

SUSTAINABLE DEVELOPMENT THROUGH TECHNICAL EDUCATION: AN ASSESSMENT OF ELECTRONIC TRADES PROGRAMME IN OYO STATE GOVERNMENT TECHNICAL COLLEGES

¹Soji Aderemi Adedeji; ² Babatunde Oloyede Aderibigbe; ³Okunlola Ayobami Olatunji; & ⁴Simeon Oluwale Odede

^{1,2,3}Electrical/ Electronic Technology Education Unit, Technology Education Department, Faculty of Vocational, Innovation and Engineering Education, Emmanuel Alayande University of Education Oyo, Oyo State

¹adedejisa@eaudoyo.edu.ng; adedejisojiaderemi@gmail.com; 08038302803, 08121466952

²aderibigbebo@eaudoyo.edu.ng

³olatumjioa@eaudoyo.edu.ng

⁴Technical Education Department, Electrical and Electronic Technology, Osun State College of Education, Ila Orangun, Osun State
odedesimeon@gmail.com

Abstract

The study assessed the electronic trades in Oyo State Government Technical Colleges and how it is facilitating a driving self-sustainable development for the youths, socio- economic of Oyo State and in general Nigeria. The research design adopted for the study was descriptive survey. This is because the items of the questionnaire seek the views, opinions and information of the respondents on the items of the questionnaire for data collection. The population was one hundred and fifty (150) respondents which comprises of sixty-five (65) male and female final year students and forty-five (45) electronic trades' instructors from Oyo State technical colleges in all the three senatorial district that comprise of five technical colleges. There was no sample for the study because of small size in population. The instrument for the study was questionnaire tagged: Sustainable Development through Electronic Trades in Technical Education for assessment in Oyo State Government Technical Colleges Questionnaire items "SDTETAGTCQ" were used for data collection. The questionnaire was validated by three experts in Electrical and Electronic technology education unit of Technology Education, Department of Emmanuel Alayande University of Education, Oyo, Oyo State using face and content validity to ensure all the items contains the subject's matter of the questionnaire. Cronbach method was conducted in one of Ogun State Government Technical College as a pilot study at an interval of two weeks. Reliability of the instrument was determined using Cronbach Alpha to obtain 0.70 reliability coefficients index indicating that the instrument is reliable for the study. Mean and Standard Deviation were used to answer the research questions one at a cutoff point above 3.00 and 0.50 as Highly Needed (HN) while below 3.00 and 0.50 as Not Needed (NN) at the same time but, the question two was considered as Strongly Agreed and Strongly Disagreed based upon the above same cut off points using the SPSS 22 edition for data analysis. The discussion of findings revealed that inadequate of modern tools, equipment and machines are some of the challenges impeding the effective creative and innovations in electronic trade in Oyo State Government Technical Colleges Based on the above, among recommendations provided was that Government at every level should provide available resources to alleviate and rescue the suffering non availabilities of modern tools, equipment and machines for Oyo State Government Technical Colleges

Keywords: Government Technical Colleges, Electronics Trades, Sustainable Development Assessment, Creativity and Innovations

Introduction

Technical College (TC) are post primary education in Oyo State and in general Nigeria saddled with the responsibility of training middle level manpower such as craftsmen, technicians, artesian and host of others in order to fill the gaps between the upper and low cadres of middle level manpower required for the sustainable growth, survival of industries and economic development activities in Oyo State, Nigeria and more importantly to prepare students for sustainable future world of work through the ability to generate new ideals, originality and valuable in providing solutions to the essential needs' products in an anticipation of becoming self-reliance, entrepreneurs, innovative, job-creators and others that are in lines with a totally compliance to the Federal Republic of Nigeria Policy on Education, (FRN, 2016) and National Board for Technical Education, (NBTE, 2022) respectively. These aspects of creativity skills and knowledge are acquired in the Technical Colleges education system which its legislative is to equip the trainees or graduates to be self-reliance and creator of business in a particular trained field. Creativity according to Kashani-Vahid et al. (2017) therefore is the ability to generate new ideas, concepts, or solution to problem which can call for creative thinking skills on both the personal and organization level. Also, Hon and Lui (2016) confirm by Ghosh's argument by supporting that creativity leads individuals to contribute their skills, ability and willingness to work.

In Oyo State, five Government Technical Colleges are located in all three senatorial districts which includes Ibadan/Ibarapa, Oyo central and Okeogun/Ogbomosho each of these offered electrical installation and maintenance work trades, electronic works trades and repairs, building construction and concrete with adequate provision of human and materials resources for the students to be trained as middle level manpower in creativity and innovation towards electrical installations and maintenance work, equipment and machines, repairs, assemblies of electronic gadgets and diagnosing faults such as Radio, Television, Laptop, Desktop, Palmtop, Handset and many more just to mention but a few in compliance with the National Board for Technical Education (2022). However, creativity is not something that can easily teach and learn abstractly but. require a combination of factors such as curiosity, imagination, knowledge, experience, motivation and an environment that fosters experimentation and risk-taking without fear of failure to sustain communication, promote cooperation and ensuring employees investment time in knowledge creation (Akbari et al, 2020., Khan et al, 2020) Thus, Ghosh (2015) claims that creative ideas provide a base for innovation and its implementations. In view of this, Innovation can be described as the process of creating new ideas or improving on

products services such histogram, Facebook among others to business to triumph and models that provides value to customers, organization, or society therefore becomes emerging to add more valuable colour to the services and improvement in a specific field, particularly in electronic trades. Therefore, according to Serdyukov (2017) posit that innovations in education are particularly importance because education plays a role in creating a sustainable future for the students and to the organization that is tailored towards the process by which employees generate, promote and implement creative ideas. Furthermore, Shalley et al 2014 described innovation is the practical of ideas that leads to new products or service or enhancements in the provision of existing products and services through the application of tools, equipment and machines. To improve on innovation, organizations that would stimulate employees to engage in innovative work behaviours referring to the generation, promotion, realization and implement of novel and useful ideas that can improve a product, service and work processes.

In view of this development, skill acquisition in electrical or rather in electronic trades in technical colleges, is an integral part of Technical Vocational Education Training (TVET) required the involvement and application of three main domain of educational development that includes cognitive, affective and psychomotor required of technical students to possess and have the deep knowledge in preparing the students towards of promoting entrepreneurial education for the development of the electronic trades in this prevailing Nigeria economic recession for future economic sustainability.

Therefore, sustainability is described as the ability to maintain or support a process, system or activity over time without depleting natural resources or harming the environmental society or economy. Sustainability is essential for ensuring a survival of a livelihood future and addressing global challenges like climate change, poverty and inequality in trades and host of related others. According to Sustainable Development Commission SDC, (2020) describes sustainable development as that of meeting the needs of the present without compromising the ability of generation to meet their own needs too. Also, in compliance with the United Nation, the component that works together, to produce sustainable development in economic, social development and environmental projection (UN General Assembly, 2005). Based on the above these three must be conceptualized, planned and implement all together by government to achieve a desire results, for sustainable development in a way that has a moral dimension and demand a great sense of responsibility from the leader (government) and the followers (citizen) (Nwanegbo and Odigbo, 2013). Again, Sustainable development can be defined as the equality of opportunities for well-being of citizenry particularly in Oyo State. It needs the consideration of certain objectives that if ignored, can slow down or even reverse development

in other areas. In view of the above, the importance of linking skill acquisition with sustainable development cannot be over emphasized (Agommuoh & Ndirika, 2017). Sustainable development include: sustainable self-employment, sustainable economic development, sustainable manpower development, sustainable socio-economic development, and sustainable industrial development among others are all towards survival of a livelihood of mankind. However, sustainable development in electronic trades is geared towards skill acquisition on electronic skills innovation and creativity that would ensure towards the application of using sophisticated equipment and tools for repairs of electronic gadget such as radio, television microphone, and handsets in compliance of meeting the present and future needs of unemployment, seamlessly relief to the economic challenges and ensuring sustainable development for job- creativity and stability. However, assessing the impact of innovation and creativity on electronic trades program in diagnosing all electronic gadgets like radio, television and alike through the skills acquired in Oyo State Government Technical Colleges provide sustainable future for youths/trainees /students in curbing down the rate of unemployment saga of this present predicament plaguing the Oyo State in particular Nigeria in general.

Therefore, assessment which has been otherwise known as evaluation is a broad and continuous efforts to inquire into the effectiveness of utilizing educational content and process to the clearly defined goals, can be classified into formative and summative (Akinyemi, 2016). In view of the above definition of assessments, Bernard (2018) reiterated that education assessment provides the necessary feedback that may be required in order to maximize the outcomes of educational efforts. In complimenting for the support of the definition and the benefits of continuous assessment, Uganda National Examination Board (2020) viewed continuous assessment as a systematic objectives and comprehensive way of regularly collecting of accumulating information about a student's learning achievement over a period of study, using it to guide the students' learning and in determining the next level of attainment if all the necessary human and material resources are made available or put in place to explore. It is this view that the electronic trades in Government Technical Colleges deserve the assessment towards of achieving the said goals of self-reliance, creativity and innovation for future sustainable development. In the above contest, the funds which are the pivot of providing the effective middle level manpower training through which of ensuring available tools, equipment and machines for the societal needs should be readily provided for the implementation and assurance of electronic trades for creativity and innovation for sustainable development in Oyo State Technical Colleges and in Nigeria.

Statement of the Problem

Unemployment is a cankerworm that has eaten the fabric of the labour market because every year graduates are passing out with inadequate skills, innovative and entrepreneurial competence that could stabilize or become self-reliant. In fact, unemployment rate increases day by day perhaps because the graduates are unskilled in their areas of specialization but rather preferably and always to rely on government for white collar jobs which are ceased or forthcoming and cannot go round for meeting the yearning needs of society. In view of these ugly trends, Nigerian youths have become a jack of all trades by involving and partaking with others means of survival of a livelihood to meet the ends meet and as a result becoming a master of none. Nigeria higher education in particular is seen not to be more in the positive light but a victim as many of the product of graduates having not possessed the required psychomotor skills aspect of education that can fetch a living for sustainable development. Even those graduates who have secured some of these marketable skills cannot fit into the labour market not to talk of favorably competitiveness or be self-reliant for sustainable future development and survival because they seem to be lacking innovative and entrepreneurial competitiveness, competencies, capability and ability needed by the contemporary society in the 21st century's economy development. This means that the students do not have creative tenacity or entrepreneurial competency that is commensurate to their certificates acquired upon after their graduations. This could simply mean that, the educational system in Nigeria today apparently seems not to have equipped enough its graduates for economic challenges emanated from this present time most especially at higher level of manpower. It is at these backdrops that sustainable future development through electronic trades work in technical colleges upon the overview and review of the assessment programme in Oyo State Government Technical Colleges is required.

Purpose of the Study

The main purpose of the study is to examine the sustainable development through technical education by assessing electronic trades work program in Oyo State Government Technical Colleges. Specifically, the study:

1. assess the creativity impact of electronic trades programme on graduates for sustainable development from Oyo State Government Technical Colleges
2. identify challenges hindering the successful implementation of innovations in electronic trades work programs in Oyo State Government Technical Colleges

Research Questions

Two research questions were raised for the study

1. What is the creativity impact of electronic trades programme on graduates of Oyo State Government Technical Colleges for sustainable development?
2. What are the challenges hindering the successful implementation of innovations in electronic trades work programmes in Oyo State Government Technical Colleges for sustainable development?

Methodology

A descriptive design survey was adopted to harvest the information, views and opinions from the respondents. The population was one hundred and fifty (150) participants. This consists of forty-five (45) lectures and instructors as well as one hundred and five (105) final year's students cutting across five Government Technical Colleges of the three senatorial districts of Oyo State were used for the study. The reasons for considering the final year students of Oyo State Government Technical Colleges were because their involvement in practical task in the school / college's workshops. The instrument for the data collection was tagged: "Sustainable Development through Electronic Trades work unit of Technical Education fur Assessment in Oyo State Government Technical Colleges Questionnaire items "SDTETAGTCQ" were used for the data collections. The questionnaire was validated by three experts in Electrical and Electronic technology education unit of Technology Education, Department of Emmanuel Alayande University of Education, Oyo, Oyo State using face and content validity to ensure all the items contains the subject matter in the questionnaire. Reliability of the instrument was tested in one of Ogun State Government Technical College as a pilot study at an interval of two weeks. Cronbach Alpha method was used to obtain 0.70 reliability coefficients index, indicating that the instrument is reliable for the study. The decision on research question was based on a five-point rating and Likert scale of: Very Highly Needed (VHN) / Strongly Agreed = 5 points, Highly Needed (HN) / Agree = 4 points, Moderately Needed (MN) / Undecided = 3 points, Slightly Needed (SN) / Disagreed = 2 points and Not Needed (NN) Strong Disagreed = 1 point to obtain average of 3 cutoff points as a Mean value. Mean and Standard Deviation were used to answer the research questions. All analysis was done using SPSS version 22.

Results

Research Question 1:

What is the creativity impact of electronic trades programme on graduates of Oyo State Government Technical Colleges for sustainable development?

Table 1: Creativity Impact of Electronic Trade Programme on Graduates of GTC for Sustainable Development

S/N	Items	Electronic Trade Work Instructors		GTC III Students		X_T	σ_T	RMKS
		X_1	σ_1	X_2	σ_2			
1	Graduates of Government Technical College have possessed creativity impact of skill acquisition for identifying faults in Electronic gadgets	4.50	0.65	4.41	0.66	6.71	0.98	HN
2	Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition for the assemblages of Electronic gadgets	4.40	0.63	4.47	0.68	6.64	0.97	HN
3	Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition for trouble shooting of any electronic faults components in Electronic gadgets	4.25	0.62	4.75	0.45	6.63	0.85	HN
4	Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition and knowledge for reading of Electronic circuit diagrams	3.85	0.58	4.58	0.51	6.12	0.84	HN
5	Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition for soldering of Electronic components appropriately	3.80	0.56	4.66	0.65	6.13	0.89	HN
6	Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition for the reading of	4.15	0.60	4.52	0.73	6.41	0.97	HN

7	Electronic component through analog meter Graduates of Government Technical Colleges have possessed creativity impact of skill acquisition for the reading of Electronic component through digital meter	3.75	0.55	4.21	0.79	5.86	0.95	HN
8	Graduates of Government Technical Colleges have possessed creativity drawing in wires into conducts using fish wire	3.70	0.54	4.47	0.66	5.94	0.87	HN
9	Graduates of Government Technical Colleges have possessed creativity in identifying functions of fuses and circuit breakers in electronic trades	4.00	0.59	3.86	1.14	5.93	1.16	HN
10	Graduates of Government Technical Colleges have possessed creativity in interpreting working drawings in electronic trades	4.20	0.61	4.17	0.77	6.29	1.38	HN
11	Graduates of Government Technical Colleges have possessed creativity in identifying single phase drawings in electronic trades	4.10	0.58	4.58	0.51	6.39	0.84	HN
12	Graduates of Government Technical Colleges have possessed creativity in identifying 3-phase drawings in electronic trades	4.05	0.57	4.33	0.62	6.22	0.88	HN
13	Graduates of Government Technical Colleges have possessed creativity in identifying electrical symbol	3.70	0.54	4.45	0.63	6.93	0.86	HN
Average Mean		48.63	7.17	53.34	8.22	6.32	11.54	HN
Overall Mean								

Field survey 2025, X_I = Mean Values, σ_I = Standard Deviation, X_T = Total Mean Values, σ_T = Total Standard Deviation HN= Highly Needed, NN=Not Needed

The mean values and standard deviation of respondents in Table 1 show that all items of the questionnaire on the impact of the skills acquisition required for the creativity on electronic

trades were positively possessed by the graduates of technical colleges in Oyo State as each of the items meet up cut of point of 3.00 and above and that of standard deviation of 0.50 above which resulted to a remark of highly needed.

Research Question 2:

What are the challenges hindering the successful implementation of innovation in electronic trades work programs in Oyo State Government Technical Colleges for sustainable development?

Table 2: responses to the challenges facing the successful implementation of innovation in electronic work trades' work programs in Oyo State Government Technical Colleges for sustainable development

S/N	Items	Electronic Trade Instructors		GTC III Students		X_T	σ_T	RMKS
		X_1	σ_1	X_2	σ_2			
14	Inadequate of modern signal generator	4.57	0.53	2.57	0.50	5.86	0.78	SA
15	Dilapidated of electronic workshops	4.91	0.28	2.95	0.66	4.43	0.61	SA
16	Outdated tools	4.85	0.37	3.23	0.83	6.47	0.79	SA
17	Insufficient of teaching materials to carry out practical skills	4.85	0.37	3.90	0.30	6.80	0.52	SA
18	Epileptics supply of electricity for the use in the workshops	4.71	0.48	3.23	0.83	6.33	0.90	SA
19	Ageing of machines with wrong electricity cable connections	4.41	0.66	3.90	0.30	6.36	0.81	SA
20	Inadequate infrastructure for staff and students in the electronics' workshops	4.91	0.28	3.23	0.83	6.53	0.70	SA
21	Inadequate developmental training and retraining for the staff to boost their moral	4.83	0.38	3.95	0.30	6.81	0.53	SA
22	Shortages of workbenches	4.75	0.45	3.23	0.83	6.37	0.87	SA
23	Shortages of oscilloscopes	4.58	0.51	3.90	0.30	6.53	0.66	SA
24	Shortages of I.C extractors	4.85	0.37	2.57	0.50	6.14	0.62	SA
25	Shortages of logic analyzer	4.55	0.51	2.47	0.81	5.79	0.92	SA
26	Inadequate of circuit tester	4.65	0.53	3.05	0.58	6.18	0.82	SA
27	Shortages of Mega tester	4.89	0.60	3.66	0.70	6.72	1.01	SA
28	Inadequate of surge detector	4.54	0.56	2.88	0.33	5.98	0.73	SA
	Average Mean	66.61	58.83	38.90	7.16	5.79	10.6	SA
	Overall Mean							

Field survey 2025, X_1 = Mean, σ_1 = Standard Deviation, X_T = Total Mean, σ_T = Total Standard Deviation, SA= Strongly Agreed, SD=Strongly Disagreed

Table 2 shows the mean values and standard deviation of respondents indicating that all items of the questionnaire on the challenges hindering the implementations and actualizing innovations in electronic trades for the graduates of technical colleges in Oyo State meet up cut of point of 3.00 and above and that of standard deviation of 0.50 above that leads to the short falls of necessary modern tools, equipment and machines which resulted to a remark of highly agreed by all the respondents.

Findings of the Study

The following findings emerged from the study based on the data collected and analyzed:

1. All the respondents responded Highly Needed to the entire items on creativity for the skills of Oyo State Government Technical Colleges graduates must possess and acquire after graduation.
2. All the respondents responded Strongly Agreed to all items on the constraint facing the implementation and actualizing the innovation the graduates of Oyo State Government Technical Colleges upon their graduation.

Discussion of Findings

The findings of the study in Table 1 revealed that the electronic trades work's creativity skills possessed by the graduates at Oyo State Government Technical Colleges are adequate for sustainability as the National Board for Technical Education enshrined in the policy which emphasized so much of it in the established content of curriculum of NBTE, (2022).

Again, the findings of the study in Table 2 revealed that the constraint facing the implementation and actualization of creativity and innovation in Oyo State Government Technical Colleges were inadequate of modern tools, equipment and machines which are not readily available in most of electronic trades workshops, are line with the research study of Bernard (2013) on the assessment of government technical trades in alleviating the unemployment of youth in Nigeria. Also, Shalley et al (2014) viewed innovation as the practical of ideas that leads to new products, service that would lead to the enhancements in the provision of existing products and services render through the application of tools, equipment and machines.

Conclusion

In conclusion, the sustainable development for the youths can be achieved particularly in electronic trades in Oyo State Government Technical College if there are modern tools, equipment and machines couples with seasonal trained instructors and workshops technicians

that would ensure the grandaunts' maximum performance in creativity and innovation ideas leading to impactful of the students in technical Government Colleges.

Recommendations

Based on the discussion of the findings, the following recommendations were provided:

1. The Government at every level should assist in providing modern day technologies tools, equipment and machines to Government Technical Colleges that would stimulate and encourage creativity and innovation in most of the trades in their course of studies
2. The instructors and workshops technician should be trained and retrained to enable them meet the challenges and perform maximally in their call of profession.
3. There should be an adequate power supply whenever there are calls for the use in the workshops by the instructors for creativity and innovations ideas during the practical exercises.
4. There should be a provision to the consumable materials for the use of creativity and innovation ideas during practical exercises for the students in the workshop

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