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Perception of Teachers and Administrators on Instructional Materials Utilization Effective Teaching of Electrical Installation and Maintenance Works in Technical Colleges of Adamawa State, Nigeria

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Abstract: ***The main aim of the study was to assess the perception of teachers and administrators on instructional materials utilization effective teaching of Electrical Installation and Maintenance Works in Technical Colleges of Adamawa State, Nigeria. The study which adopted a descriptive survey research design has two research questions and two null hypotheses. The population of the study was 37 subjects consisting of 13 electrical installation and maintenance works trade teachers and 24 administrators of the three Technical Collages in Adamawa State. Mean and t-test were used to answer the three research questions and test the null hypotheses of the study at 0.05 level of significance respectively. Findings of the study revealed that Instructional materials such as electrical drawings for residential wiring diagrams, recorded compact disc, filmstrips, computers, audio players, microphones and televisions are available for teaching and learning of electrical installation and maintenance works trade. The study further revealed that the attitude of teachers toward the use of instructional materials includes: poor selection of relevant instructional materials, and non-application of instructional materials for lesson delivery. Based on the findings of the study, government should provide relevant and more additional instructional material for the teaching and learning of electrical installation and maintenance works trade in all the Technical Colleges; and Ministry of education should sensitize teachers on how to select relevant instructional materials and its implementation in lesson delivery for effective teaching and learning of electrical installation and maintenance works trade in all the technical colleges.***

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Keywords: Teachers, School Administrators, Instructional Materials Utilization, Effective Teaching, Electrical Installation and Maintenance, Technical Colleges.

1. INTRODUCTION

Technical Colleges are designed to specially prepare individuals to acquire practical skills, basic scientific knowledge and attitude required as craftsmen and technicians at sub-professional levels. Technical colleges offer courses in motor vehicle mechanics, carpentry and joinery, welding and fabrication, painting and decoration, Electrical Installation and Maintenance Works trade, among others (National Business and Technical Examination Board [NABTEB], 2015). National Board for Technical Education [NBTE] (2011) in its policy document maintained that, for a program in technical education to achieve its stated objectives, resources for teaching various subjects embedded in the program must be employed, because skill acquisition and self-reliance that are the main objective of technical education cannot be achieved In Technical Colleges by adopting abstract methods of teaching. According to Amadike and Reagan (2013), instructional materials should be used in line with all activities in the classroom.

In the opinion of Natoli (2011), instructional materials are significant to all forms of learning at all levels of education, including formal and informal education. Instructional Material are recognized and accepted as essential supplement for the effective teaching and learning and learning process in 21st century, because it contributes much to teaching and learning process by easing emphasis, time management, stimulating of students' interest, providing valuable information and expanding the horizon of experiences. According to Dankaro and Jude (2012), instructional materials commonly used for teaching and learning process in technical colleges includes: Radio and tapes, Projectors, Slide pictures, film-strips, charts; Maps, Computers, Televisions, Drawings, Magnetic boards, Posters and Compact discs, among many others.

According to Emmanuel (2015), the use of instructional materials in schools and colleges are very significance in providing teaching and learning, yet the available instructional materials are not even utilized appropriately in order to improve the academic achievements of students. This may not be unconnected to the low academic performance recorded in the external examinations in recent years in Technical Colleges in Adamawa State especially in Electrical Installation and maintenance works Trade.

According to Amadike and Reagan (2013), instructional materials cannot be separated from the interaction of teaching and learning, consequently, teachers should select relevant instructional materials that will fit their teaching-learning situations to help their learners learn better. Rather (2014) opined that instructional materials plays a major role of making learning permanent, this is because it helps in facilitating skill acquisition and retention of learning experiences as it evokes the maximum response of the whole organism to the situations in which learning is done.

As important as the use of instructional materials may sound, teachers when using instructional materials tend to overlook the aspect of explanation and rather consider instructional materials as self-explanatory. But explanation at every level of learning is a must. Suppose if a diagram of an electrical circuit is shown to the students and if it is wrongly labeled, instead of passing concrete concept it will lead to misinformation (Prasad & Prasad, 2005). Human beings are curious by nature so are students too. Students are always

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enthusiastic and eager to see, touch and hear new things. When a teacher chooses to supplement the lecture with instructional aid; managing the class happened to be very difficult task. Suppose if a teacher is to show model of atom then controlling the excitement of the students is must, and if not the teachers' effort goes in vain. Using inappropriate instructional films creates aggression and develops destructive behaviors in students. Therefore, the way teacher views the role of media in classroom teaching will be to a large extent determine the level and degree of its usage.

Teacher forms an impression which is favorable or otherwise, depending on specific traits teacher attribute to the instructional material. Teachers' perception of instructional material is predicated upon what they feel the instructional material can do in teaching-learning process. However, evidence abounds that what teachers said were their reasons for not using media were not true (Zepp, 2015: Scrimshaw, 2014; Sugar, Crawley & Fine, 2014). Over the years, many research studies have pointed out various external deterrents for the utilization of instructional media. The major deterrents reported were budget difficulty in obtaining materials, lack of instructional classroom facilities and lack of trained instructional personnel (Higgins & Moseley, 2011; Windschitl & Sahl, 2012). It must be noted that perception can be influenced by the personality characteristics of the perceiver. It can also be influenced by the features of the thing/object perceived.

Statement of the Problem

From the researchers' observation, in the Technical Colleges of Adamawa State today, the quality of training programs has inevitably changed from the practical skill acquisition to theoretical and knowledge based concept training. This may be attributed to so many factors such as lack of skills of integrating instructional materials in classrooms, unavailable instructional materials, teachers' wrong perception on the uses of the instructional materials and the school administrators not placing priority on the use and provision of instructional materials for the transmission of knowledge in classroom. The basis for all learning is experience, and usually the most effective type of learning is gained by concrete, direct, first-hand experience. Teachers are often unable to give their students first-hand experiences and resort to the written and oral use of words. The experienced teacher, however, realizes that the use of words alone cannot and will not, provide vivid learning experience. It is against this backdrop that this study was undertaken.

Purpose of the Study

The main purpose of this study was to assess the perception of teachers and administrators on instructional materials utilization effective teaching of electrical installation and maintenance works in technical colleges of Adamawa State, Nigeria. This study sought to:

1. Determine the perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State
2. Determine the perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State

Research Questions

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1. What is the perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State
2. What is the perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State

Hypotheses

The following null hypothesis were formulated and tested at 0.05 level of significance:

1. There is no significant difference between the mean perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State
2. There is no significant difference between the mean perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching and learning of electrical installation and maintenance works trade in Technical Colleges of Adamawa State

2. METHODOLOGY

The study adopted a descriptive survey research design and was conducted in Adamawa State, Nigeria,. Adamawa State is located in the North -Eastern part of Nigeria and lies within latitude 9.333^0 North and Longitude of 12.500^0 East of the equator. The state shares boundaries with Borno and Gombe states in the North; Taraba state in the south. In the east is Cameroon Republic. The population of the study was 37 respondents consisting of 13 electrical installation and maintenance works trade teachers and 24 administrators of the three Technical Collages in Adamawa State. Due to the manageable size of the population, there was no sampling, hence, the whole population was used for the study. The instrument used for data collection was a structured questionnaire titled: "Perception of Teachers and Administrators on Instructional Materials Utilization Questionnaire (PTAIMUQ)" developed by the researchers. The responses on the questionnaire were structured on a 5-point likert scale of Strongly Agreed (SA) = 5; Agreed (A) = 4; Undecided (U) = 3; Disagreed (D) = 2 and Strongly Disagreed (SD) = 1. The questionnaire was validated by three experts from the Department of Electrical Technology Education, Modibbo Adama University, Yola, Adamawa State. A reliability co-efficient of 0.86 was obtained for the instrument using Cronbach Alpha reliability method after a trial test of the instrument was conducted on 10 teachers and 10 Administrators of Government Technical College, Kumo, Gombe state, which was not part of the study area. Data for the study was collected by the researchers. Mean statistic was used to answer the three research questions of the study while t-test was used to test the null hypotheses of the study. All items with mean score of 3.0 and above were considered "Agreed" and if less than 3.0 were also considered as "Disagreed".

3. RESULTS

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Research Question 1: What are the perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges?

Table 1: Mean and Standard Deviation of the Perception of Teachers and Administrators on the Available Instructional Materials

					Respondents: N_A = 24; N_T = 13			
S/N	**ITEMS**	$\bar{x}_A$	$s^2{}_A$	$\bar{x}_T$	$s^2{}_T$	$\bar{x}_G$	$s^2{}_G$	**Remark**
1.	Electrical drawings for residential wiring diagrams are available for teaching of electrical installation and maintenance works trade	3.71	0.55	3.50	0.89	3.61	0.72	Agreed
2.	Recorded compact disc for electrical course content delivery are available for teaching/learning of electrical installation and maintenance works trade	2.96	0.20	2.95	1.23	2.95	0.83	Disagreed
3.	Projectors for enlarged display of circuits are available for teaching/learning of electrical installation and maintenance works trade	3.88	0.34	3.85	0.49	3.86	0.41	Agreed
4.	Interactive whiteboards are available for teaching/learning of electrical installation and maintenance works trade	3.38	1.91	3.35	0.49	3.36	1.43	Disagreed
5.	Filmstrips are available for teaching of electrical installation and maintenance works trade	4.25	0.44	4.20	0.70	4.23	0.57	Agreed
6.	Webcams for virtual classrooms are available for teaching/learning of electrical installation and maintenance works trade	3.42	1.18	3.40	0.88	3.41	1.04	Disagreed
7.	Computers for display of animations/simulations are available for teaching/learning of electrical installation and maintenance works trade	4.17	0.56	4.05	0.39	4.11	0.49	Agreed
8.	Audio players for correct pronunciation of electrical terminologies are available for teaching/learning of electrical installation and maintenance works trade	3.96	0.75	3.90	0.55	3.93	0.66	Agreed

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9.	Microphones for sound amplification are available for teaching/learning of electrical installation and maintenance works trade	4.21	0.41	4.20	0.41	4.20	0.41	Agreed
10.	Televisions for showing electrical diagrams/circuits are available for teaching/learning of electrical installation and maintenance works trade	4.67	0.76	4.65	0.93	4.66	0.83	Agreed
	Grand Mean	**3.86**		**3.81**		**3.83**		**Agreed**

$\bar{x}_A$= Mean of Administrators, $\bar{x}_T$ = Mean of Teachers, s_A= Standard deviation of Administrators, s_T = Standard deviation of Teachers, $\bar{x}_G$= Grand Mean, s_G = Grand Standard deviation, N_A = Number of Administrators, N_T = Number of Teachers

Table 1 answers research question one. The respondents indicated that seven out of 10 items listed were available. With the grand mean of 3.83, the respondents indicated that most of the instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges were available.

Research Question 2: What are the perception of teachers and administrators on the attitude of teachers towards the use of instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges?

Table 2: Mean and Standard Deviation of the Perception of Teachers and Administrators on the Attitude of Teachers towards the Use of Instructional Materials

		Respondents: N_A = 24; N_T = 13						
S/N	**ITEMS**	$\bar{x}_A$	$s^2{}_A$	$\bar{x}_T$	$s^2{}_T$	$\bar{x}_G$	$s^2{}_G$	**Remark**
11.	Non application of instructional materials for lesson delivery by teachers	3.88	1.08	3.85	1.57	3.86	1.25	Agreed
12.	Teachers do not select relevant instructional materials during lesson delivery	4.42	0.58	4.31	0.63	4.38	0.59	Agreed
13.	Teachers do not apply appropriate method of using instructional materials	3.79	0.72	3.77	0.73	3.78	0.71	Agreed
14.	Teachers mostly apply visual aids in terms of instructional materials only for lesson	3.79	1.22	3.77	1.17	3.78	1.18	Agreed
15.	Teachers are inefficient in the application of instructional materials	2.42	0.97	2.38	0.87	2.41	0.93	Disagreed
16.	Teachers are not convinced of the benefits instructional materials play in teaching and learning	2.63	1.56	2.62	1.45	2.62	1.50	Disagreed
17.	Teachers considered the use of instructional materials as merely importance.	1.88	1.19	1.85	0.99	1.86	1.11	Disagreed

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18.	Teachers manipulate ways of using instructional materials	4.50	0.59	4.46	0.52	4.49	0.56	Agreed
19.	Teachers haven't recognized the role instructional materials play in teaching/learning	1.71	0.86	1.69	0.63	1.70	0.78	Disagreed
20.	Teachers mostly use instructional materials for effective teaching and learning	4.58	0.50	4.54	0.52	4.57	0.50	Agreed
	Group Mean	**3.36**		**3.32**		**3.35**		**Agreed**

$\bar{x}_A$= Mean of Administrators, $\bar{x}_T$ = Mean of Teachers, s_A= Standard deviation of Administrators, s_T = Standard deviation of Teachers, $\bar{x}_G$= Grand Mean, s_G = Grand Standard deviation, N_A = Number of Administrators, N_T = Number of Teachers

Table 2 answers research question two. The respondents agreed with all of the items listed except item 25, 26, 27 and 29. The respondents with a grand mean response of 3.35 agreed that the item listed in Table 2 are the attitude of teachers towards the use of instructional materials affect the effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges.

Hypothesis 1: There is no significant difference between the mean perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges.

Table 3: t-Test Statistical Analysis of Difference between the Mean Responses of the Perception of Teachers and Administrators on the Available Instructional Materials

Respondents	N	$\bar{x}$	s	df	p – value	Remark
Teachers	13	3.43	0.178			
				35	0.314	Accepted
Administrators	24	3.50	0.239			

P >0.05 N= Number of respondents, S = Standard Deviation, $\bar{x}$ = Mean

The analysis in Table 3 answered the research hypothesis one. Table 3 revealed that there is no significant difference between the mean perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges. The opinion was expressed with p –value of = 0.314 which is greater than 0.05 confidence level at 35 degree of freedom. Therefore, HO_1 is accepted.

Hypothesis 2: There is no significant difference between the mean perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching of electrical installation and maintenance works trade in Adamawa State technical colleges.

Table 4: t – Test Statistical Analysis of Difference between the Mean Responses of the Perception of Teachers and Administrators on the Attitude of Teachers towards the Use of Instructional Materials

Respondents	N	$\bar{x}$	s	df	p – value	Remark
Teachers	13	3.215	0.424			

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				35	0.265	Accepted
Administrators	24	3.358	0.332			

P >0.05 N= Number of respondents, S = Standard Deviation, $\bar{x}$ = Mean

The analysis in Table 4 answered the research hypothesis two. Table 4 revealed that there is no significant difference between the mean perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching of electrical installation and maintenance works trade in Adamawa State technical colleges. The opinion was expressed with p –value of = 0.265 which is greater than 0.05 confidence level at 35 degree of freedom. Therefore, HO is accepted

Findings of the Study

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

1. Instructional materials such as electrical drawings for residential wiring diagrams, recorded compact disc, filmstrips, computers, audio players, microphones and televisions are available for teaching and learning of electrical installation and maintenance works trade.
2. The attitude of teachers toward the use of instructional materials includes: poor selection of relevant instructional materials, and non-application of instructional materials for lesson delivery
3. There was no significant difference between the mean perception of teachers and administrators on the available instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State Technical Colleges
4. There was no significant difference between the mean perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching of electrical installation and maintenance works trade in Adamawa State Technical Colleges

4. DISCUSSION OF FINDINGS

The findings of the study with regard to research question one revealed that instructional materials such as electrical drawings for residential wiring diagrams, recorded compact disc, filmstrips, computers, audio players, microphones and televisions are available for teaching and learning of electrical installation and maintenance works trade. The supporting hypothesis one revealed that there was no significant difference between the mean perception of teachers and administrators on the use of instructional materials for effective teaching and learning of electrical installation and maintenance works trade in Adamawa State technical colleges. The findings of the study is in agreement with Umunadi (2019) who carried out a research on the use of Instructional materials in the teaching and learning of physics in secondary schools in Port Harcourt. Umunadi reported that most of the apparatus needed for Physics practical class were available but the quantities supplied were inadequate. The finding was also in agreement with Samreen and Malik (2012) who reported the perception of teachers and administrators on the use of Instructional materials for effective teaching and learning of biology at secondary schools' level. Samreen and Malik asserted that the Instructional materials available in schools were obsolete and not functional and as a result, the teachers feel reluctant in using the Instructional materials.

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The findings of the study in regard to research question two revealed that the attitude of teacher toward instructional materials include: poor selection of relevant Instructional materials during lesson delivery, poor technical skills in manipulating the instructional materials, non-application of instructional materials for lesson delivery, poor application of appropriate method for using Instructional materials, and inconsistent use of Instructional materials for effective teaching and learning. The supporting hypothesis revealed that there was no significant difference between the mean perception of teachers and administrators on the attitude of teachers towards the use of instructional materials in teaching of electrical installation and maintenance works trade in Adamawa State technical colleges. The finding of the study is in agreement with Adamu and Ibrahim (2018) who conducted a study which was aimed at examining the attitude of teachers in the use of Instructional Materials in teaching and learning among secondary school students in Sabon Gari Local Government Area of Kaduna State. Adamu and Ibrahim reported that most teachers in Sabon Gari were not in the habit of using Instructional materials in the teaching and learning processes. They further maintained that the teachers were not ready to use the Instructional materials as they feel that it was wasting much of their time as there was no much time allocated to them on the timetable. Some of the teachers also reported that the Instructional materials require some level expertise and technical knowhow. However, Adamu and Ibrahim concluded that though the Instructional materials were available, the teachers are not interested to use them. To further buttress the finding, Amanuel and Meshesha (2018) maintained that some teacher does not want to use the gadgets due to the fear of asking them to payback in a situation where the gadget got spoiled or damaged.

5. CONCLUSION

Based on the findings of the study it was concluded that instructional materials such as electrical drawings, recorded compact disc, filmstrips, computers, microphones and televisions were available for teaching and learning of electrical installation and maintenance works trade as the attitudes of teacher toward the use of Instructional materials was negative.

Recommendations

The results presented necessitated the following recommendations:

1. Government should provide relevant and more additional instructional material for the teaching and learning of electrical installation and maintenance works trade in all the technical colleges.
2. Ministry of education should sensitize teachers on how to select relevant instructional materials and its implementation in lesson delivery for effective teaching and learning of electrical installation and maintenance works trade in all the technical colleges.

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