenance work trade is taught.

Electrical Installation and Maintenance Works Trade (EIMWT) is made of the following modules: Electrical installation, Maintenance work, Electrical Principles, Cable Jointing Battery charging. Practical works in Electrical Installation and Maintenance Works (EIMW) in Technical Colleges involve various operations such as conduit wiring, trunking wiring, surface wiring and battery charging. It also includes; soldering, wiring of simple and advanced circuits, termination of cables (Ezugu, Duhu and Tanimu, 2020).

Pedagogical skills refers to how a teacher can teach a subject while adhering to ideas like teaching from the known to the unknown, concrete to abstract, and simple to complex (Murkatik, Harapan and Wardiah, 2020). A teacher's ability to plan for teaching practices determines his or her effectiveness in the classroom. It's important to point out that the most important resource for learning is the teacher, with his skills, styles, and strategies. Competent teacher is someone who has been well-educated and taught to teach well, possesses the necessary traits or talents, and can teach effectively (Miller, Ramirez & Murdock, 2017). Other skills of competent teachers include subject matter knowledge, pedagogy, ability processes, resourcefulness, behaviour motivation, and assessment (Kenny, Berenson, Chick, Johnson, Keegan, Read & Reid, 2017). A qualified teacher goes to workshops and seminars; has strong classroom control; good communication skills; a good understanding of the subject; and uses a variety of pedagogical strategies to improve the learning environment. According to Voss, Kunter and Baumert (2011), the main components of the pedagogical skills are knowledge of classroom management, knowledge of teaching methods, knowledge of classroom assessment, structure of learning objectives and the lesson process, lesson planning and evaluation and adaptability dealing with heterogeneous learning groups in the classroom.

A teacher is a professional person, a leader, an important personality in the classroom situation, who is highly knowledgeable in the subject matter. The teacher is not a material that can be created overnight. It takes a long time to train a teacher. The teacher is crucial because, regardless of the available resources, a student cannot effectively teach themselves without the support of a teacher (Ademumi, 2009). The teacher, in relation to this study is an Electrical Installation and Maintenance Work Trade Teacher who has acquired professional training in teaching with relevant skills in the use of hand tools and machines.

Statement of the Problem

The primary objectives of technical colleges is to produced skilled, self-reliant and enterprising craftsmen and advance craftsmen who can apply their technical knowledge and vocational skills in solving industrial, agricultural and economic problems of the nation (National Policy on Education NPE, 2013). Technical colleges were established to train individuals to acquire practical skills, basic scientific knowledge and attitudes required as craftsmen at sub professional level to meet the manpower for national development.

Electrical installation and maintenance work trade curriculum provides opportunity for acquisition of skills like domestic installation, industrial installation, cable jointing, battery charging and winding of electrical machines among others which will enable graduates of technical college to be both employable and self-reliant. However the graduates are not competent in the trade of electrical installation and maintenance work trade to be self-reliant and enterprising.

Oyeniya and Michael (2019) asserted that technical college graduates specializing in electrical installation and maintenance work trade areas such as electrical installation are unemployed and thereby roam the streets because they acquired little or no practical skills during the formal training. As a result of poor skill acquisition, they find it difficult to set up their own workshops. Graduates of technical colleges need to acquire the necessary new trend of knowledge of subject matter, practical skills for effective outcome of the goals and objectives. As supported by (Mbagi et al., 2017) stated that effective teaching of any technical subject is rooted in adequate skills and knowledge of the subject matter. Inability of many teachers to effectively impart the subject matter to students is partly due to poor technical and pedagogical skills among teachers and has led to increase in the rate of unemployment of the graduates.

Objectives of the Study

The purpose of the study was to determine the pedagogical skills improvement needs of electrical installation and maintenance work trade teachers for effective teaching in government technical colleges in Kano state. Specifically, the study seeks to determine:

1. The pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional planning
2. The pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional management
3. The pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional evaluation

Research questions

1. What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional planning?
2. What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional management?
3. What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional evaluation?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho₁: There is no significant difference between the mean responses of graduate and non-graduate electrical installation and maintenance work trade teachers on their pedagogical skills improvement needs for effective instructional planning.

Ho₂: There is no significant difference between the mean responses of graduate and non-graduate electrical installation and maintenance work trade teachers on their pedagogical skills and improvement needs for effective instructional management.

Ho₃: There is no significant difference between the mean responses of qualified and less qualified electrical installation and maintenance work trade teachers on their pedagogical skills improvement needs for effective instructional evaluation.

METHODOLOGY

Descriptive Survey research design was adopted for the study. The area of the study is Kano state, which is located in North-West geopolitical zone of Nigeria. Kano state borders Katsina state by the North-West, Jigawa state by the East, Bauchi and Kaduna state at the South. It is located between longitude 11.7471°N and latitude 8.5247°E. The population of the study is 48 teachers consisting of 28 graduate teachers and 20 non-graduate teachers of EIMWT. There was no sampling for this study. Because of its manageable size. The instrument for data collection was structured questionnaire named "Pedagogical Skills Improvement Needs of Electrical Installation and Maintenance Works Trade Questionnaire (PSINEIMWTQ). The instrument was validated by three expert from the Department of Electrical Technology Education, Madibbo Adama University, Yola. The reliability of the instrument was obtained via Cronbach Alpha with a coefficient index of 0.92. Three research questions were answered using mean and standard deviation, the corresponding hypotheses were tested using t-test at 0.05 level of

significance. The decision to consider any item with a mean value of 2.50 and above, response is regarded as needed and any item whose mean falls below 2.50 is regarded as not needed.

RESULT

Research Question One: *What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional planning?*

Table 1: Mean and Standard Deviation of Responses of Teachers on Pedagogical Skills Improvement Needed by Teachers for effective Instructional Planning

S/NO	ITEMS	Responses						REMARK
		Graduate N ₁ = 28		Non-Graduate N ₂ = 20		Overall Responses N = 48		
		\bar{x}_1	σ_1	\bar{x}_2	σ_2	\bar{x}_G	σ_G	
1.	Ability to examine the electrical installation curriculum program module.	3.60	0.57	3.60	0.59	3.60	0.57	Needed
2.	Need to improve in improvising the appropriate teaching aids for the topic.	3.32	0.82	3.20	0.77	3.27	0.79	Needed
3.	Ability to determine from the module the instructional content	3.46	0.69	3.65	0.49	3.54	0.62	Needed
4.	Ability to properly establish instructional objectives	3.50	0.58	3.45	0.60	3.48	0.58	Needed
5.	Need to possess skills on relevant evaluation strategies that will lead to achievement of the objectives	3.53	0.57	3.50	0.60	3.52	0.58	Needed
6.	Need to improve in specifying instructional concepts in learnable units for students in the classroom	3.46	0.57	3.35	0.49	3.42	0.54	Needed
7.	Ability to properly arrange objectives in ascending order of complexity.	3.39	0.74	3.60	0.50	3.48	0.65	Needed
8.	Ability to properly arrange instructional contents in order of presentation.	3.43	0.63	3.55	0.51	3.48	0.58	Needed
9.	Ability to identify adequate learning experience for instruction	3.54	0.50	3.50	0.51	3.52	0.50	Needed
10.	Ability to arrange selected instructional content logically and sequentially	3.50	0.57	3.55	0.51	3.52	0.55	Needed
	GRAND MEAN	3.47		3.50		3.48		Needed

Key: \bar{x}_1 = Mean of Graduate Teachers, \bar{x}_2 = Mean of Non-Graduate Teachers, σ_1 = Standard deviation of Graduate Teachers, σ_2 = Standard deviation of Non-Graduate Teachers, \bar{x}_G = Grand Mean, σ_G = Grand Standard deviation, N_1 = Number of Graduate Teachers, N_2 = Number of Non-Graduate Teachers, N = Total Number of Respondents

Table 1 presents the mean and standard deviation of respondents on the pedagogical skills for effective instructional planning. The table revealed that the items have mean responses which range between 3.27 to 3.60 which is above cut off mean of 2.50 and having corresponding standard deviation which range between 0.49 to 0.79. The grand mean of all the items on the table is 3.48. This shows that the respondents needed all pedagogical skills for instructional planning in technical colleges in Kano State.

Research Question Two: What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional management?

Table 2: Mean and Standard Deviation of Responses of Teachers on Pedagogical Skills Improvement Needs of Teachers for effective Instructional Management

S/NO	ITEMS	Responses						REMARK
		Graduate N ₁ = 28		Non-Graduate N ₂ = 20		Overall Responses N = 48		
		\bar{x}_1	σ_1	\bar{x}_2	σ_2	\bar{x}_G	σ_G	
11.	Ability to use relevant instructional methods to link the previous experience with new lesson	3.75	0.44	3.75	0.44	3.75	0.44	Needed
12.	Ability to use of appropriate questioning technique to determine learning outcome	3.62	0.49	3.50	0.51	3.58	0.49	Needed
13.	Ability to tactfully present selected instructional objectives	3.39	0.69	3.45	0.60	3.42	0.65	Needed
14.	Ability to organise practical as demanded by the topic either in groups or individually	3.64	0.56	3.45	0.60	3.56	0.58	Needed
15.	Improvement in responding to students' questions appropriately	3.64	0.49	3.60	0.50	3.63	0.49	Needed
16.	Ability to supervise students' activities	3.75	0.44	3.60	0.50	3.69	0.47	Needed
17.	Improvement in identifying learners learning difficulties in the workshop	3.60	0.69	3.20	0.69	3.44	0.71	Needed
18.	Ability to promptly correct learner's error.	3.54	0.69	3.60	0.59	3.56	0.65	Needed
19.	Ability to arrange selected contents in sequential instructional delivery order	3.46	0.74	3.50	0.83	3.48	0.77	Needed
20.	Improvement in presenting of learning materials to boost instruction.	3.68	0.48	3.50	0.51	3.60	0.49	Needed
	GRAND MEAN	3.60		3.52		3.57		Needed

Key: \bar{x}_1 = Mean of Graduate Teachers, \bar{x}_2 = Mean of Non-Graduate Teachers, σ_1 = Standard deviation of Graduate Teachers, σ_2 = Standard deviation of Non-Graduate Teachers, \bar{x}_G = Grand Mean, σ_G = Grand Standard deviation, N_1 = Number of Graduate Teachers, N_2 = Number of Non-Graduate Teachers, N = Total Number of Respondents

Table 2 presents the mean and standard deviation of respondents on the pedagogical skills for effective instructional management. The table revealed that the items have mean responses which range between 3.42 to 3.75 which is above cut off mean of 2.50 and having corresponding standard deviation which range between 0.44 to 0.77. The grand mean of all the items on the table is 3.57. This shows that the respondents needed all pedagogical skills for instructional management in technical colleges in Kano State.

Research Question Three: What are the pedagogical skills improvement needs of electrical installation and maintenance works trade (EIMW) teachers for effective instructional evaluation?

Table 3: Mean and Standard Deviation of Responses of Teachers on Pedagogical Skills Improvement Needs of Teachers for effective Instructional Evaluation

S/NO	ITEMS	Responses						REMARK
		Graduate N ₁ = 28		Non-Graduate N ₂ = 20		Overall Responses N= 48		
		\bar{x}_1	σ_1	\bar{x}_2	σ_2	\bar{x}_G	σ_G	
21.	Ability asses the learner's performance.	3.82	0.39	3.70	0.47	3.77	0.42	Needed
22.	Ability to specify the instructional objectives to be assessed.	3.60	0.49	3.45	0.51	3.54	0.50	Needed
23.	Ability to select assessment techniques to be used in order to achieve the objectives.	3.71	0.46	3.75	0.44	3.73	0.45	Needed
24.	Ability to develop evaluation strategies to be employed.	3.57	0.57	3.45	0.51	3.52	0.54	Needed
25.	Ability to properly administer the tests.	3.60	0.49	3.70	0.47	3.65	0.48	Needed
26.	Ability to provide performance feedback to the students.	3.68	0.48	3.45	0.51	3.58	0.49	Needed
27.	Ability to objectively assess students' performance.	3.86	0.45	3.75	0.44	3.81	0.45	Needed
28.	Ability to supervise the learners' independent performance in tests.	3.60	0.57	3.55	0.51	3.58	0.54	Needed
29.	Improvement in timely grading the learners.	3.54	0.50	3.70	0.47	3.60	0.49	Needed
GRAND MEAN		3.66		3.61		3.4		Needed

Key: \bar{x}_1 = Mean of Graduate Teachers, \bar{x}_2 = Mean of Non-Graduate Teachers, σ_1 = Standard deviation of Graduate Teachers, σ_2 = Standard deviation of Non-Graduate Teachers, \bar{x}_G = Grand Mean, σ_G = Grand Standard deviation, N₁ = Number of Graduate Teachers, N₂ = Number of Non-Graduate Teachers, N = Total Number of Respondents

Table 3 presents the mean and standard deviation of respondents on the pedagogical skills for effective instructional evaluation. The table revealed that the items have mean responses which range between 3.52 to 3.81 which is above cut off mean of 2.50 and having corresponding standard deviation which range between 0.42 to 0.54. The grand mean of all the items on the table is 3.64. This shows that the respondents needed all pedagogical skills for instructional evaluation in technical colleges in Kano State.

Hypothesis One

There is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional planning

Table 4: t-test Analysis of Difference between the Mean Responses of Graduate and Non-graduate Teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional planning

Respondents	N	Mean	σ	Df	T	P – value	Remark
Graduate	28	3.48	0.60	46	-0.122	0.903	Not Significant
None-Graduate	20	3.49	0.50				

P > 0.05 N = Number of respondents, σ = Standard Deviation

Table 4 shows the result obtained when the hypothesis 1 was tested at degree of freedom (df= 46) and 0.05 level of significance. From the table, the calculated p-value of 0.903 is greater than the level of significance value of 0.05. This result shows that there is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills for effective instructional planning. Therefore, the null hypothesis is accepted.

Hypothesis Two

There is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional management

Table 5: t-test Analysis of Difference between the Mean Responses of Graduate and Non-graduate Teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional management

Respondents	N	Mean	σ	Df	T	P – value	Remark
Graduate	28	3.61	0.52	46	0.628	0.533	Not Significant
None-Graduate	20	3.51	0.52				

P > 0.05 N= Number of respondents, σ = Standard Deviation

Table 5 shows the result obtained when the hypothesis 2 was tested at degree of freedom (df= 46) and 0.05 level of significance. From the table, the calculated p-value of 0.533 is greater than the level of significance value of 0.05. This result shows that there is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills for effective instructional management. Therefore, the null hypothesis is accepted.

Hypothesis Three

There is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional evaluation

Table 6: t-test Analysis of Difference between the Mean Responses of Graduate and Non-graduate Teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional evaluation

Respondents	N	Mean	σ	Df	t	P – value	Remark
Graduate	28	3.67	0.43	46	0.443	0.660	Not Significant
None-Graduate	20	3.61	0.42				

P > 0.05 N= Number of respondents, σ = Standard Deviation

Table 6 shows the result obtained when the hypothesis 3 was tested at degree of freedom (df= 46) and 0.05 level of significance. From the table, the calculated p-value of 0.660 is greater than the level of significance value of 0.05. This result shows that there is no significant difference between the mean response of graduate and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills for effective instructional planning. Therefore, the null hypothesis is accepted.

Findings of the Study

Based on the results presented, the following findings were made:

1. Pedagogical skills improvement needs of teachers for effective instructional planning are: Ability to examine the electrical installation curriculum program module, Need to improve in improvising the appropriate teaching aids for the topic, Ability to determine from the module the instructional content, Ability to properly establish instructional objectives, and Ability to properly arrange objectives in ascending order of complexity, among others.
2. Pedagogical skills improvement needs of teachers for effective instructional management are: Ability to use relevant instructional methods to link the previous experience with new lesson, Ability to use of appropriate questioning technique to determine learning outcome, Ability to tactfully present selected instructional objectives, Ability to organize practical as demanded by the topic either in groups or individually, Improvement in responding to students' questions appropriately, and Ability to supervise students' activities, among others.

3. Pedagogical skills improvement needs of teachers for effective instructional evaluation are: Ability assess the learner's performance, Ability to specify the instructional objectives to be assessed, Ability to select assessment techniques to be used in order to achieve the objectives, Ability to develop evaluation strategies to be employed, Ability to properly administer the tests, and Ability to provide performance feedback to the students, among others.
4. There was no significant difference between the mean responses of Graduate Teachers and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional planning in Technical Colleges in Kano state.
5. There was no significant difference between the mean responses of Graduate Teachers and non-graduate teachers of electrical installation and maintenance work trade on their technical skills improvement needs for effective instructional management in Technical Colleges in Kano state.
6. There was no significant difference between the mean responses of Graduate Teachers and non-graduate teachers of electrical installation and maintenance work trade on their pedagogical skills improvement needs for effective instructional evaluation in Technical Colleges in Kano state.

DISCUSSION OF FINDINGS

The following discussion was done based on findings of the study.

The Findings of the study with regard to research question one revealed that the electrical installation and maintenance work trade teachers needed pedagogical skills in all the 10 skills used for investigation. They include the following among others: the ability to examine the electrical installation curriculum program module, need to improve in improvising the appropriate teaching aids for the topic, ability to determine from the module the instructional content, ability to properly establish instructional objectives, need possess skills on relevant evaluation strategies that will lead to achievement of the objectives, need to improve in specifying instructional concepts in learnable units for students in the classroom. Oyeniyi and Micheal (2019) noted that the problems of different vocational and technical schools stem from the fact that their curriculum is very narrow and that some of them do not provide enough varied experiences for students while others in most cases are never upgraded to meet with the demands of the labour market. If the curriculum is faulty, the objectives that are derived from it would subsequently be problematic. The respondents also agreed that specifying instructional concepts in learnable units for students in the class would enhance skill acquisition. Arrangement of instructional contents and objectives in right order of presentation, identification of appropriate learning experiences and adopting of proper teaching methods were needed by the teachers as good pedagogical planning skills. The finding is in agreement with the work Adegbola (2019), who found out that teachers' pedagogical competence can significantly influence students' attitude towards achieving the desired objectives

The Findings of the study with regard to research question two revealed that the electrical installation and maintenance work trade teachers needed pedagogical skills in all the 10 skills used for investigation. They include the following among others: ability to select and use relevant instructional methods to link the previous experience with new lesson, ability to use of appropriate questioning technique to determine learning outcome, ability to tactfully present selected instructional objectives, Ability to organize practical as demanded by the topic either in groups or individually, improvement in responding to students' questions appropriately, ability to supervise students' activities were needed as a good measure for effective pedagogical skills instructional management. This finding is supported by Eze and Ekuma (2016) who pointed out that questioning may be used to introduce a new skill topic, arrange selected contents in sequential instructional delivery order, presenting of learning materials to boost instruction. Other items on the pedagogical skills for effective instructional management were needed by teachers. Again, Aimah, Ifadah and Bharati (2017), stated that Teachers' competence in managing the classroom becomes a significant factor in the students' comprehension, and further, in developing their competence. The Findings of the study with regard to research question three revealed that the electrical installation and maintenance work trade teachers needed pedagogical skills in all the 9 skills used for investigation. They include the following among others: ability assess the learner's performance, ability to specify the instructional objectives to be assessed, ability to select assessment techniques to be used in order to

achieve the objectives, ability to develop evaluation strategies to be employed, ability to properly administer the tests, ability to provide performance feedback to the students are all important for effective instructional evaluation. The respondents also posited that supervision of students during testing period, timely grading of students and providing feedback to them on their performance all form sound pedagogical skills in proper evaluation. This finding is supported by Japel and Arinze (2019) noted that skill improvement programme inform of workshops, and seminars should be organized for teachers of electrical installation and maintenance work trade. This goes in consonance with Eze and Ekuma (2016) conducted a research skill improvement needs of electrical installation trade teachers in technical colleges for productive employment, whose discovered that many technical teachers need to update their pedagogical skills in instructional evaluation.

The findings of the study with regard to research hypothesis one revealed that there was no significant difference between the mean response of graduate teachers and non-graduate teachers of electrical installation and maintenance work trades on their pedagogical skills improvement needs for effective instructional planning in technical colleges in Kano State. The finding is in agreement with Japel and Arinze (2019) who stated that teachers in technical colleges have no skills to impart good knowledge to the students due to the fact that they lack the desired training. The findings agreed with Chinonso, Nwonu, Uchechukwu, and Agu (2019) that many electrical teachers need improvements in instructional planning.

The findings of the study with regard to research hypothesis two revealed that there was no significant difference between the mean response of graduate teachers and non-graduate teachers of electrical installation and maintenance work trades on their pedagogical skills improvement needs for effective instructional management in technical colleges in Kano State. The findings, supported by Shittu (2019) who in their report on the study on blended instruction skills needs of fabrication and welding craft practice teachers in technical colleges for effective teaching in Lagos and Ogun states, asserted that ability to select and use relevant instructional methods to link the previous experience with the new lesson, the ability to use appropriate questioning techniques to determine learning outcomes, the ability to tactfully present selected instructional objectives are among the pedagogical skills needed for effective instructional management. Supporting the finding, Eze and Ekuma (2016), show that many electrical teachers need improvements in instructional management.

The findings of the study with regard to research hypothesis three revealed that there was no significant difference between the mean response of graduate teachers and non-graduate teachers of electrical installation and maintenance work trades on their pedagogical skills improvement needs for effective instructional evaluation in technical colleges in Kano State. The finding is in agreement with the study of Eze and Ekuma (2016) on skill improvement needs of electrical installation trade teachers in technical colleges for productive employment. It was also submitted that there was no significant difference in the opinion of graduate teachers and non-graduate teachers on the pedagogical skills for instructional evaluation. The findings also, supported by Japel and Arinze (2019) and show that many electrical teachers need improvements in instructional evaluation.

CONCLUSION

Based on the findings of the study, it was concluded that graduate and non-graduate teachers in technical colleges in Kano State needed the following pedagogical skills: pedagogical skills improvement needs in all the items listed in instructional planning; pedagogical skills improvement needs in all the items listed in instructional management; and pedagogical skills improvement needs in all the items listed in instructional evaluation. The findings of this study have educational implications in that pedagogical skills are now crucial for the efficient instruction of electrical installation and maintenance work trades in Kano State's technical colleges. Therefore, having skilled trade teachers for electrical installation and maintenance work becomes essential. This suggests that ineffective electrical installation and maintenance work trade teachers should be sent for training to develop the essential pedagogical skills, and that the government should only employ competent teachers in this field.

RECOMMENDATIONS

Based on the study's findings, the following recommendations were made:

1. Government should partner with other agencies for the training and re-training of teaching staff on the pedagogical skills needed for effective instructional planning in technical colleges of Kano State.
2. The teachers of electrical installation and maintenance work trades should be given in-service training to enable them continuously update their pedagogical skills in instructional management for effective teaching.
3. The government needs to collaborate with other organizations to retrain and educate teaching personnel in Kano State's technical colleges in the pedagogical skills necessary for efficient instructional evaluation.

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