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A Relational Study of Male and Female Students' Academic Achievement in Radio Communication for Sustainable Development (Pp. 290-303)

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Abstract

This study was conducted to ascertain the relationship between the male and female students' academic performance in radio communication in technical colleges in Delta State. There are two research questions and one null hypothesis formulated to guide the study. The population for the study consists of 735 students of the six technical colleges in Delta State offering Radio Communication. There was no sampling because of the small number of students involved in the study. The two research questions were analyzed using the percentages while the null hypothesis was tested using χ^2 -square at 0.05 level of significance. The findings revealed that the male performed better than the female counterpart. Also, it was revealed that the urban students performed better than their rural counterpart in the same examination conducted by NABTEB in 2005 & 2006. There is a significant difference in the mean scores of male and female students in Radio Communication in urban and rural technical colleges in Delta state. It was based on the findings of the study that appropriate recommendations and suggestions were made.

Introduction

In technical college, radio communication subject provides the youth with practical skills, knowledge and work pertaining to radio, television, telecommunication, electronic devices and circuit services. However, it has been discovered that the persistent poor academic achievement of male and female students emanate mainly from the inappropriate teaching method adopted by technical college teachers in teaching the radio communication. Communication can be defined as the process whereby information is transferred from one point in space and time called the source to another point called the destination or user. The ability to share information is one of the characteristics of the human race which has played a major role in its development. Down through the ages man has striven to increase his range of communication by different methods (Onoh, 2001). Today, electrical communication systems are found wherever information is to be conveyed from one point to another. Telephony, radio and television have become integral parts of our everyday life. The advent of satellite and data communication has brought in a new era in our communication potentials. However, in the present study, the researcher narrowed the scope to radio communication. For information to be transferred from one point to another, some form of link is required between two points. Radio communication is thus the totality of mechanisms that provide the information link. The radio communication system, which is our primary concern here, is one that achieves the function conveying information through the use of electrical devices and phenomena. However, it must be stressed here that the radio communication we are dealing with has the primary objective of good attribute of a communication system to provide acceptable replica of the information at the destination. In other words, for successful radio communication to be achieved, the message received at the destinations should be identical to the original message emanating from the source or so similar to it that it is unmistakable for potential message.

The realization of the objectives of technical college radio communication programme and to improve students' academic achievement depends to a large extent on a number of factors. These factors include the availability, adequate supply of qualified teachers, provision of television, radio equipment and other facilities, proper utilization of equipment and the usage of technical college textbooks in the radio communication workshop.

The entire populace of Nigeria are familiar with radio communication. A knowledge of radio communication subject in this study is therefore

important and useful (Menkiti, Abumere and Eze, 1996). Recently, it has been observed that students' academic achievement in technical colleges has been dwindling. What are the major reasons for the decline in academic achievement and the possible improvement strategies lack some empirical investigation. There is need therefore, to investigate the correlational study of male and female students' academic achievement in radio communication in urban and rural technical colleges in Delta State.

Statement of the problem

There is a growing concern over the astronomical decline in students' academic achievement in radio communication in technical colleges in Nigeria. It appears to the researcher that students' academic achievement in radio communication in technical colleges has been dwindling in recent time and the solution calls for immediate and urgent attention in the technical colleges. The technical colleges are expected to produce craftsmen. However, in the last decade, the technical colleges recorded a high failure rate of over sixty percent in WAEC, NABTEB and NTC trade components of the examination that should certify them as craftsmen (FME, 2000). It is also on record (NABTEB, 2002) from the chief examiners report that radio communication students that sat for the examination performed very poorly. Furthermore, in NABTEB certificate conducted in Radio, Television and Electronics in May/June, 2004 recorded 30 percent failure rate in radio communication, (60%) failure rate in television system and 27% failure in Electronics devices and circuits (NABTEB, 2004).

The National Business and Technical Education Board Report (NABTEB, 2004) grade distribution, from 2000-2003 May/June results revealed failure of 46 percent of the students who sat for the examination in Basic Electricity. The results also revealed unsatisfactory performance of the students in Electrical/Electronics instrumentation and domestic/industrial installation with failure rate of 42.5% and 45.5% respectively. This is an indication of overall performance of candidates achieving below average during the examination. It has been discovered that the persistent poor performance emanate mainly from the students inability to adapt to the teaching methods adopted by the technical college teachers. Also, efforts were made by government in recent times towards improving the situation of low performance but it yielded negative results. This raises more questions as to whether besides the existence of the students factors of not adapting and understanding their teacher instructions or teaching methods, there is no such factor as the gender issues or male and female and the enrolment of students

in urban and rural areas which also influence this ugly trend in radio communication. This is informed by the fact that academic achievements of students rest more on proper implementation by the teacher and the students. Thus a correlational study of male and female students' academic achievement in radio communication subject in urban and rural technical colleges is desirable.

Purpose of the study

The major purpose of this study is to compare male and female students' academic achievement in radio communication in urban and rural technical colleges in Delta State

Specifically, the study is meant to:

1. Determine any difference in achievement of male and female students examined in radio communication subject in technical colleges in Delta State.
2. Determine any difference in achievement of students' examined in radio communication subject in urban and rural setting.

Research questions

The following research questions guided this study:

1. What is the academic achievement of male and female students examined in radio communication subjects in technical colleges?
2. What is the academic achievement of students examined in radio communication in urban and rural technical colleges?

Hypothesis

H_{01} : There is no significant difference in the mean achievement scores of technical college students in radio communication in 2005 and 2006 examination year.

Methodology

This study was a survey work which was designed to enquire into and provide information about the achievement of male and female students examined in radio communication in urban and rural technical colleges in Delta State.

The area of the study was Delta State. The state has 25 local government areas with six technical colleges.

The population for the study consisted of 735 students of six technical colleges offering radio communication in 2005 and 2006 examination year. Agbor Technical College, Agbor had 139; Government Technical College, Issele-Uku had 124; Sapele Technical College, Sapele and 137; Ofagbe Technical College, Ofagbe had 102; Ogor Technical College, Otogor had 100 and Utagba-Ogbe Technical College, Utagba-Ogbe had 134 students. The information on the students in each technical college was provided by National Business and Technical Examination Board (NABTEB).

No sampling was done. All the students in the population were used for the study.

Table 1 shows the institution, population of each technical college and their different locations. It was clearly shown in Table 1 that technical colleges whose serial numbers are 1st, 3rd and 6th are located in the urban areas, while the rural technical colleges are 2nd, 4th and 5th.

The document examination results of National Business and Technical Examination Board (NABTEB) in 2005 and 2006 examination year in urban and rural technical colleges was the major instrument used at bringing out answers to the research questions raised and the hypothesis formulated in the study.

National Business and Technical Examination Board (NABTEB) subjected the scores of the students to face and content validation by the experts and professionals in the field of radio communication and electronics.

The reliability of the instrument was established using Kuder-Richardson Formula 20. It was used to establish the internal consistency reliability of the instrument. The scores of the previous year 2002 was obtained and computed to establish the internal consistency reliability estimates of radio communication of the instrument at 0.77.

The researcher personally collected the documented examination results from NABTEB office for the 2005 and 2006 examination year, the statistic on students' academic performance in radio communication in six technical colleges in Delta State. The report was contained in NABTEB May/June 2005 and 2006.

The stated research questions one and two were answered using percentage. The null hypothesis one was tested using the chi-square.

Decision was established based on rejection of null hypothesis, if the calculated value exceeds the critical value; otherwise the alternative hypothesis should be upheld.

Results

Research question 1: *What is the academic achievement of male and female students examined in radio communication subject in the six technical colleges?*

In Sapele Technical College (STC) 57.97% male and 15.94% female passed while 14.49% male and 11.59% female failed the 2005 examination out of 69 students who sat for the NABTEB examination. In 2006, 52.24% male and 7.46% female passed while 23.37% male and 14.93% female failed out of 67 students.

In Agbor Technical College (ATC), 35% male and 10.0% female passed while 38.75% male and 16.25% female failed out of 80 students who sat for the examination in 2005. In 2006, 35.59% male and 8.48% female passed while 47.46% male and 8.48% male failed the examination out of 59 students for the radio communication subject.

Otogor Technical College (OTC), 18.18% male and 10.91% female passed while 54.55% male and 16.36% female failed out of 55 students who sat for the 2005 NABTEB examination. In 2006, 26.67% male and 4.44% female passed while 57.78% male and 11.11% female failed out of 45 students that sat for the examination.

In Ofagbe Technical College (OFTC), 23.91% male and 4.35% female passed while 60.87% male and 10.87% female failed out of 46 students who wrote 2005 examination. In 2006, 39.29% male and 14.29% female passed while 39.29% male and 7.14% female failed out of 56 students.

In Utagba-Ogbe Technical College (UTC), 37.68% male and 7.25% female passed while 46.38% male and 8.6% female students failed the examination in 2005 out of 69 students. In 2006 in UTC, 46.15% male and 15.38% female passed while 33.85 male and 4.62 male failed the examination that 65 students wrote.

In Government Technical College (GTC) in 2005, 37.14 percent male and (7.14%) female passed while 45.71% male and 10% female failed out of 70 students who wrote the examination. In 2006, 35.19% male 3.70% female passed while 51.85% male and 9.26% female failed out of 54 students who

sat for the examination. In all, a total of 141 male and 37 female passed while a total of 163 male and 48 female failed the 2005 examination out of 389 students who sat for the examination. In 2006, a total of 139 male and 32 female passed while 143 male and 32 female failed out of 346 students.

Research question 2: *What is the academic achievement of students' examination in radio communication in urban and rural technical colleges?*

In Urban Technical Colleges in 2005, Sapele Technical College had 17.39% Grade A, 56.52% credit, 10.15% pass and 15.94% fail. In 2006 in radio communication subject, the student had 2.99% Grade A, 71.64% credit, 22.39% pass and 2.99% fail in the same school.

Agbor Technical College in 2005, 7.50% made a grade, 37.5% Credit, 37.5% pass, and 17.5% failed. In 2006, 3.39% made a grade, 47.46% credit, 42.37% pass and 6.78% failed. Utagba-Ogbe Technical College also under urban location had 1.45% A grade, 43.48% Credit, 36.23% pass and 18.84% failed in radio communication subject in 2005. In 2006, 0.0% 56.92% credit, 30.77% pass and 12.31% failed.

Considering the rural technical colleges in 2005, Otogor Technical College had 1.82 a grade, 27.27% credit, 60% pas and 10.9% fail. In 2006, 4.44% had a grade, 22.22% credit, 42.22% pass and 31.11% fail.

Oflagbe Technical College had 0% a grade, 28.26% credit, 60.87% pass and 10.87% fail in 2005. In 2006, 0% a grade, 51.79% credit, 35.71% pass and 12.5% fail in radio communication subject. Finally, in Government Technical College, the student had 1.43% a grade, 42.86% credit, 54.29% pass and 1.43% fails in 2005. In 2006, the students had 3.7% a grade, 35.19% credit, 53.70% pass and 7.4% fail in NABTEB examination.

Hypothesis 1: *There is no significant difference in the achievement of technical college students in radio communication subject in 2005 and 2006 examination year.*

In Table 3, X^2 – calculated = 77.58 and the X^2 - critical value is 25. The calculated value exceeds the critical value, hence null hypothesis is rejected. This implies that the grade earned by the students in radio communication subject is dependent on what is taught in the technical colleges. In other words, students from different technical college backgrounds performed differently in radio communication NABTEB examination in 2005.

Hypothesis 1: *There is no significant difference in the mean achievement of technical college students in radio communication subject in NABTEB examination in 2005 and 2006.*

$X^2 - \text{cal} = 52.2$. The calculated value exceeds the critical value, $X^2 - \text{cri.} = 25$ hence we reject the null hypothesis. This implies that the Grade earned by the students in Radio Communication is dependent on the knowledge in the individual technical college. In other words, students from different technical college backgrounds performed differently in radio communication examination in 2006.

Discussion

The findings of the research question one revealed that there is higher percentage of failure in 2005 than 2006. In other words, there is consistent high failure rate in radio communication subject in 2005 and 2006 under consideration. Ordu (2004) observe that in academic situation, there are differences in academic achievement. He stated that differences in performance of students vary from one person to another. Some perform excellently well in their academic pursuit while others perform below expectation and exhibit a dismal academic performance in spite of careful instruction and encouragement. Opinions vary as to why some students excel academically while others appear to be at the lowest level of the academic ladder. Although, people are aware that even those who are enrolled in the formal educational system appear not to be exposed to the same equal learning opportunities as a result of many variables which as it were, enhance or hinder academic achievement of students.

The findings of the research question two revealed that there is a difference in achievement between the technical college students in the urban and rural location. Those in the urban technical college had a higher percentage of credit than the rural students.

Psychologists have put forward some test as to why these disparities in academic performance among students exist. Early studies concentrated on intelligence as explanatory variable and this is still assumed the simple most effective predictor of school achievement. Subsequently, a wide variety of research report has drawn attention to the importance of social factor and early experiences of the learner in the home. Environment (urban or rural) affect both the development of intelligence and the level of achievement. The point revealed by research question was raised by (Umunadi, 1997) when he said that the discrepancy in performance is that the urban students are

exposed to extra-moral lesson, extra practical orientation during and after school period and this might enhance their academic achievement in school. The implication of this is that there will be discrepancy between the urban and rural students in radio communication because the urban most of the time are fully prepared for the examination than their counterpart in the rural setting. The hypothesis revealed that there is a significant difference between the technical college students academic achievement from the results of the test. It can be reasoned that difference in academic achievement can be as a result of student background and environment.

Recommendations

Based on the findings of the study, the following recommendations were made for sustainable development in radio communication.

1. Institutions should strive towards effective instructions in theory and practicals to enhance academic achievement of students in radio communication for sustainable development.
2. The government should provide the needed equipment and facilities to assist the teachers and students in the classroom for effective teaching and learning of radio communication for national development.
3. Teachers should be given in-service training to update their knowledge in radio communication methods of instruction in the classroom and workshop to assist them in classroom management to enable the students improve on their performance in NABTEB examination.
4. Intensive extra-moral coaching should be organized for radio communication students to assist them improve on their academic performance in NABTEB examination.
5. Trained teachers and instructions should use the past questions of the radio communication subject for revision during the class section to expose the students to the methods of answering the NABTEB questions.

Conclusion

The study sought to find out the relationship between the male and female students academic achievement in radio communication subject in urban and rural technical colleges. This is seen as a step towards highlighting and

solving problems associated with male and female students' academic achievement in rural and urban technical colleges.

The design was survey of 289 and 346 students in 2005 and 2006 examination year in the six technical colleges. Two research questions and one null hypothesis guided the study. Findings were made from the study that there are high rate of failure by the male and female students in the urban and rural technical colleges. There is a significant difference in academic achievement of male and female students in radio communication subject in technical colleges. It was also revealed that there is significant difference in academic achievement of students in urban and rural technical colleges. Recommendation was that the technical college students should be given intensive extra-moral coaching to improve their academic performance in external examination among others.

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Table 1

Institution, Population and Location of Urban and Rural Technical Colleges

S/N	Institution	2005 Population	2006 Population	Location
1	Agbor Technical College, Agbor (ATC)	80	59	Urban
2	Government Technical College, Issele-Uku (GTC)	70	54	Rural
3	Sapele Technical College, Sapele (STC)	69	67	Urban
4	Ofagbe Technical College, Ofagbe (OFTC)	46	56	Rural
5	Ogbe Technical College, Otogor (OTC)	55	45	Rural
6	Utagba-Ogbe Technical College, Utagba-Ogbe (UTC)	69	65	Urban
Total		389	346	
Grand Total		735		

Table 2: Percentage of Male and Female Students Academic Achievement Examined in 2005 and 2006 NABTEB Examination in Radio Communication Subject.

Instn.	YEAR	A ₁ – C ₆ Pass		D ₇ – F ₉ Fail		Radio Communication		Total
		Male	Female	Male	Female	2005	2006	
STC	2005	40 (57.97%)	11 (15.94)	10 (14.49%)	8 (11.59%)	69		136
	2006	35 (52.24%)	5 (7.46%)	17 (23.37%)	10 (14.93%)		67	
ATC	2005	28 (35%)	8 (10%)	31 (38.75%)	13 (16.25%)	80		139
	2006	21 (35.59%)	5 (8.48%)	28 (47.46%)	5 (8.48%)		59	
OTC	2005	10 (18.18%)	6 (10.91%)	30 (54.55%)	9 (16.36%)	55		100
	2006	12 (26.67%)	2 (4.44%)	26 (57.78%)	5 (11.11%)		45	
OFTC	2005	11 (23.91%)	2 (4.35%)	28 (60.87%)	5 (10.87%)	46		102
	2006	22 (39.29%)	8 (14.29%)	22 (39.29%)	4 (7.14%)		56	
UTC	2005	26 (37.68%)	5 (7.25%)	32 (46.38%)	6 (8.6%)	69		134
	2006	30 (46.15%)	10 (15.38%)	22 (33.85%)	3 (4.62%)		65	
GTC	2005	26 (37.14%)	5 (7.14%)	32 (45.71%)	7 (10%)	70		124
	2006	19 (35.19%)	2 (3.70%)	28 (51.85%)	5 (9.26%)		54	
GRAND TOTAL	2005	141 (36.24%)	37 (9.51%)	163 (41.90%)	48 (12.34%)	389		735
	2006	139 (40.17%)	32 (9.25%)	143 (41.33%)	32 (9.25%)		346	

Table 3: Number of Students under Grade Earned and Percentage of Students Performance in Radio Communication 2005 and 2006

Location	Inst.	Year	(A) Grade Alpha	(C) Credit	(P) Pass	(F) Fail	Population of students 2005	Population of students 2006	Total
URBAN	STC	2005	12 (17.39%)	39 (56.52%)	7 (10.15%)	11 (15.94%)	69	*	136
		2006	2 (2.99%)	48 (71.64%)	15 (22.39%)	2 (2.99%)	*	67	
URBAN	ATC	2005	6 (7.50%)	30 (37.5%)	30 (37.5%)	14 (17.5%)	80	*	139
		2006	2 (3.39%)	28 (47.46%)	25 (42.37%)	4 (6.78%)	*	59	
URBAN	UTC	2005	1 (1.45%)	30 (43.48%)	25 (36.25%)	13 (18.84%)	69	*	134
		2006	0 (0%)	37 (56.92%)	20 (30.77%)	8 (12.31%)	*	65	
RURAL	OTC	2005	1 (1.82%)	15 (27.27%)	33 (60%)	6 (10.9%)	55	*	100
		2006	2 (4.44%)	10 (22.22%)	19 (42.22%)	14 (31.11%)	*	45	
RURAL	OFR TC	2005	0 (0%)	13 (28.26%)	28 (60.87%)	5 (10.87%)	46	*	102
		2006	0 (0%)	29 (51.79%)	20 (35.71%)	7 (12.5%)	*	56	
RURAL	GTC	2005	1 (1.43%)	30 (42.86%)	38 (54.29%)	1 (1.43%)	70	*	134
		2006	2 (3.70%)	19 (35.19%)	29 (55.70%)	4 (7.4%)	*	54	
GRAND TOTAL		2005	21	157	161	50	389	*	735
		2006	8	171	128	39		346	

Table 4: Chi-square Analysis of Grades Obtained by Students in Six Technical Colleges in Radio Communication in 2005 NABTEB Examination

Institution	A	Credit (C)	Pass (P)	Fail (F)	Total	Result	Remarks
STC	12 (3.72)	39 (27.84)	7 (28.56)	11 (8.87)	69	X ² - Cal = 77.58 X ² critical	X ² = Cal > X ² Crit. Reject null hypothesis
ATC	6 (4.32)	30 (32.29)	30 (33.11)	14 (10.28)	80		
OTC	1 (2.97)	15 (22.20)	33 (22.76)	6 (7.07)	55		
OFTC	0 (2.46)	13 (18.57)	28 (19.04)	5 (5.91)	46		
UTC	1 (3.72)	30 (27.85)	25 (28.56)	13 (8.87)	69		
GTC	1 (3.78)	30 (28.25)	38 (28.97)	1 (8.99)	70		
Total	21	157	161	50	389		

Table 5: Chi-square X² Analysis of Grade obtained by Students in Six Technical Colleges in Radio Communication in 2006 NABTEB Examination

STC	2 (1.55)	48 (33.11)	15 (24.79)	2 (7.55)	67	Df	Results	Remarks
ATC	2 (1.36)	28 (29.16)	25 (21.83)	4 (6.65)	59	15	X ² cal value = 52.2 X ² -critical value = 25.00	X ² cal. is greater than X ² -critical Reject Null Hypothesis
OTC	2 (1.04)	10 (22.24)	19 (16.65)	14 (5.07)	45			
OFTC	0 (1.29)	29 (27.68)	20 (20.72)	7 (6.31)	56			
UTC	0 (1.50)	37 (32.12)	20 (24.05)	8 (7.33)	65			
GTC	2 (1.25)	19 (26.69)	29 (19.98)	4 (6.09)	54			
Total	8	171	128	39	346			