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**PRACTICAL SKILL ASSESSMENT PRACTICES AMONG RADIO TELEVISION AND ELECTRONIC WORK TEACHERS IN TECHNICAL COLLEGES IN FEDERAL CAPITAL TERRITORY, ABUJA AND NASSARAWA STATE**

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***ABSTRACT***

*The study sought to investigate Practical skill assessment practices among radio television and electronic work teachers in Federal Capital Territory, Abuja and Nassarawa State. Four research questions guided this study and four hypotheses were formulated and tested at 0.05 level of significance. A survey research design was adopted for the study, The instrument for data collection was a 83 items Practical skill assessment practices among radio television and electronic work teachers Questionnaire developed by the researcher. The instrument was validated by three experts. The population for the study was 31 respondents. The reliability coefficient of the instrument was obtained using Cronbach Alpha formula and yielded an overall reliability of 0.86. Data collected for this study were analyzed using Mean and t-test statistics. Mean was used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of significance. Findings for research question one revealed that, 12 out of 25 items were the practical skills test development practices among teachers in RTVEW. Findings for research question two revealed that 13 out of 25 items are the practical skills test administration practices among teachers in RTVEW. Findings for research question three revealed that 16 out of 25 items are the practical skills test scoring practices among teachers in RTVEW. Findings for research question four revealed that all the 8 items are the presents techniques for improving practical skills assessment in RTVEW. Findings for hypotheses one, two, three and four revealed that, there was no significant difference between the mean responses of teachers with high experience and those with low experience as regards each research question. It was therefore concluded that the assessment practices employed by RTVEW Teachers in practical test*

*development, administration and scoring does not provide adequate assessment procedures that can truly appraise the extent of what the students have actually learnt. Therefore, teachers should employ assessment techniques that will give the students more opportunity to perform practical and be assessed on a given task individual using practical assessment tool such as the checklist so as build students confidence even at their final examination.*

**Keywords:** *Assessment, Teacher-made-test, Test development, Test implementation, Test scoring and Experience.*

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## INTRODUCTION

Vocational education according to national policy on education Federal Republic of Nigeria (FRN, (2013) is that form of education which is obtainable at the technical colleges, equivalent to the senior secondary education but designed to prepare individuals to acquire practical skills, basic scientific knowledge and attitude required as craftsmen and technicians at sub-professional level. According to FRN, (2013) the goal of vocational education are to: (a) Provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical level; (b) Provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development and (c) Give training and impart the necessary skills to individual who shall be self-reliant economically. It is therefore the bedrock in which a country's socio-economic, technological and cultural advancement is built. It was further explained by, FRN (2013) that the curriculum programmes of technical colleges are grouped into related trades and trade courses. The trade courses includes: the computer trades, mechanical trades, building trades, wood trades, hospitality trades, textile trades, printing trades, beauty culture trades, business trades, and electrical/electronic trades.

Electrical/electronic trade is a general name used in describing trades that have direct

bearing with servicing/repairs of electrical/electronic equipment and appliances. The courses in the electrical/electronics trade include: electrical installation and maintenance work, radio, television and electronics works (RTVEW).

RTVEW is a programme incorporated into the technical college curriculum to achieve its national goal. According to National Board for Technical Education (NBTE, 2001) radio and television trade curriculum among others is aimed at

training skilled technical manpower equipped with the necessary technical knowledge and practical skills for diagnosing faults and repairs in radio and television system (troubleshooting). Hence, at the completion of the course trainees are expected to know how to troubleshoot or trace faults and repair electronic equipment. In addition trainees are expected to acquire skills that will enable them understand the functions and characteristics of electronic devices and circuits. Practical skills are the psychomotor skills that enable an individual to perform practical tasks. Task, On the other hand, is a logically related set of actions required for the completion of the job objectives (NBTE, 2004). Skills can be broadly seen as the ability to do something well. According to Osinem (2008), skill refers to expertness, practiced ability or proficiency displayed in the performance of a task. Practical skills primarily require physical dexterity, although an understanding of principles, process and sequences is also essential especially for more complex practical skills. In pursuance of the above goals, FRN (2013) stated that the curriculum for each trade in technical college including electronics works shall consist of four components, which

are; (i) General education (ii) Theory and related courses (iii) Workshop practice (iv) Industrial training/production work and (v) Small business management and entrepreneurial training.

To achieve the above national goal and objectives of technical education in Nigeria which includes RTVEW there is the need to ensure quality in the teaching and assessment /evaluation of students (Olaitan and Ikeh, 2015). In recent time ensuring quality in student assessment at the technical college level has become very necessary because most people who pass through training in this type of education are unable to perform adequately as they ought to in the field of work (Obianumba, 2014). Which makes it difficult for employers to keep them or employ new once, Thereby, increasing the rate of Unemployment and poverty among youth. In order to salvage the situation there is need to ensure quality in teaching, and assessment of students practical examinations. In the same vein, Okoro, (2005) elucidates that for RTVEW students to perform dexterously, the teachers are expected to be able to deliver quality instructions to their students. Other literatures like Disha (2019), further reveals that the performance of students in national examinations like NABTEB have been declining over the years whereas they have good grades in the teacher made-test. To enable students acquire adequate practical skills in RTVEW, there is need for RTVEW teacher to imbibe adequate and appropriate practical skill assessment practices. Due to lack

of adequate skills for practical experience which occurs as a result of inadequate practical skill assessment practice, technical college students are graduating without work-based skills. Carl, (2012), attribute lack of practical skills amongst students to theoretical teaching of practical contents and poor practical skills assessment. Consequently RTVEW graduates shy away from employment where they might be called upon to demonstrate their skills. Carl, further emphasized that, this is due to the fact that students' practical skills are not adequately assessed by teachers during their learning process. The result of these lapses is half baked technical college graduates of RTVEW, who are not employable. This situation calls for the practical skill assessment practices among RTVEW teachers.

Assessment is the process of investigating the status or standard of a learner's attainment with reference to the expected outcome or objectives. Okoro (2000), described assessment as the process of investigating a programme status or extent of implementation of a programme based on expected standards of performance.

According to Osadebe (2015), assessment in its completeness/totality comprise of "formative (process) and summative" (product) respectively in order to achieve educational objectives. It further explained that, formative/process assessment refers to frequent, interactive assessments of student progress and understanding to identify learning needs and adjust teaching appropriately. Teachers using formative assessment approaches and techniques are better prepared to meet diverse students' needs – through differentiation and adaptation of teaching to raise levels of student achievement and to achieve a greater equity of student outcomes. In the same vein, Summative/product assessments are used to measure what students have learnt at the end of a unit to promote students, In order to ensure they have met required standards on the way to earning certification for school completion or to enter certain occupations, or as a method for selecting students for entry into further education.

Moreover, in technical colleges, assessment helps to determine the level of attainment of stated educational objectives by students in a programme to ascertain whether they can apply the knowledge and skills acquired to solve problems in various areas, including RTVEW as a trade. In the field of technical and vocational education, practical skill activities form major part of instruction and assessment. As such practical skills assessment (both process and product) in RTVEW should be carried out adequately so as to achieve its set goals/objectives. In another instance, Ministry, board or departments of education uses summative assessments and evaluations

as a way to hold publicly funded schools accountable for either achieving the set aims/objectives of education or not (FRN, 2013). Some of such summative assessments of technical colleges are developed, implemented and scored usually towards the end of the programme (product assessment) by certified national bodies like, National Business and Technical Examination Board (NABTEB), National Examination Council (NECO) whose standards are valid and reliable. With little or no attention been paid to teachers practical skills assessment practice in teacher made test.

Teacher-made tests are usually criterion referenced tests that are designed to assess student mastery of a specific body of knowledge (Wiggins, 2001). In order words teacher made test are testing strategy designed to monitor students learning progress. The importance of teacher made test in teaching and learning can never be over emphasized. It helps the teacher to measure the outcome and level of attainment of the curriculum, it helps the teacher in formulating new teaching strategies, and to measure students' academic achievement in a given subject amongst others (Disha, 2019). This kind of assessment is classified as formative assessment.

Formative assessment as implemented under the paradigm of Assessment for Learning (AFL) is considered a key aspect of teaching/learning process (Clark, 2006). This is driven by the assumption that if students are regularly informed about their progress in learning, then they are bound to learn better as a result of this feedback. In order to achieve this goal, regular formative assessments can be useful (Clark, 2008). In the course of the learning process, such formative assessments allow students to see their own progress and teachers to identify aspects of the content where more effective instruction is required (Tomlinson, 2008). The primary aim of formative assessment is to find out whether after a learning experience in practical class, students are able to do what they were previously unable to do. Its ultimate goal is usually to help students perform well at the end of the programme. It enables the teacher to determine the areas of modifications or improvement, choose the most suitable teaching techniques and materials, identify level of cognitive process of students amongst others. The achievement of this primary purpose is largely dependent on quality of the test development.

Development is the act or systematic process of using scientific or technical knowledge to build a material (Merriam-Webster, 2017; Business Dictionary, 2017). From the foregoing, test development can be seen as a systematic process through which the teacher builds the instrument used for measuring students' achievement. In the measurement of students' achievement, various instruments

are available for assessing students learning. These include: observation, survey, test, questionnaire, interview and measuring scales (Hills, 2008). Instruments are categorized into two namely; research-completed and subject-completed which are basically named to distinguished those instruments that examiners administer versus those completed by participants. For subject-completed test instrument that the teacher administers may assume various forms and include: questionnaires, self-checklists, attitude scales, personality inventories, achievement/aptitude tests, projective devices and socio-metric devices among others. These kinds of test instruments are considered suitable for assessing practical skill in RTVEW. In order for a test instrument to achieve its intended outcome one must not undermine the process of its implementation/administration.

Test implementation is the stage where the developed test or the test instrument is being administered in order to determine the achievement of the students (Ogbonnaya, 2010). Test implementation is said to be achieved when the generated items contained in the test instrument is successfully administered unto the students (Ogbonnanya, 2010). In order for test implementation to be sound, the implementation process must be free from distortion and the effectiveness of the process is the assurance that the quantitative value obtained from the testing is accurate. (The value obtained from the implementation process represents the score).

Test score is a piece of information, usually a number that conveys the performance of a student in a [test](#) (Okwelle, 2011) Test scoring is hence the process through which the teacher scores or grades the responses of students to a test. Test scores are interpreted with a [norm-referenced](#) or [criterion-referenced](#) interpretation, or occasionally both. A norm-referenced interpretation means that the score conveys meaning about the student with regards to their standing among other students'. A criterion-referenced interpretation means that the score conveys information about the student with regard to a specific subject matter, regardless of other students' scores (Borsboom, 2005). In scoring students practical works in technical college available literatures such as Okwelle, (2011) showed that the scoring may be raw scoring or scaled scoring. A raw score is a score without any sort of adjustment or transformation, such as a simple number assigned to question or questions answered correctly while a scaled score is the result of some transformation(s) applied to the raw score in order to report all students' general achievement on a consistent scale. The effectiveness of the forms of scoring is dependent on the teachers' experience.

Experience is the knowledge or mastery of an event or subject gained through involvement in or exposure to it (Merriam-Webster, 2017; Business Dictionary, 2017). Experience is the [practical](#) knowledge, skill, or practice derived from direct observation of or participation in events or in a particular activity (Merriam Webster, 2017). The experience the teacher possesses are significant not just to the test scoring but also in the development and the implementation process. Osadebe (2015) observed that in the entire teaching and learning process teachers' experience is related with student achievement. They further stated that teachers' experience is also helpful in the development, implementation and scoring of students' test. As regards testing, Osadebe further opined that the importance of teachers' level of experience cannot be neglected in the sense that the quantity of information/knowledge the level of teachers' experience as regards assessment is significant in the construction of table of specification, selection of test items, design of score allocation scheme, determination of interest and ability of the students in which the teacher made the test for.

Despite teacher-made tests are usually criterion referenced tests that are designed to assess student mastery of a specific body of knowledge, studies and reviews on the impact of formative assessment on students' achievement in summative assessment have not been very positive. A recent review of studies on this topic shows that students' grade point average is usually not consistent with the same students' scores on standardized test (Notar et al., 2004). Evidence from research studies (Bukar, 2006; Chejile, 2006; Garba, 1993; Okwelle, 2003; Osadebe, 2015) indicate that the popular method of assessing students' practical skills in technical and vocational education programmes including RTVEW by the teachers and instructors in Nigerian technical colleges is based on mere looking at the students' finished products with little or no attention to the process involved in carrying out the practical work. Marks are then awarded to the students based on what the teacher or examiner feels the student deserves. It has been argued that the problem of using such formative assessment for evaluation is that the teacher-made tests themselves are often severely flawed (Osadebe, 2015). According to Wiggins (2016), "most criterion-referenced tests are inadequate because the problems are contrived and the cues artificial" (Wiggins, 2016). It has been suggested that if teacher-made tests are going to adequately prepare the learners for the summative assessment (which includes; acquitting them with the adequate practical skills for self-reliance) at the end of the various key stages of learning, then teacher-made tests (formative assessment) and end of key stage

examinations (the standard national board summative test, say; NABTEB) must be comparable on the key attributes of test quality namely, (test development, implementation and scoring) validity and reliability (Parr and Bauer, 2006). Practical skills dexterity of RTVEW students or graduates greatly depends on the practical skill assessment practice among RTVEW teachers in technical colleges. Knowing that, a simplistic measure of quality of teaching will be how effectively and efficiently students can, at the end of a course or programme of study, apply or use the skills that have been learned (Eftong, 2006). The researcher therefore seeks to assess the practical skill assessment practices among radio, television and electronic work teachers in technical colleges in Federal Capital Territory Abuja.

### **Statement of the Research Problem**

The evaluation of practical skill assessment practices among RTVEW teachers for checking teaching quality is a multi-dimensional process which includes formative assessment (teacher-made test). Several research literatures like Disha (2019), revealed that the performance of RTVEW students in national examinations like NABTEB have been declining over the years. He further opined that students who pass through this form of education presently lack the required skill/dexterity to perform in the field of work. Other researches carried out earlier like Obianumba (2014), revealed previously that graduates of RTVEW find it hard to perform effectively in diagnosing faults, repairs and maintenance of RTV systems (troubleshooting) which had made them unemployable. This is of serious concern to the researcher. It is important to note that, for RTVEW students to perform poorly in national examinations (NABTEB) which is summative assessment, whereas they have been awarded good grades in the teacher made test (formative/process assessment) which prepares, promotes and qualifies them to sit for national examination. It becomes vital to investigate the teacher made test development, test implementation/administration and test scoring.

Poor performance of RTVEW students in national examinations may be due several reasons which may include; poor teaching methods, inadequate instructional materials, and poor practical skill assessment practices among RTVEW teachers. Over the years researches has been carried out on poor teaching methods, and inadequate instructional materials. However, little or no work has been carried out on poor practical skill assessment practice among RTVEW teachers in technical colleges (Disha 2019, and Kini and Podolsky, 2019). Despite several researches in RTVEW at technical college level, there is no conclusive argument or evidence as to the actual cause of the RTVEW students' low performance in national examinations. It appears the practical skill



assessment practices among teachers of RTVEW is another vital area that needs to be researched to enhance instructional practices and learning of RTVEW as a trade, This is because there is no adequate empirical research evidence regarding the relationship between practical skill assessment practices among RTVEW teachers and RTVEW student's performance in national examinations (Olaitan and Ikeh, 2015, and Disha 2019). Based on the above reasons therefore, this study is design to assess practical skill assessment practices among RTVEW teachers in technical colleges in Federal Capital Territory Abuja and Nassarawa state in order to create a baseline data necessary for decision making and for further research.

### **Aim and Objectives of the Study**

The aim of the study is to investigate the practical skills assessment practices among RTVEW teachers in technical colleges in FCT Abuja and Nassarawa state. Specifically, this study intends to determine:

1. Practical skills test development practices in RTVEW.
2. Practical skills test administration practices in RTVEW.

### **Research Questions**

The study will seek answers to the following research questions:

1. What are the practical skills test development practices in RTVEW?
2. What are the practical skills test administration practices in RTVEW?

### **Hypotheses**

The following null hypotheses were formulated and will be tested at 0.05 level of significance.

**H0<sub>1</sub>:** There is no significant difference between the mean responses of teachers with high experience and those with low experience as regards the practical skills test development practices in RTVEW.

**H0<sub>2</sub>:** There is no significant difference between the mean responses of teachers with high experience and those with low experience as regards the practical skills test administration practices in RTVEW.

## **METHODOLOGY**

### **Research Design**

The study adopted descriptive survey research design. Descriptive survey is a research design which involves the assessment of sampled people's opinion using questions (Osuala, 2005).

### **Area of the Study**

The study was carried out in the Federal Capital Territory (FCT) and Nassarawa state, and covers all NBTE approved science and technical colleges offering Radio Television and Electronics works and awarding National Technical Certificate in the FCT and Nassarawa. There are a total of six technical colleges in the area.

### **Population of the Study**

The population of the study is 31 subjects/respondents and it consists of all the teachers teaching RTVEW in all the technical colleges in the study area. The entire population of 31 subjects was used for the study since the population size is not too large, (all the population will be used). Hence there was no sampling.

### **Instrument for Data Collection**

The instrument that will be used for collecting data for the study is structured item questionnaire developed by the researcher titled: Practical Skills Assessment Practices among Radio Television and Electronics Works Teachers questionnaire (PSAPRET). The questionnaire consists of two Sections (A and B). Section 'A' concerns the respondents' personal data whereas Section 'B' seek information on practical skills assessment practices among Radio Television and Electronics works teachers as highlighted in the objective of the study. This section is also sub divided into four parts; part I, II, III and IV respectively.

Part I which has 25 structured item questions solicited information from the respondents on the practical skills test development practices among RTVEW teachers. Part II consists of 25 structured questions and solicits information from the respondents on practical skills test administration practices among RTVEW teachers in RTVEW. Part III consists of 25 items and seeks opinion of respondents on the practical skills test scoring practices among teachers in RTVEW. Part IV which seeks information on the techniques for improving practical skills assessment in RTVEW has 8 items.

### **Validation of the Instrument**

To ensure that the instrument adequately covers the scope of the study, the instrument was subjected to content validation by three experts from ITE department, federal university of technology minna.

### **Reliability of the Instrument**

A pilot test of the instrument was carried out in Federal Science and Technical college, Otukpo, Benue state. After which Cronbach Alpha formula was used to

determine the reliability coefficient of the instrument. The reliability coefficient was established to be 0.94, 0.85, 0.82, and 0.82 for practical skills test development practices among teachers, practical skills test administration practices among teachers, practical skills test scoring practices among teachers and the techniques for improving practical skills assessment in RTVEW respectively with an overall reliability of 0.86.

### Administration of the Instrument

The researcher administered the instruments to the respondents through personal contact with the respondents and with the help of 2 research assistants.

### Method of Data Analysis

The data collected for this study was analyzed using mean to answer the research questions. To determine the acceptance and rejection of any item, mean score of 2.50 is chosen. The resulting means score was interpreted relatively to the four (4) Point Rating Scale adopted for the study. In this regard, any item with mean score of 2.50 and above was regarded as Agree and any item with mean score below 2.50 was considered as Disagree. While t-test was used to test the null hypotheses at 0.05 level of significance in order to compare whether the differences was significant or insignificant. In applying this, any null hypothesis with calculated t-value less than the t-table value was considered not significant and if the calculated t-value is greater than the t-table value it was considered significant.

## RESULT OF DATA ANALYSIS AND INTERPRETATION

### Research Question 1

What are the practical skills test development practices among teachers in RTVEW?

### Mean and Standard Deviation of Practical Skills Test Development Practices among Teachers in RTVEW

<i>S/</i>	Practical Skills Test Development Practices	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	$\bar{X}_t$	SD <sub>t</sub>	Decision
<i>N</i>								
<i>1</i>	Practical skill test planning A test blueprint is designed in line with	3.4 2	0.7 6	3.3 3	0.7 7	3.3 9	0.7 6	Agree

	the objectives of RTVEW.							
2	The availability of facilities and equipments are considered	3.1 1	0.9 4	3.8 3	0.3 9	3.3 9	0.8 4	Agree
3	The nature of the testee (RTVEW students) is also considered.	3.0 5	0.6 2	3.4 2	0.7 9	3.1 9	0.7 0	Agree
4	Provision is made for review, length of the test and time.	1.8 9	0.8 1	1.8 3	0.5 7	1.8 7	0.7 2	Disagree
5	The teacher practical skill test are usually oral questions that requires students to provide verbal answers during the teaching-learning process.	1.8 4	0.6 9	1.7 5	0.4 5	1.8 1	0.6 0	Disagree
6	The teacher practical skill test is often a take home test that requires students explaining practical steps rather than hand on the work.	3.7 4	0.4 5	2.8 3	0.7 2	3.3 9	0.7 2	Agree
7	The teacher practical skill test is a checklist designed to assess students usually by student's performance based on his contribution and participation in the	1.7 9	0.5 4	1.4 2	0.6 7	1.6 5	0.6 1	Disagree

	teaching-learning process.							
	<b>Practical Skill test is developed to achieve objectives on mounting of components</b>							
8	Students ability to layout components (replaced) appropriately on the circuit board	1.32	0.67	2.67	1.02	1.84	1.07	Disagree
9	The ability to stripe components' leads and prepare jumpers to desired sizes	2.84	0.60	3.83	0.39	3.23	0.71	Agree
10	The aptitude to manipulatively link components leads appropriately	1.79	0.63	2.83	0.72	2.19	0.83	Disagree
11	The ability to stripe conductor, cut and bend jumper into shapes	1.68	0.67	1.75	0.75	1.71	0.69	Disagree
12	Ability to link components leads using jumpers appropriately	1.89	3.15	1.92	0.67	1.90	0.47	Disagree
13	The aptitude to ensure that the under laid components on the circuit board is neat	3.58	0.61	2.58	0.52	3.19	0.75	Agree
14	competence to ensure that joints are firm	3.74	0.45	3.08	0.67	3.48	0.63	Agree
	<b>Practical Skill test is developed to achieve objectives on</b>							

	desoldering and soldering							
15	Ability clinch leads to the tip of the soldering iron so as to melt small blob of solder on the tip of the soldering iron	2.8 9	0.8 8	2.4 2	1.2 4	2.7 1	1.0 3	Agree
16	The dexterity to place the melted small blob of solder on the tip of the soldering iron onto the interface between the component lead and the pad on the circuit board	1.9 5	0.2 3	2.1 7	0.7 2	2.0 3	0.4 8	Disagree
17	Skill to generally desolder/solder active and passive electronic components	3.8 9	0.3 2	3.1 7	0.5 8	3.6 1	0.5 6	Agree
18	The ability to use soldering flux to desolder/solder Printed Circuit Board components	1.9 5	0.4 1	1.5 0	0.9 1	1.7 7	0.6 7	Disagree
19	The capacity to use soldering flux to desolder/solder spider Integrated Circuits	1.9 5	0.5 2	1.6 7	0.8 8	1.8 4	0.6 9	Disagree
20	The skill level in desoldering/soldering Surface Mounted resistor chip, diode chip and transistors	1.4 7	0.6 1	2.0 0	0.4 3	1.6 8	0.5 9	Disagree

21	The competence to allow solder blob on the soldering iron tip to run around and fill the interface between lead of the components and the pad on the circuit board neatly	3.7 9	0.5 3	2.1 7	0.9 4	3.1 6	1.0 6	Agree
	<b>Practical Skill test is developed to achieve objectives on constructing, testing and assembling of circuits and gadgets constructing, testing and assembling of circuits and gadgets</b>							
22	The ability to accurately assemble circuit components	3.9 5	0.2 3	3.7 5	0.4 5	3.8 7	0.3 4	Agree
23	The competence to accurately conduct stage signal and voltage measurement on a final circuit	1.7 4	0.8 7	1.3 3	0.6 5	1.5 8	0.8 1	Disagree
24	The dexterity to install circuit board into their respective devices accurately	3.3 2	0.6 7	1.0 8	0.2 9	2.4 5	1.2 3	Disagree
25	The skill to conduct specific manipulative task involving assembling of Radio, Television and other electronic gadgets.	2.8 4	0.6 0	3.0 8	0.2 9	2.9 4	0.5 1	Agree

Table 4.1 presents the practical skills test development practices among teachers in RTVEW. As shown in the Table, the respondents agree with items 1, 2, 3, 6, 9, 13, 14, 15, 17, 21, 22 and 25 since their mean (3.39, 3.39, 3.19, 3.39, 3.23, 3.19, 3.48, 2.71, 3.61, 3.16, 3.87 and 2.94 respectively) are above the 2.50 cutoff mean. Whereas the respondents disagree with items 4, 5, 7, 8, 10, 11, 12, 16, 18, 19, 20, 23, and 24 with mean respective 1.87, 1.81, 1.65, 1.84, 2.19, 1.71, 1.90, 2.03, 1.77, 1.84, 1.68, 1.58 and 2.45 since they are below 2.50 threshold mean set for data reporting.

### Research Question 2

What are the practical skills test administration practices among teachers in RTVEW?

#### Mean and Standard Deviation of Practical Skills Test Administration Practices among Teachers in RTVEW

S/ N	PRACTICAL SKILLS TEST ADMINISTRATION PRACTICES	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	$\bar{X}_t$	SD <sub>T</sub>	DECISI ON
	<b>Practical skills test administration in planning</b>							
1	Students sit in cluster and the teacher test students practical skills cluster by cluster.	2.00	0.33	1.83	0.39	1.94	0.36	Disagree
2	Students are verbally assessed individually in an interview section.	1.68	0.95	2.08	0.67	1.84	0.86	Disagree
3	Students are allocated work and tested on a practical section as the assigned practical task progresses.	2.26	0.45	2.50	0.52	2.35	0.49	Disagree
4	Students practical skills are assessed through computer based test.	1.58	0.84	1.83	0.39	1.68	0.70	Disagree
5	The teacher assess the Students practical skills	1.89	0.31	1.75	0.62	1.84	0.45	Disagree



	using checklist to grade students ability progressively as the students carryout the practical step by step.								
6	Students are assessed on identification and selection of circuit components	3.95	0.23	2.50	0.52	3.39	0.80	Agree	
7	RTVEW teacher assess students on the use of measuring instrument to determine the functioning of electronics components	3.63	0.68	2.83	0.72	3.32	0.91	Agree	
<b>Practical skills test administration in mounting of components</b>									
8	Teacher conduct test to ascertain students ability to layout components appropriately on the circuit board	1.68	0.89	1.50	0.79	1.61	0.84	Disagree	
9	Teacher conduct test to determine students ability to stripe components' leads and prepare jumpers to desired sizes	3.05	0.97	2.83	0.38	2.97	0.79	Agree	
10	Teacher assess students on their ability to manipulatively link components leads appropriately	1.42	0.69	1.50	0.67	1.45	0.68	Disagree	
11	Electronics teachers assess students on their ability to stripe	2.63	0.89	2.67	0.78	2.65	0.84	Agree	

	conductor and cut and bend jumper into shapes							
12	Students are tested on their ability to manipulatively link components leads using jumpers appropriately	1.89	0.66	2.00	0.60	1.94	0.63	Disagree
13	Electronics teacher assess students on their ability to under lay components on the circuit board neatly	2.53	1.13	2.67	0.78	2.58	0.99	Agree
14	Teacher assess students on their ability to ensure firm joints	3.58	0.61	3.50	0.52	3.55	0.57	Agree
	<b>Practical skills test administration in desoldering and soldering of components</b>							
15	Students are assessed on clinching leads to the tip of the soldering iron so as to melt small blob of solder on the tip of the soldering iron	3.53	0.61	2.58	0.79	3.16	0.82	Agree
16	Students are assessed on their ability to place melted small blob of solder on the tip of the soldering iron onto the interface between the component lead and the pad on the circuit board	2.32	0.82	2.08	1.08	2.23	0.92	Disagree
17	Test is conducted to determine students ability to generally desolder/solder active	3.53	0.61	2.50	0.79	3.13	0.85	Agree

	and passive electronic components							
18	Students are assessed on the use of soldering flux to desolder/solder Printed Circuit Board components	2.11	0.32	1.50	0.67	1.87	0.56	Disagree
19	Students are assessed on the use of soldering flux to desolder/solder spider Integrated Circuits	3.37	0.49	1.83	0.39	2.77	0.88	Agree
20	Test is conducted to ascertain students level of desoldering/soldering Surface Mounted resistor chip, diode chip and transistors	1.68	0.82	2.00	0.85	1.81	0.83	Disagree
21	Test conducted on students to assess their ability to allow solder blob on the soldering iron tip to run around and fill the interface between lead of the components and the pad on the circuit board neatly	3.21	1.03	3.83	0.39	3.45	0.89	Agree
	<b>Practical skills test administration in constructing, testing and assembling of circuits and gadgets</b>							
22	Test is conducted on students to assess their ability to accurately assemble circuit components	3.05	0.70	3.33	0.49	3.16	0.64	Agree

23	Students are assessed on the ability to conduct stage signal and voltage measurement on a final circuit	2.11	0.32	1.4	0.79	1.84	0.6	Disagree
				1			4	ee
24	Test is conducted to assess students ability to install circuit board into their respective devices accurately	3.58	4.50	2.5	0.67	3.16	3.5	Agree
				0			5	
25	Teacher assesses students to determine their ability to conduct specific manipulative task involving assembling of Radio, Television and other electronic gadgets.	2.53	0.51	2.7	0.45	2.61	0.4	Agree
				5			9	

Presented in Table 4.2 are the practical skills test administration practices among teachers in RTVEW. As indicated by the respondents, items 6, 7, 9, 11, 13, 14, 15, 17, 19, 21, 22, 24 and 25 with average mean 3.39, 3.32, 2.97, 2.65, 2.58, 3.55, 3.16, 3.13, 2.77, 3.45, 3.16, 3.16 and 2.61 respectively shows that they are above 2.50 cutoff mean. This implies that the respondents agreed with these items but disagreed with item 1, 2, 3, 4, 5, 8, 10, 12, 16, 18, 20 and 23 with mean 1.94, 1.84, 2.35, 1.68, 1.84, 1.61, 1.45, 1.94, 2.23, 1.87, 1.81 and 1.84 since the mean are below 2.50.

### Hypothesis One

#### t-test Analysis of Practical Skills Test Development Practices among Teachers in RTVEW

GROUP	N	MEAN DIFFERENCE	STANDARD ERROR DIFFERENCE	T-CALC.	DF.	T-TABLE	DECISION
LOW EXPERIENCED TEACHERS	19	4.00	4.74	0.84	29	2.01	Ho: Sign.
HIGH EXPERIENCED TEACHERS	12	4.00	4.89				

The t-test analysis of practical skills test development practices among teachers in RTVEW. The table revealed t-calculated to be 0.84 at 0.05 level of significance, df 29. This result indicates that t-calc. value (0.84) is less than 2.01 t-critical value. As a result the null hypothesis is therefore upheld. Hence there is no significant difference between the mean responses of teachers with high experience and those with low experience as regards practical skills test development practices in RTVEW.

### Hypothesis Two

#### t-test Analysis of Practical Skills Test Administration Practices among Teachers in RTVEW

GROUP		N	MEAN DIFFERENC E	STANDARD ERROR DIFFERENCE	T-CALC.	DF.	T- TABLE	DECISIO N
<b>LOW</b>	<b>EXPERIENCED</b>	19	6.45	5.08	1.27	29	2.01	H <sub>0</sub> : Sign.
<b>TEACHERS</b>	<b>TEACHERS</b>	12	6.45	5.02				

The t-test analysis of the practical skills test administration practices among teachers in RTVEW. The table revealed t-calculated to be 1.27 at 0.05 level of significance, df 149. This result indicates that t-calc. (1.27) is less than 2.01 t-critical value. As a result the null hypothesis is therefore upheld. Hence there is no significant difference between the mean responses of teachers with high experience and those with low experience as regards practical skills test administration practices in RTVEW.

### Discussion of Findings

Emerging results on practical skills test development practices among teachers in RTVEW provides the practices that the teacher employed in the development of practical skill test. In the development of instrument for testing students' outcome in practical skills, it is revealed that the teacher employed some practices that are identified to enforce performance standing in measuring students skills. Some of these practices are that the teachers ability to design a test blues print in line with the objectives of RTVEW, consider the availability of facilities and equipment, consider the nature of the testee, construct test assesses students aptitude to under laid components on circuit board is neat, construct

test to assess students ability to conduct specific manipulative task involving assembling of Radio, Television and other electronic gadgets. These findings are in line with Obianumba (2014) that observed that for adequately developed practical skills assessment instrument, it is appropriate that it should reflect the interest of the testee, and the test blue print should adequately cover the course objectives.

Furthermore, notwithstanding that some of the outcome of the finding on practical skills test development practices that is revealed in the study enforce performance standards in measuring students skills outcome, some practices employed by the teacher are contrary to Obianumba (2014) advocacy that prioritized practical skills development to testee interest, course objectives, students mental ability amongst others. Contrary to Chiejile (2006) and Okoro (2005) asserts that properly developed practical skills test also provides adequate assessment procedure that can easily appraise the extent of what has been learnt. In this light they enumerate amongst other practical skills testing tool to include rating scale, checklist. According to Obianumba (2014) practical skills test developed without developing appropriate instrument for eliciting students' performance could position the teacher to employed techniques not appropriate for measuring practical skills. Additionally, the outcome of the hypothesis on practical skills test development that revealed a no significant difference between the mean responses of teachers with high experience and those with low experience as regards practical skills test development practices in RTVEW signify that both responses unanimously with the outcome of this finding. This result shows that students' performance could be affect poorly over the years.

The outcome of the finding on practical skills test administration practices among teachers in RTVEW revealed the practices the teacher adopts in the administration of test in RTVEW. The finding revealed that students are assessed on identification and selection of circuit components, students are not assessed in clusters, students are not assessed verbally, teacher assess students on the use of measuring instrument to determine the functioning of electronics components, teacher conduct test to determine students ability to stripe components' leads and prepare jumpers to desired sizes amongst others. This finding indicates that in practical skills test administration the teacher imbibe best administration practices. According to Abdullahi (2015), practical skills test administration is the implementation stage of the test the teachers developed. So to ensure that the test effectively measure what it is designed for the administration process most not be neglected. In line with the outcome of some of the findings, Obaianumba

(2014) advocate that in order to eliminate administration bias that could place some students on advantage to other, cluster test administration should be avoided and test should adequately covers the totality of the students practical skills in planning, mounting, soldering and circuit assembly/testing skills.

Despite that some of the findings shows that students practical skills are adequately tested, some test administration practices where identity that introduces bias in test administration. Unlike Obaianumba (2014) that advocate for computed based testing and use of checklist, rating scale for testing, the study established that RTVEW teachers does not assess students practical skills through computer based test, students practical skills are not assessed using checklist to grade students ability progressively as the students carryout the practical step by step, students are not tested to ascertain their ability to layout components appropriately on the circuit board, students ability to manipulatively link components leads appropriately and place melted small blob of solder on the tip of the soldering iron onto the interface between the component lead and the pad on the circuit board are not tested amongst others. The outcome of the finding shows that students poor performance could be attributed to the method used in test administration since human factor could much influence the process due to lack of use of computers and not using ordered scale in testing students among others. This is further supported by the outcome of the hypothesis on practical skills test administration that revealed a no significant difference between the mean responses of teachers with high experience and those with low experience as regards practical skills test administration.

### **Conclusion**

Following the country's pursuit to meeting the world technological advancement, the demand for effective and skilled individual to needed to take up the technology challenges of the nation is on the increase. The realization of the objectives is not without production of all level effective and efficient skilled manpower. Despite the government and private individuals' effort in producing the needed technological manpower needed to take up the nation's industrial responsibilities, the technical manpower is disappearing due to student poor performance particularly at the technical colleges. Based on the results obtained from the study, students' poor performance in technical colleges is attributed to the practical skills assessment practices employed among teachers. Particularly, the study identified that the assessment practices employed in practical test development, administration and scoring does not provide adequate assessment

procedures that can truly appraise the extent of what the students have actually learnt. Practices such as assigning arbitrary score to students, questioning students on practical task rather than have students perform the task do not enforce performance standards in measuring students' skills outcome. As such when these students are confronted with summative test the performance cannot be otherwise. To overcome this challenge, the study advocates that teachers should employ assessment techniques that will give the students more opportunity to perform practical and be assessed on a given task individually using practical assessment tools such as the checklist so as to build students' confidence even at their final examination.

### Recommendations

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

1. Since the determinant of the assessment process is dependent on the quality of test development, the RTVEW teachers ought to ensure that they develop their test early so as to give room for review. During the review process areas of shortcomings can be detected. With this, the trust of the test covering adequately the objectives is guaranteed.
2. The school principal should create a monitoring committee saddled with the responsibility of administering the test which the teacher prepared. The essence is to ensure that the totality of the content of the test developed is fairly administered to the students without any form of favouritism and with monitoring.
3. Teachers' test should comply with computer-based testing format so that all RTVEW teachers are mandated to employ the computer in scoring students' test using standard practical skills assessment tools such as the rating scale, checklist.
4. The school management should ensure that RTVEW teachers are encouraged to employ the techniques for improving practical skills assessment in RTVEW that the study proffers.

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