

TECHNICAL SKILLS NEEDED BY TECHNICAL COLLEGE GRADUATES OF RADIO TELEVISION AND ELECTRONICS WORKS FOR SUSTAINABLE WORKFORCE DEVELOPMENT IN ANAMBRA STATE

**Obi, Catherine Odinaka (Ph.D); Akamobi, Ogochukwu Grace (Ph.D) & Okafor, Ikenna
Anthony (Ph.D)**

Department of Electrical/Electronics Technology Education,
School of Industrial Technical Education,
Federal College of Education (Technical),
Umunze, Anambra State, Nigeria.

Abstract

The study was necessitated by the need to improve technical skills acquisition of graduates in radio, television and electronics works in technical colleges for poverty alleviation in Anambra State. Two research questions guided the study. Two null hypotheses were tested at 0.05 level of significance. The study adopted the survey research design. The researchers used a purposive sampling technique to select 48 Artisans in Anambra State. Researchers made instrument duly validated by two experts in the field of technical education, Federal College of Education (Technical), Umunze were used for data collection. Internal consistency of the instrument was determined using Cronbach Alpha technique and reliability coefficient value of 0.83 was obtained. Mean was used to answer the research questions and the hypotheses tested with t- test statistics at 0.05 level of significance. The findings of the study indicated that the ability in using signal tracer to diagnose faults in a radio receiver using fault finding techniques and ability to prevent disruption of satellite signals from the orbit to the user device are needed to a high extent by technical college graduates of radio, television and electronics works. Also there is no significant difference in the mean ratings of urban and rural artisans on the technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State. It was recommended among others that the current curriculum for technical colleges be reviewed and updated to include some essential components that are lacking to equip the students adequately for sustainability.

Keywords: Technical Education, Technical skills, Technical Colleges, Radio Television and Electronic works.

Introduction

Skill acquisition is a global issue that has forced nations to redesign programmes to alleviate poverty, create job opportunities and tackle crisis for innovation and sustainable workforce development. In this quest however, Nigeria is not left behind, hence the Technical Education. Technical education is education for change which breeds skill acquisition and plays important roles in improving the status of the youths. Technical education programmes is generally known as programmes which equip its recipients with knowledge and skills needed to function effectively and thus contribute to the development of the society. According to Okwelle and Assor (2022), in developing technical skill for gainful employment after graduation in technical education programmes (radio, television and electronics works inclusive), constant practices in a technology driven environment could help in sustaining skill learned. This follows the assertion of Obi, (2021) that knowledge of technical skills while in school is key to proficiency after graduation and suggest need for consistent practices even after graduation This will help technical college graduates (radio, television and electronic works inclusive) become self-reliance, foster creativity for workforce sustainability and eradicate poverty. Additionally, the transformation in economic, social and political life-style of people world over has been linked

to technical skill acquisition which in itself, is empowerment and a product of technical education.

Technical skills are those capabilities involved in a task or various tasks that learners are expected to acquire as a result of persistent practice especially in radio, television and electronics works as offered by technical colleges. Technical skill could be described as the ability of an individual to apply scientific knowledge for the production and repair of technological products. In furtherance, Okwelle, and Assor, (2022) submitted that for sustainable economic growth and development, learners need technical skills to contribute effectively to the society. Similarly, in another study Obi, (2021) noted that technical skills in electrical installation and maintenance work (radio television and electronics works inclusive) are highly needed among technical college students to make them employable or self-reliant. Thus, technical skills acquired are what differentiate graduates of technical colleges from other graduates because its programmes are designed to be skill based. According to Federal Government of Nigeria (2014), it is expected that graduates of technical colleges be able to set their own business, become self-employed and able to employ others. To fully achieve the objectives highlighted above, there is need for instructors in technical colleges to give quality skill training to its recipients that will considerably match needs of industries and society. Supporting this view, Eze, (2019) asserted that, employers are looking for technical college graduates (radio, television and electronic works inclusive) who are highly skilled and productive enough to identify and solve problem in industries.

Technical colleges in Nigeria are institutions that give full vocational training intended to prepare students for entry into various technical occupations. Unfortunately, it is common knowledge that graduates of technical colleges lack the relevant technical skills that will enable them to be self-reliant, employ others and eradicate poverty in the society. This view is in line with the assertion of Dauda, Diraso, Yaduma, and Agbu, (2017) that most students pass-out through colleges without functional technical skills. It is in this awareness that the authors are spurred to identify relevant technical skills highly needed by technical college graduates of radio, television and electronics works to be self-employed for creativity and poverty eradication in Anambra State which has numerous industries and require the services of skilled radio, television and electronics work graduates.

Radio, television and electronics works comprises three certifiable modules namely; radio communication, satellite transmission and television technicians (Zambwe, Makinde, & Yakubu 2018). Students offering radio, television and electronics works in technical colleges are expected to acquire technical skills in installing, operating, maintaining, and repairing of electrically energized systems in radio and television. On completion of the course of training, the recipient can obtain job in industries or establish personal business and also employ others. Additionally, programmes in technical colleges were designed to train craftsmen and artisans for the economy. The programmes were also designed to produce individuals who would not only be craftsmen and artisans, but also knowledgeable about the role of technology and the environment in which they live. It is also expected that graduates of radio, television and electronics works should be able to set their own businesses, become self-employed and be able to employ others, (Eze, 2019). The need for unemployment reduction, creativity, poverty eradication and wealth creation in the society becomes imperative hence sustainable workforce development in Technical Vocational Education and Training (TVET) Programmes in schools in the country. It also calls for making every technical college graduate acquire technical skill, since paid employment is no longer easily to come.

Statement of the Problem

The development of sound technical and vocational education is central to the nation's desire of becoming industrialized and self-reliant (Akamobi, 2019). However, present realities in Nigeria in this insecurity era indicate that it will take more than a mere refocusing of technical education in its present format to make it more relevant, responsive and effective in delivering graduates with requisite technical skills that can perform to the satisfaction of the society (Obi and Obi, 2019). It is common knowledge that something vital is missing from graduates of technical colleges in technical skill area. According to Dauda, Diraso, Yaduma, and Agbu, (2017), this could be attributed to gap between the technical skills taught in colleges and the actual technical skills needed in the society and industries. The situation of poor performance in technical skills seen among graduates of technical colleges (radio, television and electronic work inclusive) has forced Nigeria public to question the relevance of the nation's technology education programmes since the skills acquired by its graduate is not giving them jobs or helping to reduce unemployment and eradicate poverty in the country. The need to collaborate with already established artisans in radio and television repair to analyse the technical skills highly needed by technical college graduates of radio, television electronics works for creativity and poverty eradication in Anambra State, Nigeria becomes imperative.

Purpose of the Study

The purpose of this study is to analyze the technical skills needed by technical college graduates of radio, television and electronics works in Anambra State. Specifically, the study seeks to:

1. Ascertain the technical skills needed by technical college graduates of radio, television and electronics Works in radio repair.
2. Ascertain the technical skills needed by technical college graduates of radio, television and electronics Works in television repair.

Research Questions

The following research questions guided the study of technical skill needed by technical college graduates of radio, television and electronics works.

1. To what extent are these technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State?
2. To what extent are these technical skills needed in television repair by technical college graduates of radio, television and electronics works in Anambra State?

Null Hypotheses

The following null hypotheses were tested at 0.05 level of significance

1. Urban and rural artisans do not differ significantly in their mean ratings on technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State.
2. Years of experience of artisans do not significantly affect the mean ratings on technical skills needed in television repair by technical college graduates of radio, television and electronics works in Anambra State

Methods

The study adopted a survey research design. The study was ideal because the work sought the opinion of artisans in radio and television repair with respect to the technical skill needed in radio and television repair by technical college graduates of radio, television and electronics works. The population comprised 48 artisans in radio and television repair registered with the State chamber of commerce and industries in both rural and urban areas. A purposive sampling technique was used in selecting the respondents for the study. A 33-item questionnaire titled "Analysis of Technical Skills Needed by Technical College Graduates of Radio, Television and

Electronics Works for Poverty Eradication'' was the instrument used to collect data for the study. The items were structured on a four-point scale of Needed to Very High Extent (NVHE) 4, Needed to High Extent (NHE)3, Needed to Moderate Extent (NME)2, Not Needed (NN)1. Validation of the instrument was carried out by presenting the topic, the purpose, and research questions to two experts, from department of electrical/electronic technology education, Federal College of Education (Technical), Umunze. These experts critically examined the instrument for relevance of content and clarity of statements. Their suggestions and corrections were adapted to the final version of the instrument used for the study. Reliability of the instrument was established by administering 20 copies to artisans in radio and television repair in Aba, Abia State who were not part of the study. Cronbach Alpha formula was used to determine the instruments internal consistency. A reliability co-efficient of 0.83 was obtained. Copies of questionnaire were administered directly to the respondents with the help of research assistants. The completed copies of the questionnaire were collected from the respondents by hand and were used for analysis. The decision rule was that all items with mean score of 3.50 and above were regarded as Needed to Very High Extent, 2.50-3.49 as Needed to High Extent, 1.50-2.49 as Needed to Moderate Extent and 0.50-1.49 Not Needed.

Results

The result of the analysis of the study was presented in Tables 1-4.

Research Question 1: To what extent are these technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State?

Table 1: Mean scores and standard deviation on the extent technical skills are needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State

S/ N	extent technical skills are needed in radio repair by technical college graduates of radio, television and electronics works includes;	Urban N=24		Rural N= 18		Overall		Decision
		$\bar{X}_1$	SD ₁	$\bar{X}_2$	SD ₂	$\bar{X}_G$	SD _G	
1	Ability to manage signals and assemble radio system	3.33	0.66	3.17	0.82	3.20	0.79	High Extent
2	Ability to test the authenticity of signals generated by radio	3.43	0.68	3.41	0.66	3.41	0.66	High Extent
3	Ability in using signal tracer to diagnose fault in a radio receiver using fault finding techniques	3.24	0.70	3.28	0.68	3.27	0.68	High Extent
4	Ability to use signal generator to diagnose fault in a radio receiver	3.23	0.54	3.24	0.57	3.24	0.56	High Extent
5	Ability to use AVO meter to detect faults in a radio receiver	2.95	0.67	3.02	0.63	3.01	0.63	High Extent
6	Ability to use frequency counter to detect faults in a radio receiver	3.33	0.66	3.26	0.69	3.27	0.68	High Extent
7	Ability in using loop antenna to diagnose faults in a radio receiver	3.30	0.79	3.19	0.93	3.22	0.91	High Extent
8	Ability to identify faulty components in affected stages of radio receiver circuit	3.48	0.60	3.43	0.62	3.44	0.61	High Extent
9	Ability to remove and replace defective components from a radio set circuit	3.05	0.67	3.17	0.84	3.15	0.81	High Extent
10	Ability in troubleshooting microphone.	2.90	0.77	2.94	0.73	2.94	0.73	High Extent
11	Ability in troubleshooting disc changer solenoid of DVD	3.00	0.77	3.01	0.88	3.01	0.86	High Extent
12	Ability in troubleshooting bias oscillator and record switch of tape cassette	2.86	0.79	2.90	0.73	2.90	0.74	High Extent
13	Ability in troubleshooting pulse width modulation (PWM) turner and power	2.90	0.94	3.18	0.89	3.14	0.90	High Extent

14	amplifier Ability in troubleshooting power supply of a radio	3.10	0.77	3.21	0.75	3.19	0.75	High Extent
15	Ability in troubleshooting head phone power amplifier	3.05	0.74	3.13	0.64	3.11	0.65	High Extent
16	Ability in analogue and digital operation	3.01	0.71	3.02	0.71	3.02	0.71	High Extent
17	Ability in audio cassette recording	3.19	0.81	3.16	0.72	3.16	0.74	High Extent
18	Ability in troubleshooting audio signal processor tape cassette deck	3.24	0.70	3.17	0.72	3.19	0.71	High Extent
19	Ability to choose appropriate tools and instruments for radio repair	3.05	0.80	2.96	0.83	2.97	0.82	High Extent
20	Ability in troubleshooting faults in public address system	3.14	0.85	3.09	0.88	3.10	0.87	High Extent
Mean of Mean/SD		3.14	0.73	3.15	0.71	3.15	0.74	High Extent

X = Mean; SD = Standard Deviation

The analysis of data presented in Table 1 above shows that the items overall mean ratings range from 2.94 to 3.44 showing high extent. This means that the itemized technical skills are needed to high extent in radio repair by technical college graduates of radio, television and electronics works in Anambra State. The overall mean of mean of 3.15 further indicates that the items are the technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State. The low standard deviation of 0.74 indicates that the respondents have similar opinion to the items.

Hypothesis 1

Urban and rural artisans do not differ significantly in their mean ratings on technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State.

Table 2: Summary of t-test analysis of mean ratings of urban and rural artisans on technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State

Variables	N			Sig. (2tailed)	Mean Difference	Std. Error Differenc e	Decision
		t	df				
Urban	24	.252	40	.801	.20620	.81795	NS
Rural	18						

The result of t-test analysis in Table 2 shows that the t-value at 0.05 level of significant and 40 degree of freedom for the items is 0.198 with a significant value of 0.843. Since the significant value of 0.843 is more than the 0.05 level of significant the null hypothesis is not significant. This means that there is no significant difference regarding the items on the mean ratings of urban and rural artisans on technical skills needed in radio repair by technical college graduates of radio, television and electronics works in Anambra State.

Research Question 2

To what extent are these technical skills needed in television repair by technical college graduates of radio, television and electronics works in Anambra State?

Table 3: Mean ratings and standard deviation on the extent technical skills are needed in television repair by technical college graduates of radio, television and electronics works in Anambra State

S/ N	technical skills needed in television repair by technical college graduates of radio, television and electronics works includes;	1-5 Years N=16		6-Years and above N= 26		Overall		Decision
		$\bar{X}_1$	SD ₁	$\bar{X}_2$	SD ₂	$\bar{X}_G$	SD _G	
21	Ability to manage signals and assemble television system	2.86	0.79	2.92	0.80	2.91	0.79	High Extent
22	Ability to test the authenticity of signals generated by television	3.19	0.93	3.19	0.84	3.19	0.85	High Extent
23	Ability to prevent disruption of satellite signals from the orbit to the user device	2.95	0.80	3.03	0.76	3.02	0.76	High Extent
24	Ability to master the operation of turner circuit and broadcast television system	2.95	0.92	2.88	0.88	2.90	0.88	High Extent
25	Ability to use low voltage deferential signal (LVDS) connector for connecting flexible cable to LCD module	3.10	0.94	3.00	0.88	3.02	0.89	High Extent
26	Ability in troubleshooting main board of LED television	3.19	0.75	3.11	0.87	3.12	0.85	High Extent
27	Ability in troubleshooting TV power supply board with backlight inverter	3.11	0.60	2.99	0.68	3.02	0.67	High Extent
28	Ability in connecting USB port to USB storage devices	3.09	0.68	3.07	0.72	3.09	0.71	High Extent
29	Ability in antenna installation	3.29	0.64	3.22	0.67	3.23	0.66	High Extent
30	Ability in troubleshooting of remote control of LED TV trainer	3.28	0.72	3.14	0.67	3.16	0.68	High Extent
31	Ability to master panel button switches of LED TV trainer	3.33	0.73	3.29	0.75	3.30	0.74	High Extent
32	Ability to master the function of video signal demodulation	3.33	0.66	3.20	0.68	3.23	0.67	High Extent
33	Ability in troubleshooting backlight LCD TV system	3.14	0.57	3.13	0.71	3.13	0.68	High Extent
	Mean of Mean/SD	3.13	0.75	3.09	0.76	3.10	0.80	High Extent

X = Mean; SD = Standard Deviation

The data presented in Table 3 indicates that the overall item mean ratings ranges from 2.90 to 3.30 showing high extent. This shows that the items are the identified technical skills needed to a high extent in television repair by technical college graduates of radio, television and electronics works in Anambra State. The overall mean of mean ratings of 3.10 indicates high extent. The low standard deviation of 0.80 shows that the respondent's opinions do not differ remarkably to the itemized technical skills needed in television repair by technical college graduates of radio, television and electronics works in Anambra State.

Hypothesis 2

Years of experience of artisans do not significantly affect the mean ratings on technical skills needed in television repair by technical college graduates of radio, television and electronics work in Anambra State

Table 4: Summary of t-test analysis of mean ratings on technical skills needed in television repair by technical college graduates of radio, television and electronics work in Anambra State based on years of experience of artisans

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
1-5Years	16	.388	40	.698	.41516	1.06894	NS
6-Years and above	26						

The result of t-test analysis in Table 4 shows that the t-value at 0.05 level of significant and 40 degree of freedom for the items is 0.350 with a significant value of 0.727. As the significant value of 0.727 is more than the 0.05 level of significant the null hypothesis is not significant. This means that there is no significant difference with respect to the items on the mean ratings on technical skills needed in television repair by technical college graduates of radio, television and electronics work in Anambra State based on years of experience of artisans.

Discussion of Findings

The result of analysis of research question 1 revealed that technical skills in radio repair are needed to a high extent by technical college graduates of radio, television and electronics works in Anambra State for addressing poverty, sustainable workforce development, innovation and strengthening of technical education. This finding is partly in consonance with the earlier assertion of Okwelle, and Assor, (2022) who submitted that for sustainable economic growth and youth empowerment, learners need technical skills to contribute effectively to the society. Similarly, in another study Obi, (2021) noted that technical skills in electrical installation and maintenance work (radio, television and electronics works inclusive) are highly needed among technical students to make them employable or self-reliant.

Regarding research question 2, the finding indicates that the artisans accepted that technical skills in television repair is needed to a high extent by technical college graduates of radio, television and electronics works in Anambra State Nigeria. This finding is in agreement with the earlier submission of Eze, (2019) who asserted that employers are looking for graduates (radio, television and electronics works graduates inclusive) who are highly skilled and productive enough to identify and solve problem in industries.

Furthermore, regarding hypothesis 1 and 2 indicating no significant difference with respect to the items on the mean ratings on technical skills needed in radio and television repair by technical college graduates of radio, television and electronics work in Anambra State based on location and years of experience of artisans. This finding is in agreement with the assertion of Okwelle and Assor (2022), who submitted that in developing technical skill for gainful employment after graduation in technical education programmes (radio, television and electronics works inclusive), constant practices in a technology driven environment could help in sustaining the technical skill learned irrespective of location or years of experience. This follows the assertion of Obi, (2021) that knowledge of technical skills while in school is key to proficiency after graduation and suggest need for consistent practices even after graduation This will help technical college graduates (radio, television and electronic works inclusive) become creative, self-reliance and eradicate poverty.

Conclusion

Technical skills in radio and television repair are very important and necessary as they are veritable tools to cushion the effects of insecurity and poverty for sustainable economic growth.

The awareness of technical education will help stabilize the economy and reduce unemployment as well as insecurity and poverty drastically. Again, as job market approaches saturation point the certainty of finding a job upon graduation declines. It is therefore, imperative that technical college students are imparted with technical skills for self-employment upon graduation.

Recommendations

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

1. The curriculum for technical colleges should be reviewed and updated to include some essential components that are lacking to equip the students adequately for self-reliance upon graduation.
2. The federal government should establish a council that will oversee to the appropriate training of students of technical colleges.
3. Technical college students should be included in the Supervised Industrial Work Experience Scheme (SIWES) programme to ensure that students are exposed to technical skills.

References

- Akamobi, O.G. (2019). Electrical installation and maintenance practice teacher's assessment of entrepreneurial skill needs of technical students in Anambra and Enugu states. *International Journal of Academic Researchers*, 1 (2), 98- 110.
- Dauda, M., Diraso, D.K., Yaduma, P.S. & Agbu, D. (2017). Industrial installation skills acquired and job performance of graduate of electrical installation and maintenance works trade of technical Colleges in north eastern Nigeria. *The International Journal of Engineering and Science* (6), 1-8. Retrieved on 7th January, 2019 from www.theijes.com
- Eze, T.I. (2019). Entrepreneurship education in developing countries challenges and prospects. *Interaction Journal of Academic Researchers*, (3), 1-5.
- Federal Government of Nigeria (2014). *Nigeria industrial revolution plan (NIRP)*. Abuja: Author.
- Obi, C.O.C (2021). Relative effectiveness of demonstration and project-based teaching methods in developing students' psychomotor skill and interest in electrical installation and maintenance work. *Unpublished doctoral dissertation*, Department of Technology and Vocational Education. Nnamdi Azikiwe University, Awka.
- Obi, W.J.D & Obi, C.O.C (2019). Entrepreneurial skills in TVET programmes drivers of sustainable economic growth. . *International Journal of Academic Researchers* (3), 182-189.
- Okwelle, P.C. & Assor, F.I. (2022). Acquisition of work skills in radio and television repair for youth empowerment in River State. *Journal of Contemporary Science and Engineering Technology*. 1 (2).
- Zambwe, J., Makinde, A.A. & Yakubu, S. (2018). Competency needs of radio television and electronics works teachers for effective teaching in technical colleges, Northern States of Nigeria. *Multidisciplinary Journal of Science, Technology and Vocational Education* 6 (1) 23-26 Retrieved on 5th February, 2023 from www.mjosteve.com