

An evaluation of students' self assessment on tasks needed in the servicing of radio and television from technical colleges in rural and urban settings

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Abstract

The purpose of this was to evaluate students' self assessment on tasks needed in the servicing of Radio and Television. The questionnaire was the data gathering instrument for the study while mean and chi-square were the statistics used. Results of the analysis showed that the urban and rural groups differed significantly in the perceived mastery of five basic tasks. Also, the computed mean revealed that students in urban and rural settings were below average in seven essential tasks. It was suggested that students be made to master required job skills since graduates of radio and television servicing programme are highly needed in the job market.

Introduction:

Skill acquisition is a unique aspect of a technical education programme. One of the aims of technical education is to give training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant (National Policy on Education, 1981). Prospective craftsmen and technicians pass through technical college programmes and it is expected that such programmes should be run to achieve the desired objective. The National Board for Technical Education (1987) stressed that the ultimate goal of programmes offered in the technical college is to enable trainees perform all the skills and show a good knowledge of the theoretical concepts of the trade as specified in training modules before they are certified. The Board established the learning objectives and content for vocational courses. The learning objectives were sequentially structured and capable of providing adequate preparation for employment.

Radio, Television and Electronics Work is a programme designed to meet the needs of tradesmen that will repair and service electronics equipment such as Cassette Players, Radio, Television and other auto equipment. Services of specialists in this area are very crucial now that we have shifted from a replacement culture to one based on repairs of available machines and appliances. It is essential that students who pass through the programme should master the required job tasks.

The need to assess the effectiveness of a technical education programme and determine whether modifications were necessary have engaged the attention of

researchers in recent years (Wright, 1984; Laird, 1985; Alden, 1987 and Uwameye, 1990). Evaluation is necessary because it aids planning and decision making. Besides, it helps to upgrade programme personnel, improve programmes for students and helps to ascertain whether or not the outcomes of a programme worth the investment (Wentling, 1980). Officials of the Inspectorate office of the State Ministry of Education conduct periodic visitation to the technical colleges to evaluate physical facilities, instructional materials, admissions and student services. Such evaluation helps to keep up-to-date data about each college with the state Ministry of Education. New technical colleges are also evaluated after five years for accreditation. At the moment, a common way of assessing a technical college programme is by considering students level of passes in the final examination.

The current economic crunch makes it difficult for most people to replace faulty equipment and appliances with new ones. The alternative is to employ the services of repairers to identify the faults and restore appliances to good working conditions by repairing the faulty parts. There is the need to assess the extent to which the final year students of the Radio and Television programme are equipped to face the challenges of their trade.

This study was to evaluate the self expressed performance level of students on essential tasks in Radio, T.V. and Electronics work. Specifically, the study sought to determine whether or not students master the necessary skills. In addition, the study determined whether the mastery of skills in Radio and Television repair reflect rural-urban variations. A null hypothesis was formulated thus: There is no significant difference in the mean rating of expressed competencies between the urban and rural students in the servicing of Radio and Television.

Method:

The subjects in this study consisted of all the final year students offering Radio, T.V. and Electronics servicing at five Government Technical Colleges in Delta and Edo States. Two of the schools were in rural and three in urban locations. There were a total of 108 students and this population constituted the sample of the study. The students were between the ages of 20 and 34 years with a mean age of 21.56 and a standard deviation of 2.72.

The instrument used for the study is the Evaluation by Achievement of Learning Objective (EBALO) questionnaire. The questionnaire consists of three parts. The first part itemises 25 skill competencies critical to Radio and Television servicing. Four additional items were purposely built into the instrument to enhance the validity and reliability of the instrument. The built-in check made it possible to isolate insincere responses. The student was expected to rate each item according to how she/he was able to perform the skill using a 9-point scale ranging from 9 (very able) to 1 (very unable). The second part of the questionnaire tested ability to use test equipment while the third part focused on personal information about the respondents. The instrument was validated by four colleagues and pilot-tested. The comments of the validators and results of the pilot test formed the basis for the revision of the instrument to its final form. Furthermore, a split-half reliability of the questionnaire was computed to be 0.86.

The questionnaires were administered to the respondents by the researcher. Out of the 108 copies of the instrument administered on the students, 99 (i.e. 92%) were duly completed for analysis. The scores obtained for each task were summed and the means and standard deviations computed. The Chi-square was then used to test the significance of the differences between the frequencies of responses on each task for students in urban and those in rural settings. The analysis compared the students' self assessment of ability to perform each task. Data associated with the hypothesis were analysed and upheld or rejected at the 0.05 level of significance.

Results

Table I shows the mean scores, standard deviations and rank orders of tasks. The computed mean for each task revealed that students in urban and rural settings are below average in the performance of the following tasks:

1. Alignment of F. M. radio receivers
2. Alignment of A. M. radio receivers
3. Installation and maintenance of auto-electronic sound equipment
4. Construction of signal injector using multivibrator circuits
5. Operation of T.V. analyser
6. Repair of Video amplifier (output stage) and
7. Repair of Video amplifier (I.F. Stage).

Table 2 presents the result of the data analysis relating to the hypothesis of the study. The null hypothesis states that there will be no significant differences in the frequencies of rating of expressed competencies between students in urban and rural locations. The assumption of the null hypothesis is that the frequency rating of urban and rural groups are the same for each task. The Chi-square analysis of table 2 indicates that significant differences exist in four tasks at the 0.05 level of significance. Consequently, the null hypothesis was rejected. The urban and rural groups differ significantly in the mastery of the following basic tasks:

1. testing of vacuum tubes
2. construction of amplifiers using semiconductor devices
3. replacement of black and white picture tube and
4. testing for high voltage.

Table 1

The mean Scores, Standard deviations and rank orders of Urban and Rural students' responses on ability to perform required tasks In Radio and Television servicing.

Items	Variable of Task	N-	Mean	SD	Rank
1	Test transistors	99	8.02	1.33	1
2	Test vacuum tubes	"	6.22	2.34	4
3	Test integrated circuits	"	5.31	2.44	13
4	Construct stabilized low voltage dc. power supply unit	170	5.76	2.66	9
5	Construct signal injector using multivibrator circuit	"	4.22	2.62	18
6	Install and maintain public address system	"	6.02	2.33	6
7	Service and repair turntable (i.e. changer)	"	5.66	2.52	10
8.	Repair of audio tape recorder	"	6.32	2.21	3
9	Construct amplifier using thermionic devices	"	5.41	2.86	11
10	Construct amplifier using Semiconductor devices	"	6.09	2.68	5
11	Detect and correct fault in A.M. radio receiver	"	6.97	8.12	2
12	Detect and correct fault in F.M. radio receivers	"	5.83	1.92	8
13	Align F.M. receivers	"	4.73	2.41	15
14	Align A.M. radio receivers	"	4.42	2.42	16
15	Install and maintain auto electronic sound equipment	"	4.34	2.46	17
16	Operate TV analyser	"	3.92	2.61	19
17	Replace black and white picture tube	"	5.34	2.41	12
18	Repair television tuners	"	5.25	2.40	14
19	Repair Video amplifiers				

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	(I.F. stage)	"	3.70	2.18	21
20	Repair Video amplifiers (output stage)	"	3.83	2.42	20
21	Test for high Voltage	"	5.86	2.39	7

Table 2:

Chi-square analysis of subjects responses on ability to perform
skills between the urban and rural students.

Skill Competencies	Group	Frequencies		X ²	Level of Significance P ≤ 0.05
		Able	Unable		
1 Test transistors	U	64	2	1.030	NS
	R	33	0		
2 Test Vacuum tubes	U	47	19	10.89	.05
	R	30	3		
3 Test integrated circuits	U	46	20	0.37	NS
	R	21	12		
4 Construct Stabilized low voltage dc. power supply	U	41	25	0.02	NS
	R	21	12		
5 Construct signal injector using multivibrator circuit	U	27	39	0.19	NS
	R	15	18		
6 Install and maintain public address system	U	52	14	0.52	NS
	R	28	5		
7 Service and repair turn- table (i.e. changer)	U	47	19	2.72	NS
	R	18	15		
8 Repair of audio tape recorder	U	51	15	0.03	NS
	R	25	8		
9 Construct amplifier using recorder	U	36	30	2.09	NS
	R	23	10		
10 Construct amplifier using semiconductor devices	U	41	25	8.98	.05
	R	30	3		
11 Detect and correct fault in A.M. radio receivers	U	52	14	3.67	NS
	R	20	13		
12 Detect and correct fault in F.M. radio receivers	U	49	17	0.42	NS
	R	23	10		
13 Align F.M. receivers	U	30	36	0.73	NS
	R	18	15		
14 Align A.M. radio receiver	U	27	39	0.19	NS
	R	15	18		
15 Install and maintain auto electronic sound equip-	U	27	39	0.19	NS
	R	15	18		

	ment					
16	Operate TV analyser	U	22	44		
17	Replace black and white picture tube	U	47	19		
		R	15	18	6.24	.05
18	Repair television tunners	U	47	19		
		R	18	15	2.72	.05
19	Repair Video amplifiers (I.F. stage)	U	25	41		
		R	8	25	1.84	NS
20	Repair Video amplifiers (output stage)	U	25	41		
		R	12	21	0.02	NS
21	Test for high voltage	U	54	12		
		R	18	15	8.25	.05

Table Value = 3.84; P = 0.05; Df = 1

U = Urban

R = Rural

NS = Not Significant

Discussion

The findings reveal that students in urban and rural settings have low assessment of their ability to perform seven tasks. A possible reason could be the lack of essential tools and test equipment to perform the required tasks. One of such is the alignment of A.M. and F.M. radio receivers. It is essential to have alignment tools and signal generator to effectively do alignment tasks. A radio receiver needs re-alignment when it lacks sensitivity or selectivity. The alignment can be done by adjusting the tuning circuits of the I.F. stages, the local oscillator and the R.F. stages in that order.

The task of installing and maintaining auto electronic sound equipment had a low mean of 4.34. It could be assumed that car radios are not readily available for repair. The repair procedure of car radios is similar to other radio receivers. As a result, students can transfer their skill in the repair of common receivers to that of auto sound equipment. Also, the task of operating TV analyser had low mean of 3.92. This could be attributed to non-availability of the test equipment. Finally, the task of repairing video amplifiers attracted the least means (3.70 and 3.83). A good knowledge of the circuit operation and signal tracing procedure can help students overcome their deficiencies. Besides, the provision of test instrument will aid the students.

The findings related to the hypothesis show that there were statistically significant differences between urban and rural groups with respect to self assessment on some required tasks in the servicing of radio and television. The findings imply that location of technical colleges has influence on some variables considered.

In testing vacuum tubes, the frequencies for rural subjects were higher than that of the urban subjects. A possible reason is that the rural group is faced with more challenges because of the environment and greater number of faulty home entertainment products that make use of vacuum tubes. The rural subjects are more likely to construct more amplifiers using semiconductor devices. This is supported by the fact that they had higher frequencies.

The higher frequencies of the urban group in replacing black and white picture tube can be attributed to the fact that the urban inhabitants can afford to pay for tube replacement and urban students can learn in the process of fixing. Such opportunity may not be available for students in rural setting. Also, the urban group had higher frequency in testing for high voltage than the rural group. This will depend on availability of high-voltage probes and the opportunity to practice with the test instrument.

Implications

Technical/job competence is crucial in a technical education programme. Technical Colleges should give attention to those tasks with low mean ratings by students in urban and rural settings. Comparison of students' expressed performance against standard revealed that students are not doing well enough. It is important that students master the required job skills for better performance since graduates of radio and television servicing programme are highly needed in the job market. Essential training facilities should be provided to facilitate the teaching and learning of required tasks for radio, television and electronics work. It is recommended that future evaluation studies on servicing of Radio and Television should consider the comparison of teachers' and students' ratings for students' performance evaluation.

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