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New Television Camera Systems Operation and Maintenance Contents for Training Radio, Television and Electronics Work Students in Nigeria

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ABSTRACT

The study developed new television camera systems operation and maintenance contents for training Radio, Television and Electronics Work (RTVEW) students. Four stage of research and development (R&D) design was adopted. A total of 228 subject matter experts selected using; purposive and random sampling techniques. Data for the study were collected using a structured questionnaire that had a reliability coefficient of 0.83. The data were analysed using mean, standard deviation and t-test. The study revealed that: safety practices in cameramanship, studio and outdoor cable management techniques, camera control mode; manual, robotic and computerized, introduction to use of ICT products in filming, and introduction to internet, recording for video streaming, received a strong emphasis as the new cognitive contents for the operation and troubleshooting of television camera systems. The study also revealed that there was no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the new cognitive and psychomotor skills contents for the operation and maintenance of television camera systems. It was concluded that the skills acquired by RTVEW students would be boosted tremendously and their employability enhanced, if the training they receive incorporates the new contents for the operation and maintenance of television camera systems developed in this study. It was therefore, recommended that the latest facilities needed for the teaching and learning of skills in television cameras operation and maintenance should be provided by government and all stakeholders involved in the provision of Technical and Vocational Education and Training in Nigeria.

Keywords: *Radio, Television, Electronic work, Technical college, Television camera, Curriculum..*

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Highlights of this paper

- This paper developed 32 television camera systems operation and maintenance contents for training Radio, Television and Electronics Work students in Nigeria.
- The study revealed that there was no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the new cognitive and psychomotor skills contents for the operation and maintenance of television camera systems. Meaning that both professionals and teachers were concerned that the existing curriculum used for training Radio, Television and Electronics Work students students Nigeria, has become obsolete and require a review.

1. INTRODUCTION

Radio, Television and Electronics Work (RTVEW) is one of the electrical and electronics engineering trades offered at the Nigerian technical college level to equip technical college graduates with sellable skills. Okwelle and Okeke (2012) defined RTVEW as one of the engineering trades incorporated into the technical college curriculum for the purpose of producing middle level skilled manpower required for the nation's economic and technological development. The possession of competencies in the maintenance and repair of consumer electronics has no doubt helped some Radio, Television and Electronics Work (RTVEW) graduates in securing means of livelihood and become productive members of the Nigerian society. However, a cursory inspection of the RTVEW curriculum (National Board for Technical Education (NBTE), 2001) reveals that skills in the operation and maintenance of television cameras are important areas where potentials are yet to be fully tapped.

The curriculum of RTVEW is divided into smaller units referred to as modules. A module is a well-defined short course of study that forms part of a larger academic course or training programme, which when successfully completed can be used for employment purposes without having to complete the larger course. For trade courses like RTVEW, modularization presents multiple benefits that result into the improvement of old skills and developing of new ones (Siagian, 2014; Li and Pilz, 2017; Pilz and Canning, 2017; Pilz *et al.*, 2018). There are 10 modules that are currently being used for training RTVEW students in Nigeria. However, it is only in satellite transmission and reception (STR) module that elements of television camera systems were mentioned. The provision of skills in television cameras systems to RTVEW students is an important aspect of the curriculum. However, the only mention of television cameras systems in the entire STR module is in section 3.1. Where the teacher was merely required to explain the relative difference between; CCTV Monitors, TV receivers, CCTV Cameras, and Television Cameras (NBTE, 2001). A television camera is an electronic device used to capture and convert images into electrical signal for transmission to a television receiver (Zettl, 2014). According to Greenberg and Zanetis (2012) the role played by television cameras in the entire process of the transmission of video over remote distances, cannot be over emphasized. In essence, television cameras made viewing images in television sets possible.

Television camera is one of the few electronic equipment that evolved through a very rough past. Williams (2017) hinted that the flying-spot scanners were the first set of what are now known as television cameras. They were in use in the 1920s and 1930s, during the period which mechanical television was in vogue and were themselves mechanically operated (Rosen *et al.*, 2015). But in the early 2000s, the television camera experience dramatic advancement. This was made possible due to feats attained by electronics manufacturers such as Sony and Philips. Compesi (2015) hinted that these major manufacturers were responsible for the introduction of the digital professional video cameras. The digital professional video cameras made use of Charge-Coupled Device (CCD) sensors and recorded video digitally on flash storage (Cvjetnicanin and Kallenberger, 2017). These were quickly followed by digital high-definition television (HDTV) cameras. Bignell and Lacey (2014) noted that as digital

technology improved and also due to digital television transition, digital professional video cameras became dominant in television studios since the 2010s.

The innovations that greeted the television camera, which were introduced as recently as 2012, points to the fact that the current STR module which was introduced in 2001 and that is being used for the training of RTVEW students is fast becoming obsolete and inadequate for use in the training of the students. In the same vein, Rubin (2017) and Osman and Anouze (2016) noted that with many television stations springing up almost in every city nowadays, the demand for television cameras and consequently people with skills in handling them is on the increase. This has therefore provided an opportunity for upgrading the current RTVEW curriculum with contents that are capable of placing the graduates of the programme at a vantage position with respect to the numerous job opportunities that are springing up in the television industry. This view is also corroborated by Frenzel (2003) who hinted that in order to maintain a strong technical workforce, there is an increasing need for colleges and training institutes to update their curriculum so that it addresses the latest technologies and industrial practices. Against this background therefore, there is the need to investigate the emerging skills in television camera systems with a view of developing appropriate contents that can enhance the employability of RTVEW craftsmen graduating from technical colleges in Nigeria.

The objective of being able to secure employment upon the completion of RTVEW students' programme at the technical colleges in Nigeria, does not appear to be adequately realized. Ismail and Mohammed (2015); Raymond (2013) revealed that majority of the technical college graduates which may include RTVEW graduates are unemployed as a result of lack of adequate practical skills needed in the modern day workplace. Apparently, the training that these RTVEW graduates acquired in technical colleges seems inadequate to make them enterprising and self-reliant as stipulated in the objectives of the programme. The menace of unemployment is further made worse by the absence of adequate television camera operation and maintenance contents to provide the required practical skills that are necessary for securing employment in the television camera industry.

In addition, the module on satellite transmission and reception that contains elements of television camera systems is too cumbersome as well as obsolete. Hence, its continuous use over the past 17 years, resulted in a myriad of problems including a mismatch between graduate employee skills and those skills required for performance in the television industry. The implication of this is that, if nothing is done to come up with an up-to-date television camera systems operation and maintenance module, that has the necessary cognitive and psychomotor skills contents, capable of fostering the acquisition of skills that are commensurate with the present technological developments, RTVEW graduates would continue to be poorly prepared and inadequately equipped for the challenges of the world of work in the television industry and remain in need in the midst of plenty. Hence, in order to enhance the employability of RTVEW graduates, there is the need for the development and validation of new television camera systems operation and maintenance contents for training RTVEW students.

Hence, the aim of this study is to develop and validate a new television camera systems operation and maintenance contents for training radio, television and electronics work students. Specifically, the objectives of this study were to develop and validate: Cognitive contents for the operation and maintenance of television cameras for training radio, television and electronics work students in Nigeria, and Psychomotor skills contents for the operation and maintenance of television cameras for training radio, television and electronics work students in Nigeria.

2. METHODOLOGY

The development and validation process of this study was restricted to four stages of research and development (R & D) research design. They are; preliminary study, development, assembly and validation. The four stages were executed as follows: 1. Preliminary study stage: literature were reviewed to identify and generate some relevant cognitive and psychomotor skills contents of television camera systems. These were used to produce the interaction guide which was used to extract knowledge from the subject matter experts (SMEs). 2. Development stage: The researchers booked appointments with each of the nine SMEs (consisting of Three electrical/electronics industrial personnel in television industry, three lecturers and three RTVEW teachers) using the appointment card they designed two weeks ahead of time. The appointments included date, time and place convenient for the SMEs. After the meetings, the researchers prepared a transcript of the information provided by the SMEs, gave it to them to; review, effect necessary corrections and endorse. The researchers then interchanged the endorsed version of the transcribed information among the SMEs for peer review. Their observations were harmonized into one set of information, which was presented to a five-man panel at the assembly workshop that was organized. 3. Assembly stage: the researchers constituted a five-man panel based on the dictates of DACUM (develop a curriculum) model as postulated by Norton and Moser (2008) who met for two days at the Electrical Engineering Trade Workshop, Government Technical College Malali, Kaduna, to discuss and arrange the cognitive and psychomotor skills contents generated into modular form. 4. Validation stage: the researchers converted the instrument into a four-point rating scale questionnaire and used to generate the statistical data needed for calculating the reliability coefficient of the instrument, answer the research questions as well as test the null-hypothesis of the study.

The population of the study consisted of all the 346 SMEs in the 21 television stations, seven higher institutions offering Electrical/Electronics Technology Education, and 15 technical colleges in Niger, Kwara, Federal Capital Territory Abuja and Kaduna. 228 SMEs sampled using purposive technique. The final list of the participants that were used at each of the four stages of the study were selected through random sampling using balloting technique. The distribution of the final sample was made up of; the nine SMEs used for the instrument development, 205 used for main data collection and five used for the assembly panel. This gave a total of 219 SMEs that participated in the study. Data were collected using the researchers constructed instrument titled: Contents Development and Validation Instrument for Television Camera Systems Operation and Maintenance Module. The instrument had two parts; I and II. Part I was used to elicit information on the personal data of the respondents. Part II contained 32 questionnaire items on a four-point rating scale of; Strongly agree (SA=4), Agree (A=3), Disagree (DA=2), and Strongly disagree (SD=1). These were further divided into two sub-sections in line with the two research questions.

The research instrument was face and content validated by three electrical/electronics teachers. The face validated instrument was pilot tested using 35 SMEs in Kano State. The coefficient of internal consistency of the instrument was calculated using Cronbach's alpha. The reliability coefficient of the research questions were calculated separately and it yielded 0.79 and 0.85 respectively, while that of the entire instrument was 0.83. A total of 205 (which was made up of 123 electrical/electronics industrial personnel and 82 electrical/electronics teachers) SMEs participated in the main data collection. The research instrument was administered on the respondents with the help of four research assistants, one each for Niger, Kaduna, Kwara states and the FCT, Abuja. However, 118 questionnaires from electrical/electronics industrial personnel and 77 electrical/electronics teachers, representing 95.1% of the total number distributed, provided the information that were used for data analyses. The data collected from the respondents were analysed using mean, standard deviation and t-test. Mean and standard deviation were

used to answer the research questions, while the null hypotheses were tested at 0.05 level of significance using t-test. All statistical calculations were done using the Statistical Package for the Social Sciences (SPSS) version 22.

3. RESULTS

Analysis and presentation of data are ordered according to the research questions and hypotheses that guided the study.

3.1. The Cognitive Contents for the Operation and Maintenance of Television Cameras for Training Radio, Television and Electronics Work Students in Nigeria

Data in Table 1 reveal the mean and standard deviation of the responses of electrical/electronics industrial personnel and teachers on the new cognitive contents for the operation and troubleshooting of television camera systems. The results show that items; 1, 4, 7, 11 and 13 which had average means of 3.51, 3.56, 3.60, 3.71 and 3.56 respectively were rated strongly agree since their mean ratings fell within the 3.50 – 4.00 real limit, while items; 2, 3, 5, 6, 8, 9, 10, 12 and 13 with average mean ratings ranging between 3.04 and 3.41 which fall into the real limits of 2.50 – 3.49, were rated agree as the respondents as the new cognitive contents for the operation and troubleshooting of television camera systems. The table also show that the average standard deviation of the 13 items were within the range of 0.49 and 0.80, which are less than 1.96 which is the standardized value, this is an indication that the respondents were close in their opinions and that they were not too far from the mean. This added some reliability to the mean.

Table-1. Mean and standard deviation of respondents on the new cognitive contents for the operation and troubleshooting of television camera systems.

S/No	Cognitive contents for the installation and maintenance of television camera systems	$\bar{X}_{IP}$	SD_{IP}	$\bar{X}_{EET}$	SD_{EET}	$\bar{X}_{A}$	SD_{A}	Remark
1.	Safety practices in cameramanship.	3.31	0.59	3.71	0.58	3.51	0.59	Strongly agree
2.	Various tools, accessories and equipment used in TV camera operation and maintenance (screwdrivers, meters, oscilloscope, spectrum analyser).	3.06	0.88	3.71	0.45	3.39	0.67	Agree
3.	Types of cables used in TV camera systems, advantages and disadvantages.	3.68	0.47	3.13	0.88	3.41	0.68	Agree
4.	Studio and outdoor cable management techniques, tools, and equipment used.	3.34	0.64	3.78	0.42	3.56	0.53	Strongly agree
5.	Introduction to TV camera systems, working principle, block diagrams.	3.38	0.64	2.97	0.97	3.18	0.80	Agree
6.	Types of designs, studio, outdoor, wired and wireless cameras.	2.98	0.68	3.78	0.42	3.38	0.55	Agree
7.	Camera control modes; manual, robotic and computerised.	3.68	0.47	3.52	0.50	3.60	0.49	Strongly agree
8.	Multiple TV cameras setup for recording and real-time viewing.	2.97	0.67	3.10	0.90	3.04	0.79	Agree
9.	Flowchart for TV camera operation and maintenance.	2.68	0.90	3.69	0.63	3.19	0.77	Agree
10.	Filming conditions, illumination, platforms, indoor outdoor.	3.34	0.48	3.45	0.95	3.40	0.72	Agree
11.	Introduction to use of ICT products in filming.	3.47	0.65	3.95	0.32	3.71	0.49	Strongly agree
12.	Introduction to pictures (video and still) production.	3.14	0.77	3.53	0.50	3.34	0.64	Agree
13.	Introduction to internet, recording for video streaming.	3.64	0.48	3.48	0.50	3.56	0.49	Strongly agree
	Grand means	3.28	0.64	3.52	0.62	3.41	0.63	Agree

Source: Summary of data gathered from fieldwork, 2018.
N_{IP}, X_{IP}, SD_{IP} = number, mean and standard deviation of electrical/electronics industrial personnel, N_{EET}, X_{EET}, SD_{EET} = number, mean and standard deviation of electrical/electronics teachers, and X_A, SD_A = Average mean and standard deviation.

Table-2. Mean and standard deviation of respondents on the new psychomotor skills contents for the operation and troubleshooting of television camera systems.

S/No	Psychomotor skills contents for the installation and maintenance of television camera systems	$\bar{X}_{IP}$	SD_{IP}	$\bar{X}_{EET}$	SD_{EET}	$\bar{X}_{A}$	SD_{A}	Remark
1.	Demonstration of safety practices involved in cameramanship.	2.65	0.79	3.64	0.69	3.15	0.74	Agree
2.	Identification of tools and equipment used in TV camera industry.	3.36	0.53	3.36	0.97	3.36	0.75	Agree
3.	Demonstration of the handling of tools and equipment used in TV camera industry.	3.15	0.66	3.03	0.86	3.09	0.76	Agree
4.	Identification of TV camera systems parts and components, lens, microphone, buttons.	3.63	0.65	2.62	0.90	3.13	0.78	Agree
5.	Identification of various types of cables used in TV camera systems.	3.19	0.68	2.75	1.02	2.97	0.85	Agree
6.	Demonstration of cable routing and management in TV camera systems.	3.48	0.69	2.71	0.78	3.09	0.74	Agree
7.	Identification of TV camera power packs and storage devices.	2.95	0.61	3.13	1.21	3.04	0.91	Agree
8.	Mounting and dismantling of TV camera power packs and storage devices.	3.20	0.65	3.64	0.63	3.42	0.64	Agree
9.	Carrying out of preliminary testing of TV camera for functionality and meeting of company specifications.	3.53	0.65	3.38	0.73	3.46	0.69	Agree
10.	Assembling and dissembling of TV camera unit.	3.11	0.66	2.90	0.80	3.01	0.73	Agree
11.	Demonstration of TV camera mounting, alignment and positioning techniques.	2.50	0.78	3.69	0.67	3.09	0.73	Agree
12.	Carrying out Multiple TV cameras setup for recording and real-time viewing.	2.78	0.98	3.23	0.79	3.01	0.89	Agree
13.	Demonstration of manual multiple TV camera control.	2.90	0.63	3.26	0.59	3.08	0.61	Agree
14.	Demonstration of robotic multiple TV camera control.	3.03	0.67	2.79	0.69	2.91	0.68	Agree
15.	Programming a computer for multiple TV camera auto-control.	3.07	0.86	2.64	0.84	2.86	0.85	Agree
16.	Demonstration of various TV camera operation techniques; zooming, angling, panning.	2.56	0.80	3.38	0.73	2.97	0.77	Agree
17.	Demonstration of cameramanship ethics.	3.37	0.62	3.22	0.58	3.30	0.60	Agree
18.	Demonstration of Video production techniques.	3.58	0.65	2.97	0.65	3.28	0.65	Agree
19.	Maintenance a TV camera using appropriate equipment; meters, oscilloscopes, computer, smartphones, for faults in sections such as; video, audio.	2.79	0.65	3.23	0.79	3.01	0.72	Agree
	Grand means	3.10	0.70	3.14	0.79	3.12	0.74	Agree

Source: Summary of data gathered from fieldwork, 2018.

N_{IP}, X_{IP}, SD_{IP} = number, mean and standard deviation of electrical/electronics industrial personnel, N_{EET}, X_{EET}, SD_{EET} = number, mean and standard deviation of electrical/electronics teachers, and X_A, SD_A = Average mean and standard deviation.

3.2. The Psychomotor Skills Contents for the Operation and Maintenance of Television Cameras for Training Radio, Television and Electronics Work Students in Nigeria

In Table 2 are shown the mean and standard deviation of the responses of electrical/electronics industrial personnel and teachers on the new psychomotor skills contents for the operation and troubleshooting of television camera systems.

The result of analysis shows that average means of the 19 items of the research question were in the range of 2.97 – 3.46, all of which are in the 2.50 -3.49 real limit. Therefore the respondents were in agreement with all the items as the new psychomotor skills contents for the operation and troubleshooting of television camera systems. Furthermore, the average standard deviations of the items were in 0.60 and 0.91 range. This is an indication that all the responses were dispersed close to the mean. In addition to this, none of the standard deviations was up to the standard normal deviate of 1.96. This therefore strengthens the integrity of the mean.

3.3. Hypotheses Testing

The first hypothesis tested was; *"There is no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the cognitive contents for the operation and maintenance of Television cameras for training radio, television and electronics work students in Nigeria."* The result is shown in Table 3. A t-test was conducted to compare the responses of electrical/electronics industrial personnel and electrical/electronics teachers on the cognitive contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria. from the table, Levene's Test for Equality of Variance yielded a p-value of 0.006. This means that the difference between the variances is not significant hence the t value on the second row (equal variance not assumed) should be used. There was no significant difference in the responses of electrical/electronics industrial personnel ($\bar{X}_{IP}$ = 3.23, SD_{IP} = 0.55) and electrical/electronics teachers [$\bar{X}_{EET}$ = 3.54, SD_{EET} = 0.45; $t(183.137) = 4.279$, $p = 0.000$]. Hence, there is no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the cognitive contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria.

Table-3. t-Test analysis of differences in the responses of electrical/electronics industrial personnel and electrical/electronics teachers on the cognitive contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria.

Group statistics

Group	**N**	**Mean**	**SD**	**Std. Error mean**
Industrial personnel	118	3.28	0.64	0.05028
Electrical/Electronics teachers	77	3.52	0.62	0.05100

Independent sample test

	Levene's test for equality of variances		t-test for equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower	Upper
Equal variances assumed	7.712	.006	4.105	193	.000	.30646	.07465	.45370	.15922
Equal variances not assumed			4.279	183.137	.000	.30646	.07162	.44776	.16517

Source: Extracted from SPSS, 2018.
N= number of respondents, SD = standard deviation, df = degree of freedom, sig = significant criterion.

The second hypothesis tested was; *"There is no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on psychomotor skills contents for the operation and maintenance of television cameras for training radio, television and electronics work students in Nigeria."* Table 4 shows the t-test that was conducted to compare the responses of electrical/electronics industrial personnel and electrical/electronics teachers on the psychomotor skills contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria. The result shows that the Levene's Test for Equality of Variance yielded a p-value of 0.802. This means that the difference between the variances is not statistically significant hence the t value on the first row (equal variance assumed) should be used. There was no significant difference in the responses of electrical/electronics industrial personnel ($\bar{X}_{IP}$ = 3.10, SD_{IP} = 0.56) and electrical/electronics teachers [$\bar{X}_{EET}$ = 3.13, SD_{EET} = 0.61; $t(193) = 0.390$, $p = 0.697$]. Hence, there is no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the psychomotor skills contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria.

Table-4. t-Test analysis of differences in the responses of electrical/electronics industrial personnel and teachers on the psychomotor skills contents for the operation and maintenance of television camera systems for training radio, television and electronics work students in Nigeria.

Group statistics

Group	N	Mean	SD	Std. Error Mean
Industrial personnel	118	3.10	0.70	0.05174
Electrical/Electronics teachers	77	3.14	0.79	0.06940

Independent sample test

	Levene's test for equality of variances		t-test for equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower	Upper
Equal variances assumed	.063	.802	.390	193	.697	.03322	.08511	.20108	.13464
Equal variances not assumed			.384	153.215	.702	.03322	.08656	.20423	.13779

Source: Extracted from SPSS, 2018.
N= number of respondents, SD = standard deviation, df = degree of freedom, sig = significant criterion.

4. DISCUSSION

Findings on the new cognitive contents for the operation and troubleshooting of television cameras revealed that all the 13 items were rated agreed by the respondents as the new cognitive contents for the operation and troubleshooting of television camera systems with five items including: safety practices in cameramanship, studio and outdoor cable management techniques, camera control mode; manual, robotic and computerized, introduction to use of ICT products in filming, and introduction to internet, recording for video streaming, receiving a strong emphasis. Similarly, analysis of hypothesis three revealed that there was no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the new cognitive contents for the operation and troubleshooting of television cameras for training radio, television and electronics work students in Nigeria.

The implication of these findings is that both professionals and teachers were concerned that the existing curriculum used for training RTV students, has become obsolete and require a review. This is in sync with Salve-

Opina (2014) who noted that materials (contents) containing all the required sources (topics) for learning are effective tools in enhancing and improving students' knowledge and skills in a subject and needs constant review. Hence, the insignificant difference in the opinion of the respondents, is an indication that there is a consensus among them. This could mean that enhancing skills based subjects like RTV, with new and up-to-date contents that are capable making them world class craftsmen is a welcome development. In addition to updating the curriculum, the sequential arrangement of its contents in such a way that knowledge flow from known to the unknown is equally crucial. Oludipe (2011) in support of this, hinted that sequentially arranged contents are not only necessary for the understanding of advanced activities, it also help in the performance of complex tasks. A possible explanation for this is that, the contents developed in this section are important in the operation and troubleshooting of television camera systems in a modern day work situations, since there is a sequential flow of knowledge and competency, which endeared the contents to both professionals and teachers that responded to the items.

Findings on the new psychomotor skills contents for the operation and troubleshooting of television cameras revealed that the respondents agreed on all the 19 items as the new psychomotor skills contents for the operation and troubleshooting of television camera systems, including; mounting and dismantling of TV camera power packs and storage devices, assembling and dissembling of TV camera unit, and demonstration of various TV camera operation techniques: zooming, angling, and panning. In the same vein, analysis of hypothesis seven revealed that there was no significant difference between the mean responses of electrical/electronics industrial personnel and teachers on the new psychomotor skills contents for the operation and troubleshooting of television cameras. This is an indication that all 19 topics developed in this section are important to a successful career in television industry as a craftsman.

The implication of this is that since more advanced television cameras have made entrance into the television camera industry, new entrants into the industry will be a lot better off with the new psychomotor skills contents for the operation and troubleshooting of television cameras developed in this study. This view is in sync with Udofia and Nlebem (2013)'s submission which revealed that an updated training modules for skills-acquisition for youths does the following: it helps authorities organized a wide range of programmes periodically on practical enterprise, with a view of reducing unemployment rate; it creates awareness of enterprise to engage on, as well as help them overcome the phobia associated with starting enterprises.

Therefore, fact that there is an insignificant difference in opinion of professionals and teachers, indicates that stakeholders in Nigeria are aware that there is a competency gap that exist between what the present day world of work demands from RTV graduates and the skills they possess at the end of their training programme. This gap is attributed to the technological innovations being introduced from time to time and which the curriculum used for training them has not captured. In support of this, Salve-Opina (2014) reported that the possession of updated psychomotor skills by youth, RTV graduates inclusive, helps them in real life work situations, which is better achieved when the instructional process is loaded with current practical skills contents. A possible explanation of this is that, it is easier for graduates of technical colleges to fit into the daily routines of television camera industry and is a way of enhancing their employability.

5. CONCLUSION AND RECOMMENDATIONS

The employability of the youths of Nigeria is a critical subject in national discourse. All hands have been on deck with a view of proffering a solution to the menace. Hence, the lack of curriculum contents that foster the acquisition of skills in television camera systems operation and maintenance only further aggravated the problem. This is a situation that is inimical to the purpose of technical college system in Nigeria. This study is an effort made

towards solving the problem. Hence, the skills acquired by RTVEW students would be boosted tremendously and their employability enhanced, if the training they receive incorporates the contents developed in this study. If that happens, the RTVEW graduate would stand a better chance of being able to operate and carry out maintenance of television cameras with equal dexterity as their counterparts in other countries would do. By so doing, they would be better positioned to make more meaningful contributions towards the economic and technological development of the country.

Based on the findings of the study, the following recommendations are made: The latest facilities needed for the teaching and learning of skills in television cameras operation and maintenance should be provided by government and all stakeholders involved in the provision of Technical and Vocational Education and Training (TVET) in Nigeria. Retraining workshops and seminars should be organized by NBTE in conjunction with states ministries of education for RTVEW teachers in other to keep them abreast with the competencies that they need to be better able to teach the skills in television camera systems operation and maintenance. Advocacy and sensitization campaigns should be organized with a view of sensitizing; lecturers and students of Electronics Technology, RTVEW teachers and technical college students, about the new television camera systems operation and maintenance contents.

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