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RESEARCH ARTICLE

Enhancing the Utilization of Computer Based Test Technology in Assessing Students in Basic Electricity in Technical Colleges in Enugu State

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Abstract

The main purpose of the study was to determine the measures for enhancing the utilization of computer-based test (CBT) technology in assessing students in Basic Electricity in technical colleges in Enugu State. The study was guided by two research questions and two null hypotheses. The study adopted a survey research design. The population used for the study was 57 teachers of electrical/electronic trades subjects in technical colleges in Enugu State. There was no sampling due to the manageable size of the population. The instrument used for data collection was 20 item structured questionnaire grouped into two sections according to the research questions that guided the study. The items were structured in four-point rating scale. The instrument was validated, and the reliability of the instrument was determined using Cronbach Alpha which yielded 0.76. Out of 57 copies distributed, 52 copies were returned giving 91.23%return rate. Mean, standard deviation and t-test statistic were the statistical tools used. Based on the data analysis, the study identified the government and school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. Based on the findings, the following recommendations were made: The government should organize and sponsor workshops and seminars to promote teachers' knowledge and pedagogical skills in the use of CBT for assessing students. Additionally, school administrators should provide teachers with the necessary environment and resources that would promote and enhance the effective utilization of CBT in student assessment.

Keywords: *Computer Based Tests; Students in Basic Electricity; Technical Colleges in Enugu State*

Introduction

The application of technological development and innovations in education have introduced the utilization of computer in the assessment of students learning. The use of computer in the process of evaluating learner's outcome is usually regarded as computer-based test (CBT). According to Benson (2017) computer-based test can provide many benefits, one of which is to facilitate the process of carrying out tests because a computer-assisted test can collect question banks so that tests can be easily packaged. Also, it facilitates the correction process, and minimizes errors in the evaluation process like human errors and can minimize fraud that can be done by students, because with the existence of a question bank, the questions can be randomly displayed to each test participant.

Computer-Based Test is a tool for evaluating students learning using computer assistance, where questions and answer keys are made in electrical form. Citing the opinion of Isaac (2014) computer-based test is defined as computer use in testing and evaluating student's learning outcomes. Computer-based test (CBT) creates new possibilities for testing more effectively when compared to tests submitted on paper in the classroom. From the above definitions, it can be concluded that CBT creates new possibilities for testing more effectively when compared to tests submitted on paper in the classroom. Azodo (2024) opined that CBT is the use of computer and its software to evaluate skills and knowledge of the students in certain areas. It can range from online screen-testing system that automatically mark learners test, to electronic portfolios where learner's work can be assessed and marked. In a related development, computer-based test may also be regarded as a method of administering tests in which the responses are electronically recorded, assessed or both. The use of CBT for entrance examinations in educational certification examinations by professional groups and promotional examinations in various stages and categories of life cannot be over emphasized. Based on the level of examination malpractice among the students and some teachers in the educational system, it has become imperative to maximize the use of CBT as a tool for students assessments (Isaac, 2014). The use of CBT in assessment of learning outcome is not limited to any educational level, as the technical college administrators and teachers may adopt CBT is all the technical college trades subjects.

Technical College is an institution designed specially to train an individual at semi-skilled level as artisans, craftsmen and master craftsmen in their area of interest and specialization to make them self-reliant (Deebom, Dokubo & Obed, 2018). Technical colleges in Nigeria are established to produce craftsmen at the craft level and master craftsmen at advance craft level (Federal Ministry of Education, 2013). They give full technical and vocational training intended to prepare individuals for entry into various occupations as a craftsman. Technical colleges could also be seen as post primary schools where students are trained to acquire relevant knowledge, skills and attitudes in a chosen occupation or trade at craft level. The curriculum programmes of technical colleges are grouped into related trades. The trades offered in the technical colleges in Nigeria according to FGN (2013) include: Building Trades; Beauty Culture Trades, Computer Craft Practice, Bricklaying, Carpentry, Plumbing, Motor Vehicle Repair and Maintenance Works, Radio and Television Maintenance Works, Welding and Fabrication, Home Economics Work, Wood Trades, Printing Work, Textile Work, Hospitality and Mechanical Engineering Work, Agricultural Implement Craft Trade, Auto Electric Works, Vehicle Body Building Works and Motor Vehicle Mechanic's Works, Refrigeration and Air Conditioning Works, Electrical Installation and Maintenance Works, Radio, TV and Electronic works among others. The trades in technical colleges that are electrical/electronic technology offer the students with Basic Electricity. Basic Electricity refers to the fundamental principles and concepts that govern the flow of electric charge. The subject Basic Electricity provides students with the understanding of concepts like voltage, current, resistance and circuit (ogwa and Owoh, 2017). The training of students prepares them for understanding more complex electrical system and applications. The learning outcome of the students are usually assessed using paper and pen examination which the innovation in technology has provided CBT as a more stress-free approach and less malpractices cases.

The utilization of computer-based test (CBT) technology plays a vital role in enhancing the educational experience for technical college students. One of the primary benefits of utilizing CBT technology in technical colleges is the alignment with industry standards and practices of digitalization of devices and processes. This is pertinent as Mbah (2016) pointed that technical fields are constantly evolving, with new technologies and methodologies emerging regularly and the technical college teachers needs to adopt innovations in teaching and assessment of the students. By implementing CBTs in assessing the students, teachers can ensure that assessments prepare students with the relevant skills and knowledge needed for success in their chosen field.

Moreover, the adoption of CBTs offer flexibility in assessment design, allowing instructors to create interactive and multimedia-rich questions that simulate real-world scenarios. For technical subjects that require hands-on skills and problem-solving abilities, CBTs can incorporate simulations and virtual labs, providing students with practical experience in a controlled environment (Mbah and Odike, 2021). This experiential learning approach enhances comprehension and retention of complex technical concepts. CBT technology enables the tracking of individual student progress and performance. In technical college programmes, where students may come from diverse backgrounds and have varying levels of prior knowledge, personalized learning experiences are essential. CBTs can adapt to each student's learning pace and provide targeted feedback, helping to address gaps in understanding and facilitate mastery of technical concepts. Another advantage of CBT technology in assessing students in Basic Electricity is the efficient administration and grading of assessments. Technical college teachers and instructors often face large class sizes and tight schedules, making traditional paper-based testing impractical. This therefore necessitate the utilization of CBTs that streamline the assessment process, allowing teachers and instructors to create, administer and grade tests electronically, saving time and resources.

However, the successful utilization of CBT technology in technical college requires careful planning and implementation by the stakeholders. The stakeholders need to adopt measures to enhance the utilization of CBT assessing the student's basic electricity in technical colleges. The Government and school administrators need to adopt measures that would provide adequate training and support for teachers and instructors to ensure smooth adoption and optimal use of CBT platforms in assessing students. Additionally, considerations must be made to address availability, accessibility, utilization and equity for information and communication technology (ICT), particularly for teachers and instructors with disabilities or limited access to technology. The identification of these measures for enhancing the utilization of CBT in assessing the students through the teachers will held in developing a positive framework for effective implementation. The teachers in technical colleges are the curriculum implementer and with the pedagogical skills to impart skills and knowledge to the students. The teachers use of CBT in assessing the learning outcome is not gender sensitive as male and female teachers are expected to utilize the CBT assessing the students. It is on this background that the need arouse to determine the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Statement of the Problem

The utilization of computer-based test (CBT) technology in teaching technical college students offers numerous benefits, including alignment with industry standards, experiential learning opportunities, personalized assessment, and efficient administration (Chekwube, 2015; Bournce, 2016). By harnessing the power of CBTs, technical colleges can significantly enhance the quality of education, better prepare students for success in their chosen technical fields, and promote fair, objective, and unbiased assessments. CBTs standardize test administration and scoring, mitigating human error and subjective grading biases, thus ensuring the integrity and reliability of assessment results and fostering trust in the educational system.

However, despite these advantages, the adoption and effective utilization of CBT technology in technical colleges remain limited. Teachers continue to face challenges such as assessment errors, malpractices, and high levels of stress during the administration, scoring, and grading of student assessments. These challenges are particularly pronounced in technical subjects such as Basic Electricity, where precise and accurate assessment of students' skills is critical. The increasing occurrence of assessment errors and the stress experienced by teachers in traditional assessment methods raises serious concerns about the effectiveness and fairness of the evaluation process.

Given the potential of CBT to address these challenges, it is imperative to awaken teachers' awareness and enhance their utilization of this technology, particularly in the assessment of psychomotor skills in Basic Electricity. The problem of this study is, therefore, to explore and identify the measures required to enhance the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Purpose of the Study

The main purpose of the study was to determine the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. The study specifically sought to determine the:

1. Government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.
2. school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Research Questions

The study was guided by the following research questions:

1. What are the government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State?
2. What are the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State?

Hypotheses

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

H_{01} Male and female technical teachers do not differ significantly in their mean responses on the government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

H_{02} A significant difference does not exist on the mean responses of male and female technical teachers on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Methods

This study adopted a survey research design. According to Nworgu (2015) survey research design is one in which a group of people or items are studied by collecting and analyzing data from only a few of them to represent the entire group. This design was adopted due to the responses from sample of male and female technical teachers used for the study could be generalized to the rest of others using CBT or intending to use CBT in assessing students in similar programme. The area of the study was Enugu State of Nigeria. Enugu State is one of the five states in South-East geopolitical Zone of Nigeria. The population used for the study was 57 teachers of electrical/electronic trades subjects in technical colleges in Enugu State. There was no sampling due to the manageable size of the population. The instrument used for data collection was 20 item structured questionnaire grouped into two sections according to the research questions that guided the study. The instrument was structured in four point response option of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with numerical values of 4, 3, 2 and 1. The instrument was validated by three experts, two from Technology and Vocational Education Department and one from Measurement and Evaluation unit of Mathematics and Computer Education Department, all from Enugu State University of Science and Technology, Enugu. Their corrections and suggestions of the experts after the validation were used to produce the final instrument used for the study. The reliability of the instrument was determined using Cronbach Alpha which yielded 0.76. This .76 coefficient is in-line with Uzoagulu (2013) that reliability index of 0.60 to 1 show that the instrument is highly reliable Three research assistants were used in the administration of the questionnaire. Out of 57 copies distributed, 52 copies were returned giving 91.23%return rate. Mean, standard deviation and t-test statistics were the statistical tools used. Decisions on the research questions were made using the lower and upper limits of the mean based on a four-point rating scale. The standard deviation was used to determine the homogeneity or otherwise of the opinions of the respondents. The t-test was used to test the null hypotheses. The analysis was carried out using Statistical Packages Social Science (SPSS). The significant value (at 2-tail) was compared with .05 level of significant at the appropriate degree of freedom. The null hypothesis was not rejected where the significant value was less than the .05 level of significance and at appropriate degree of freedom; otherwise the null hypothesis was not significant.

Results

The results of the study are presented according to the research questions and hypotheses that guided the study.

Research Question 1

What are the government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State?

Table 1: Respondents' mean ratings on the government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State

S/N	The government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity includes:	Male N= 30		Female N= 22		Overall		Decision
		X_1	SD_1	X_2	SD_2	X_G	SD_G	
1	Government should organize in-service training for technology educators on use of CBT	3.31	0.68	3.27	0.69	3.27	0.69	Strongly Agree
2	Providing motivational packages apart from salaries	3.33	0.69	3.26	0.68	3.27	0.68	Agree
3	Providing ICT facilities that will enable CBT	3.36	0.76	3.26	0.78	3.27	0.78	Agree
4	Providing CBT facilities to the technical colleges	3.19	0.75	3.11	0.87	3.12	0.85	Agree
5	Providing technical teachers with holiday courses for CBT experience	3.00	0.62	3.02	0.61	3.01	0.62	Agree
6	Improving security of facilities in the technical colleges	3.05	0.58	3.04	0.59	3.05	0.58	Agree
7	Providing effective communication channel between the government and school on CBT	3.24	0.76	3.23	0.76	3.23	0.76	Agree
8	Providing excellent infrastructure to accommodate CBT facilities in technical colleges	3.14	0.73	3.05	0.73	3.06	0.73	Agree
9	Providing conducive school environment for teacher's-students interaction	3.29	0.64	3.22	0.67	3.23	0.66	Agree
10	Providing power supply to support CBT facilities	3.19	0.61	3.14	0.62	3.15	0.62	Agree
11	Providing monitoring on the implementation of CBT in assessing students learning outcome	3.29	0.67	3.27	0.69	3.27	0.68	Agree
	Cluster Mean/SD	**3.22**	**0.69**	**3.17**	**0.70**	**3.18**	**0.70**	**Agree**

Note: **X = Mean; SD =Standard Deviation**

The analysis of data presented in Table 1 shows that the overall mean ratings for the 11 items range from 3.01 to and 3.27 showing agree. This means that the items are the government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. The overall cluster mean of 3.18 further showed agree. The cluster low standard deviation of .70 indicates that the respondents have relatively similar opinion itemized measures.

Hypothesis 1

Male and female technology educators do not differ significantly in their mean ratings on the technical teachers on the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Table 2: Summary of t-test analysis of mean ratings of male and female technical teachers on the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State

Variables	N	t	Df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
Male	30	0.407	52	0.707	0.84423	0.76012	NS
Female	22						

NS= Not Significant

The result of t-test analysis in Table 2 shows that the t-value at .05 level of significance and 52 degree of freedom for the 11 items is .407 with a significant value of .707. Since the significant value of .707 is more than the .05 level of significance the null hypothesis is not significant. This means that there is no significant difference between the

mean ratings of male and female technical teachers on the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Research Question 2

What are the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State?

Table 3: Mean and standard deviation ratings on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State

S/N	The school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity includes:	Male N= 30		Female N= 22		Overall		Decision
		X_1	SD_1	X_2	SD_2	X_G	SD_G	
12	Conducting CBT workshop for technical teachers	3.07	0.68	3.04	0.71	3.04	0.70	Agree
13	Retraining the teachers on strategies to manage CBT facilities in assessing students	3.38	0.70	3.34	0.73	3.34	0.71	Agree
14	Ensuring steady power supply	2.95	0.58	2.91	0.60	2.91	0.59	Agree
15	Given needed compensation to technical teachers on the use of CBT	3.24	0.70	3.28	0.68	3.27	0.68	Agree
16	Organizing training for staff on the CBT facilities	3.23	0.54	3.24	0.57	3.24	0.56	Agree
17	Opening a functional communication channel for immediate feedback on CBT facilities	2.95	0.67	3.02	0.63	3.01	0.63	Agree
18	Ensuring that facilities are maintained	3.02	0.76	3.01	0.77	3.02	0.76	Agree
19	Deployment of ICT compliant staff for monitoring of teachers and students before, during and after CBT	3.07	0.73	3.09	0.73	3.08	0.73	Agree
20	Maintaining favourable policy in the school for effective teaching and learning	3.03	0.71	3.03	0.72	3.03	0.71	Agree
	Cluster Mean/SD	**3.10**	**0.67**	**3.11**	**0.68**	**3.04**	**0.67**	**Agree**

Note: **X = Mean; SD =Standard Deviation**

The data presented in Table 3 indicates that the overall item mean ratings range from 2.91 to 3.34 depicting agree. This shows the respondents agree to the items as the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. The overall cluster mean rating of 3.04 indicates agree. The low standard deviation of .67 shows that the respondent's opinions is homogenous to the items as the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Hypothesis 2

A significant difference does not exist on the mean ratings of male and female technical teachers on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Table 4: Summary of t-test analysis of mean ratings of male and female technical teachers on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State

Variables	N	T	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
Male	30	0.287	50	0.610	0.18913	0.79809	NS
Female	22						

NS= Not Significant

The result of t-test analysis in Table 4 shows that the t-value at .05 level of significance and 50 degree of freedom for the items is 0.287 with a significant value of .610. As the significant value of 0.610 is more than the 0.05 level of significance the null hypothesis is not significant. This means that there is no significant difference with respect to the items on the mean ratings of male and female technical teachers on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Discussion

The findings of the study with respect to government measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State include that government should be organizing in-service training for technology educators on use of CBT, providing motivational packages apart from salaries, providing ICT facilities that will enable CBT, providing CBT facilities to the technical colleges, providing technical teachers with holiday courses for CBT experience, improving security of facilities in the technical colleges, providing effective communication channel between the government and school on CBT, providing excellent infrastructure to accommodate CBT facilities in technical colleges, providing conducive school environment for teacher's-students interaction, providing power supply to support CBT facilities and providing monitoring on the implementation of CBT in assessing students learning outcome. The study indicated that government can enhance the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges. The findings of the study were supported by Ajinaja (2017) that government need to organize workshops and seminars for the teachers to improve their job performance. This could equally be achieved through the provision of ICT facilities and platforms that would enhance the use of CBT in assessing the students in Basic Electricity.

Moreover, the findings of the study indicated that there was no significant difference in the mean ratings of male and female technical teachers regarding the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. This implies that the use of CBT is not gender sensitive. The result is consistent with Isaac (2014), who reported that gender had no significant influence on the job performance of teachers with respect to the use of CBT in evaluating students.

Furthermore, the study revealed the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. The school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges includes; conducting CBT workshop for technical teachers, retraining the teachers on strategies to manage CBT facilities in assessing students, ensuring steady power supply, given needed compensation to technical teachers on the use of CBT, organizing training for staff on the CBT facilities, opening a functional communication channel for immediate feedback on CBT facilities, ensuring that facilities are maintained, deployment of ICT compliant staff for monitoring of teachers and students before, during and after CBT and maintaining favourable policy in the school for effective teaching and learning. The findings of the study showed that the itemized are the school administrative measures for enhancing the utilization of CBT in assessing students in Basic Technology. The findings of the study were inconsonance with Adekanmdi (2014) and Azodo (2024) that the school administrators should provide the teachers with in-service programmes and enabling environment to utilize ICT facilities for the 21st century teaching and evaluation of students learning outcomes. The indication was that the identified school administrative measures could be adopted in enhancing the utilization of computer-based test (CBT) technology in assessing students in Basic Electricity in technical colleges in Enugu State.

In a related development, the findings of the study showed that there is no significant difference in the mean ratings of male and female technical teachers on the school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. The implication of the findings was that gender of the respondents had no significant influence on the identified school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Conclusion

Quality educational development in 21st century depends on the utilization of ICT facilities such as CBT in assessing the students learning. As technological innovation continues, teachers are expected to adopt the use of CBT in assessing students in technical colleges. The utilization of CBT has been identified as a tool to assessing the students and getting immediate feedback and the students worth or merit. The study examined the measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State. the study identified the government measures and school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity. Based on the findings of the study, the study concluded that all the identified items under the government and school administrative measures are relevant for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges. Also, there was no significant influence of gender on the identified government and school administrative measures for enhancing the utilization of computer-based test technology in assessing students in Basic Electricity in technical colleges in Enugu State.

Recommendations

Based on the findings, following recommendations were made;

1. The government should organize and sponsor workshops and seminars to promote teachers' knowledge and pedagogical skill in the use of CBT in assessing the students
2. The school administrators should provide the teachers with the needed environment that would promote/enhance the utilization of CBT in assessing the students.
3. Government should provide ICT facilities and platform that would enable the teachers and school administrators to increase the utilization of CBT in assessing the students.

References

Adekanmbi, H.D. (2014). Opportunity to learn: Implications for professional development. *Journal of Negro Education*, 2 (3) 62, 311-323.

Ajinaja, M. (2017). The Design and Implementation of a Computer Based Testing System Using Component-Based Software Engineering. 8491, 58–65.

Azodo, C. A. (2024). Students' Perception in the use of Computer-Based Assessment (C.B.A) in General Courses (G.S) in Colleges of Education in South East; A case study of Anambra and Imo. *International Journal of Research Publication and Reviews*, 5,2, 682-691.

Benson, M. (2017). Impact of ICTs on Open and Distance Learning in a Developing Country Setting. New York: Lexicon International Publishers. 283- 296.

Bourne, V. (2016). *Embracing a digital future: Transforming to leap ahead*. Dell Technologies.

Chekwude, E.A. (2015). Traditional Pedagogy to innovative pedagogy in Business Education: A challenge to Business Education. *ABEN Conference Proceedings,* 2(1), 86-94.

Deebom, M. T., Dokubo, I. N. & Obed, O. O. (2018). Collaboration Between Technical Vocational Education and Training (TVET) Institutions and Oil and Gas Industries for Tackling Skills shortage in Niger Delta. *Niger Delta Journal of Education, 10(2),* 47 –54.

Federal Republic of Nigeria (2013). *National Policy on Education*. Lagos: NERDC.

Isaac, B. (2014). The Challenges Facing Teaching and Learning of ICT in Senior High School: A Case Study in the Bekekum, Manicipality. New York: Longman 63-69.

Mbah, C. O. & Odike, F. I. (2021). Influence of ICT innovations in vocational education for achieving sustainable development in Anambra State. Conference paper presented at 3rd international multi-disciplinary *conference of Faculty of Education Chukwuemeka Odumegwu Ojukwu University with the theme;* education and innovations for sustainable development in Africa 16th to 19th of March, 2021.

Mbah, C. O. (2016). Mechatronics technology craft training needs of technical college students in Anambra State. *Unpublished M. Sc. Dissertation* presented to the Department of Technology and Vocational Education. Enugu State University of Science and Technology, Enugu

Nworgu, B.G. (2015). *Educational Research: Basic Issues and Methodology*. Nsukka: University Trust Publishers.

Ogwa, C. E. & Owoh, T. M. (2017). Practical skills in domestic and industrial considered by electrical installation trade teachers in technical colleges in Ebonyi State. *International Journal of Innovative Research in Science, Engineering and Technology 6(12) 22589-22592*.

Uzoagulu, A.E. (2013). *Practical guide to writing research report in universities and colleges of education.* Enugu: John Jacobs Classic Publishers Ltd.