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Electronic security system installation skills requisite for self-reliance of radiotelevision and electronic work students in technical colleges in Rivers State

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### **Abstract**

The study determined the electronic security system installation skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State. A descriptive Survey design was used for the study. The population for the study was 30 teachers and 185 NTC III students in technical colleges in Rivers state. The study was carried out in Rivers state. A Structured questionnaire was used as instruments for data collection. Two research questions and two null hypotheses guided the study. Cronbach Alpha method was used for the reliability of the instrument which yielded a coefficient of 0.75. Mean and standard deviation were used to analyze the data for answering research questions, while t- test was used to test the hypotheses of no significant difference at 0.05 level of significant. The study found out that: the acquisition of physical access control system skills will enable the radio-television and electronic work students to be self-reliance upon graduation and the gaining of video surveillance system skills will also make the radio-television and electronic work students in technical colleges to be more effective and efficient in the delivery of their jobs.

**Keywords:** Electronic; Security; Installation; Self-reliance

### 1. Introduction

Technical Colleges (TCs) in Nigeria are institutions of learning proven with the goalmouth of training students to upsurge appropriate technical skills, knowledge, attitudes, conducts of thoughts and qualities of character that will enable them build their intellectual and competencies to become autonomous and also add to the economic growth of the societies.

Technical Colleges are in variation from usual secondary schools; the reason is that it places emphasis on vocational education and skills acquisition rather than how to read and write (Okolie, et al., 2014). The Technical Colleges in Nigeria are the training grounds for those who would want to get technical alertness and useful skills needed for learning a particular trade. Students who attained First School Living Certificates are often admitted by Technical Colleges for six years of vocational technical training (Okolie, et al., 2019). The vocational and technical subjects offered in TCs include; furniture making, painting, automobile mechanics, electrical and electronics repairs and installations, welding and fabrication, plumbing, woodworking, carpentry, and Joinery, etc. In addition to general education, all the vocational and technical subjects offered by Technical Colleges are in two parts: theory and practice (Okolie, et al., 2019). There is more time allotted for workshop practice per week than classroom theory lessons; this is to ensure that the learners gain the practical skills that are anticipated of them in the world of works (Adegbile, 2002). A better way to improving the abilities and drives for development is the acquisition of skills.

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Skill acquisition is needed in technical colleges to enable radio-television and electronic work students to be self-reliance. Skill acquisition can be seen as training by individuals or group of individuals that can lead to acquisition of knowledge for self-reliance. It entails the training of people in diverse trade under agreement between the Trainers and the trainees for certain duration and under certain conditions. Ochiagha (1995) defined skill acquisition as the process of demonstrating the habit of active thinking or behaviour in a specific activity. He added that skill acquisition is seen as the ability to do or perform an activity that is related to some meaningful exercise, work or job. He maintains that for skill to be acquired, appropriate knowledge, attitudes, habits of thought and qualities of character are learnt to enable the acquirer develop intellectual, emotional and moral character which prepares him or her for a brighter future. Similarly, Donli (2004) is of the view that skill acquisition is the manifestation of idea and knowledge through training which is geared towards inculcating in individuals, the spirit of entrepreneurship needed for meaningful development.

Electronic security systems serve three main purposes. First, the mere presence of a system can act as a preventive to crime. Second, if an intrusion happens, it will be noticed. Finally, the system will alert the appropriate personnel, making apprehension of the intruder possible. Adewuyi and Adekanye (2011) attests that the electronic detector machine at the University of Lagos Main library has significantly assisted in detecting theft cases in their library. Osayande (2011) unveiled that academic libraries have suffered adversely from security threats and other anti-social menace, that the installation of electronic security systems in selected University libraries in South west Nigeria has drastically improved the situation. Osayande, (2009) articulated that the installation of electronic security systems at the University of Kentucky reduced book theft, mutilation and so many other library crimes. According to Rathnabahu (2012), the electronic security systems at the University and special libraries of Sri Lanka, monitors for criminal activities, monitors hard to see areas, review recorded video to resolve disputes, archive speakers or special events, protects employees and students.

The electronic security systems are in various forms and they are; physical access control systems (PACS), video surveillance systems (VSS) sometimes called (CCTV), intrusion detection systems (IDS) and fire alarm system (FAS) amongst others. But in this study the researcher will be interested in physical access control systems (PACS), and video surveillance systems (VSS)

Physical Access Control Systems (PACS) is a particular type of access control system used as an electronic security counter-measure. A Physical Access Control System (PACS) grants access to employees and contractors who work at or visit a site by electronically authenticating their personal identity verification (PIV) credentials.

Physical access control (PAC) is one of the dominant pillars of an organization's security system. From pharmaceutical employees stealing drugs (R. B. CHS-III PSP. 2017) to a flight management system being stolen from a parked aircraft (Simple Flying, 2022) and heroin disappearing from police evidence lockers before trials (R. B. CHS-III PSP. 2017) small holes in PAC systems can have huge significances. Physical access control care for people and physical resources against unapproved accesses and the catastrophic costs connected. Therefore, it is about managing who accesses a physical location and when to access them. PAC is all over, with \$8.8 billion worth of PAC products being sold globally in 2021, up from \$6.7 billion in 2016, and with \$12.0 billion projected sales in 2026 (Meemoori, 2021). In spite of the size of the PAC industry and its important role in safeguarding our physical environments, public research and development regarding PAC has been restricted. While access to physical resources has been declared in some journals, very few papers truly deal with the unique features of PAC environments such as physical access, topological space models, and physical access/movement barriers. We differentiate between PAC and its counterpart in cyber systems, logical access control (LAC) (Meemoori, 2021). LAC controls the access of computer users to computing resources like devices, applications, data, etc. Analog PAC controls the physical access of physical actors to physical resources or spaces. In other words, PAC has the responsibility of protecting the physical attack surface compared to LAC which protects the cyber-attack surface. The common characteristics of PAC and LAC allow some of the prototypes and modus operandi developed for LAC to be used in the context of PAC too. For example, many access control policy models that invented in the LAC domain (e.g., role-based access control are useful in PAC systems as well (R. S. Sandhu, E. J. E. Coyne, H. L. Feinstein, and C. E. C. Youman, 1996). Though, the physical nature of PAC systems presents several challenges and research openings. For example, PAC systems need to clearly take into consideration the protected physical spaces, their relationships, and how physical barriers (as policy enforcement points) control access to them. The participation of human actors in PAC systems as topics demanding physical access and as physical security personnel also introduces new difficulties in policy implementation such as handling multiple subjects in a single access request or the possibility of being overridden by physical security personnel.

Video surveillance systems (VSS) are prevalent and common in many environs. Video surveillance has been a key component in safeguarding security at airports, banks, casinos, and correctional institutions. More recently, governments' agencies, businesses, and even schools are turning toward video surveillance as a means to increase

public security. With the explosion of cheap cameras and the accessibility of high-speed, broad-band wireless networks, deploying a large number of cameras for security surveillance has become economically and technically achievable (Rangaswami et al, 2003) Several important research questions remain to be addressed before we can rely upon video surveillance as an effective tool for crime prevention, crime resolution, and crime protection (Dimitrijevič et al, 2003) Much of the current research in video surveillance focuses on procedures to analyze video and other media from multiple sources to automatically detect significant events (Cucchiara, 2005). Video surveillance is a vigorous part of research. Object uncovering and tracking in video surveillance systems are usually based on background estimation a subtraction. The main attention of today's video surveillance systems act is the presentation of video density technology to proficiently picture house or store pictures from a large number of cameras on mass store devices (video tapes, discs) (Bojkovič et al 2005).

#### 1.1. Statement of Problem

The main objective of electronic security system is to provide adequate security in our homes, offices, hospitals, schools amongst others, to reduce or eliminate theft and criminality in our society. According to Rathnabahu (2012), the electronic security systems at the University and special libraries of Sri Lanka, monitors for criminal activities, monitors hard to see areas, review recorded video to resolve disputes, archive speakers or special events, protects employees and students. But, due to the un-seriousness in the side of radio-television and electronic work students who has refused to obtain these electronic security system installation skills has increased the level of theft and criminality in our schools, homes, industries and hospitals etc. Osayande (2011) unveiled that academic libraries have suffered badly from security threats and other anti-social menace. Osayande (2009) articulated that the installation of electronic security systems at the University of Kentucky reduced book theft, mutilation and so many other library crimes. Would acquisition of electronic security system installation skill reduce the level of theft, criminality and social vices in our homes, schools, hospitals and banks? Would it eradicate pilfering, stealing, kidnapping, cultism? Answers to these questions underscored the need for the study.

### Aim/Objectives of the study

The aim of the study was to determine the electronic security system installation skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State. Specifically the study sought to determine:

- The physical access control system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.
- The video surveillance system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

### 1.2. Research Questions

Two research questions guided the study

- What are the physical access control system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State?
- What are the video surveillance system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State?

### 1.3. Research Hypotheses

# 1.3.1. Four hypotheses guided the study

- **HO**<sub>1</sub> There is no significant difference between the mean responses of teachers and NTC III students on the acquisition of physical access control system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.
- **HO**<sub>2</sub> There is no significant difference between the mean responses of teachers and NTC III students on the acquisition of video surveillance system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

### 2. Methodology

The study adopts a descriptive survey design. The descriptive survey design was appropriate for this study since data was collected with the aid of a questionnaire from teachers and students of technical colleges on the electronic security system installation skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State. The study was carried out in the four Technical College in Rivers State, Nigeria. Purposive sampling technique was used for the study according to Isangedighi et al (2004), purposive sampling techniques has the assumption that with good judgment and acceptable approach, the researcher creditably and intentionally include in his sample, elements which are judge to be characteristic of the population being investigated. This position informed the use of purposive sampling in this study. The population of the study was 215 respondents, comprising of 30 teachers and 185 NTC III students from the four technical colleges in Rivers State. A structured questionnaire titled, 'Electronic Security System Installation Skills' (ESSIS) was used for data collection. The questionnaire was sub-divided into three (3) sections, such as A, B, and C respectively. Section A requested for bio data of the respondents, section B comprises of 9 items to determine the physical access control system skills for self-reliance of radio-television and electronic work students, section C comprises of 9 items to determine the video surveillance system skills for self-reliance of radiotelevision and electronic work students in technical colleges Rivers State. The structured questionnaire was based on 5-point liker scale of Strongly Agreed (SA-5), Agreed (A-4), Undecided (U-3), Disagreed (D-2) and Strongly Disagreed (SD-1) respectively. ESSIS was face-validated by two experts, one from the department of Industrial Technical Education, Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, and another from Rivers State University, Port Harcourt. The experts' observations and suggestions were used to structure the final copy of the questionnaire. The Reliability of the Instrument was determined by using Cronbach Alpha  $(\alpha)$  reliability method. Thirty (35) copies of the instrument were administered to teachers and instructors in Boys Technical Colleges in Fox Road, Osusu, Aba in Abia State, which is not part of the area of study but have equivalent individuality and uses the same National Board for Technical Education (NBTE) curriculum. Their responses were analyzed using statistical package for social sciences version 23 (SPSS). This yielded coefficient index of 0.75. Two hundred and fifteen (215) copies of the questionnaire were administered to the respondents, on recovery; two hundred and ten (210) copies were recovered. However, the return rate of the questionnaire was 95% and the questionnaire was recovered with the help of two research assistants on the procedures needed in administering of the questionnaire instruments. For the reason of speedy repossession of the questionnaire, the questionnaire were distributed to the respondents and was retrieved two days after, by the research assistant through the directives given to the research assistant by the researcher. The data retrieved from the respondents were analyzed using mean and standard deviation. The mean responses were used to answer the two research questions and t-test statistics were used to test the two null hypotheses at the 0.05 level of significance. To determine the acceptance and rejection level of each items in relation to the research questions, a decision rule based on the real limit number were used and decision were taken which states that the mean responses up to 3.50 and above were accepted and mean responses 3.49 and below were rejected. Standard deviation value close or wide apart were used to determine homogeneity in perception of the respondents. The decisions for null hypotheses are as follows: if the calculated value of the (P-value) is less than the sig.2-tailed accept the null hypothesis but if the sig.2-tailed is greater than or equal to the P-value at 0.05 level of significance, then the null hypothesis were rejected. The Statistical Package for Social Science version 23 (SPSS) were used to carry out the computation of the mean, standard deviation and t-test.

## 3. Results and Analysis

# 3.1. Research Question 1: What are the physical access control system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State?

The data presented in table 1, revealed that the teachers had the mean range of 3.85-4.55 and standard deviation of .905-1.275, While the students had the mean range of 3.25-4.35 and standard deviation of .490-1.302. The grand mean are 3.964 and 3.918 for teachers and students respectively. The closeness of the standard deviation showed that the respondents were homogeneous. The mean showed that the respondents agreed that the acquisition of physical access control system skills will enable the radio-television and electronic work students to be self-reliance upon graduation.

**Table 1** Mean and Standard Deviation on the physical access control system skills for self-reliance of radio-television and electronic work students

S/NO	Physical Access Control System Skills	Teacl	Students						
		X	SD	RMK	X	SD RMK		RMK	
1	Control Devices	4.23	0.905	A	4.35	.900	0	A	
2	Top Secret Sensitive Compartmented Information (TS/SCI)	4.11	0.924	A	4.32	1.13	38	A	
3	Customer Service Functions	3.99	1.275	A	3.68	.68 .866 A			
4	Patrol	4.01	1.088	A	3.92	92 1.145 A			
5	Control Systems	4.55	0.947	A	4.32	i.32 .651 A			
6	Security Cameras	4.18	1.073	A	3.83	.490	0	A	
7	Common Access Card (CAC)	3.89	0.994	A	3.25 1.302		A		
8	Department of Defense (DOD)	3.85	1.239	A	4.00	4.00 .953 A		A	
9	Intrusion Detection System	3.96	1.036	A	4.00	4.00 1.128 A		A	
Grand mean		3.964	0.3035	Α	3.918	8 .2958		A	A

# 3.2. Research Question 2: What are the video surveillance system skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State?

**Table 2** Mean and Standard Deviation on the video surveillance system skills for self-reliance of radio-television and electronic work students

S/NO	Video Surveillance System Skills	Teach	iers		Students			
			SD	RMK	X	SD	RMK	
1	Satellite	4.10	0.975	A	4.38	0.602	A	
2	Video Cameras	4.35	0.856	A	4.52	0.679	A	
3	Range Listening Devices	3.73	1.062	A	4.20	0.883	A	
4	Flying Drones	3.77	1.182	A	3.63	0.937	A	
5	Infrared Goggles	3.93	1.234	A	4.56	0.674	A	
6	Locator Beacons	4.18	0.914	A	4.14	0.835	A	
7	Closed-Circuit Television (CCTV)	4.15	1.038	A	3.83	1.215	A	
8	Casino Floor	3.60	1.173	A	4.20	0.673	A	
9	Circuit Television	4.58	0.756	A	4.42	1.431	A	
	Grand mean	4.157	0.2246	A	4.179	.2499	A	

Table 2, revealed that the teachers had the mean range of 3.60- 4.58 and standard deviation of .856-1.234, While the students had the mean range of 3.63- 4.52 and standard deviation of .602-1.431. The grand mean are 4.157 and 4.179 for teachers and students respectively. The closeness of the standard deviation showed that the respondents were consistent. The mean showed that the respondents agreed that the acquisition of video surveillance system skills will enhance self- reliance of radio-television and electronic work students in technical colleges in Rivers State.

# 3.3. Data analysis

 $HO_1$  There is no significant difference between the mean responses of teachers and students on the acquisition of physical access control system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

**Table 3** T-text analysis on the physical access control system skills for self-reliance of radio-television and electronic work students in technical colleges

GROUPS	N	X	SD	DF	P	Sig.2-tailed	REMARK
Teachers	30	3.978	0.3035				
				208	0.05	0.655	Accepted
Students	185	3.944	0.2958				

Result in Table 3 showed that the significant value at 2-tailed .655 is greater than .05 (P>.05) this indicates that the null hypothesis is accepted. Therefore, there is no significant difference between the mean response of teachers and students on the acquisition of physical access control system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

 $HO_2$  There is no significant difference between the mean responses of teachers and students on the acquisition of video surveillance system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State

**Table 4** T-text analysis on the video surveillance system skills for self-reliance of radio-television and electronic work students in technical colleges

GROUPS	N	X	SD	DF	P	Sig.2-tailed	REMARK
Teachers	30	3.918	0.2232				
				208	0.05	0.615	Accepted
Students	185	4.175	0.2496				

Result in Table 4 showed that the significant value at 2-tailed **.615** is greater than .05 (P>.05) this indicates that the null hypothesis is accepted. Therefore, there is no significant difference between the mean response of teachers and students on the acquisition of video surveillance system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

### 3.4. Findings of the study

The study finds out that

- The acquisition of physical access control system skills will enable the radio-television and electronic work students to be self-reliance upon graduation.
- The gaining of video surveillance system skills will make the radio-television and electronic work students to be more effective and efficient in the delivery of their jobs.

### 4. Discussion of Findings of the Study

The data presented in table 1, revealed that the teachers had the mean range of 3.85- 4.55 and standard deviation of .905-1.275, While the students had the mean range of 3.25- 4.35 and standard deviation of .490-1.302. The grand mean are 3.964 and 3.918 for teachers and students respectively. The closeness of the standard deviation showed that the respondents were homogeneous. The mean showed that the respondents agreed that the acquisition of physical access control system skills will enable the radio-television and electronic work students to be self-reliance upon graduation.

Result in Table 3 showed that the significant value at 2-tailed **.655** is greater than .05 (P>.05) this indicates that the null hypothesis is accepted. Therefore, there is no significant difference between the mean response of teachers and students on the acquisition of physical access control system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State. The finding of this study in unification with R. S. Sandhu, E. J. E. Coyne, H. L. Feinstein, and C. E. C. Youman,(1996) who stated that the common characteristics of PAC and LAC allow some of the prototypes and modus operandi developed for LAC to be used in the context of PAC too. For example, many access control policy models that invented in the LAC domain (e.g., role-based access control are useful in PAC systems as well.

In agreement with the above statement, radio-television and electronic work students acquire this physical access control system skills to enable ben self-employed after graduation.

Table 2, revealed that the teachers had the mean range of 3.60- 4.58 and standard deviation of .856-1.234, While the students had the mean range of 3.63- 4.52 and standard deviation of .602-1.431. The grand mean are 4.157 and 4.179 for teachers and students respectively. The closeness of the standard deviation showed that the respondents were consistent. The mean showed that the respondents agreed that the acquisition of video surveillance system skills will enhance self- reliance of radio-television and electronic work students in technical colleges in Rivers State.

Result in Table 4 showed that the significant value at 2-tailed .615 is greater than .05 (P>.05) this indicates that the null hypothesis is accepted. Therefore, there is no significant difference between the mean response of teachers and students on the acquisition of video surveillance system skills for self-reliance of radio-television and electronic work students in technical colleges in Rivers State. The finding of this study is in agreement with Rangaswami et al, (2003) who stated that with the explosion of cheap cameras and the accessibility of high-speed, broad-band wireless networks, deploying a large number of cameras for security surveillance has become economically and technically achievable. In line with the above statement, the radio-television and electronic work students in technical colleges should acquire the video surveillance system skills to enable be self-reliance.

### 5. Conclusion

Based on the findings of the study, electronic security system installation skills requisite for self-reliance of radio-television and electronic work students in technical colleges in Rivers State, the study analyzed physical access control system skill and video surveillance system skill. Electronic security system installations skills are key areas to determine the self-reliance of radio-television and electronic work students in technical colleges in Rivers State, which will have positive impact in our industries and also make radio-television and electronic work students in technical colleges to be independent. As a result to this, the present study showed that the electronic security system installation skills if considered will upsurge students' skill acquisition level in technical colleges in Rivers State and beyond. Hence, both teachers and students had agreed that the electronic security system installation skills are requisite for self-reliance radio-television and electronic work students in technical colleges.

#### **Recommendations**

In respects to the findings of the study, the following recommendations were made:

- The acquisition of physical access control system skills should be made compulsory in technical colleges to enable the radio-television and electronic work students to be self-reliance upon graduation.
- The regulatory body(NBTE) should enforce the acquisition of video surveillance system skills to enhance self-reliance of radio-television and electronic work students in technical colleges in Rivers State.

# Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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