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AN ASSESSMENT OF THE UTILIZATION OF COMPUTER SKILLS BY LECTURERS IN PORT HARCOURT POLYTECHNIC

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Abstract

This study assessed the utilization of computer skills by lecturers at Port Harcourt Polytechnic, Rivers State, Nigeria. The research examined the level of computer skills possessed by lecturers, the extent of utilization of these skills in teaching and administrative activities, and the challenges faced in computer skills application. Using a descriptive survey design, data were collected from 180 lecturers across various departments through structured questionnaires. Results revealed that while lecturers possessed moderate computer skills, utilization levels varied significantly across different applications. The study identified inadequate infrastructure, limited training opportunities, and power supply challenges as major barriers to effective computer skills utilization. The findings suggest urgent need for institutional support, capacity building programs, and infrastructure development to enhance effective utilization of computer skills among lecturers in Nigerian polytechnics.

Keywords: ***Computer Skills, Lecturers, Polytechnic Education, Information Technology, Nigeria***

Introduction

The integration of Information and Communication Technology (ICT) in higher education has become increasingly crucial in the 21st century educational landscape. Computer skills, defined as the ability to use computers and related technology efficiently to accomplish various tasks, have emerged as fundamental competencies for educators in tertiary institutions (Azad, 2024). In Nigerian polytechnics, where technical and vocational education is the primary focus, lecturers' computer skills utilization is particularly critical for effective knowledge transfer and institutional development.

The Nigerian educational system has witnessed significant technological advancement over the past decade, with various initiatives aimed at integrating ICT into teaching and learning processes. The National Board for Technical Education (NBTE) has emphasized the importance of both technical knowledge and hands-on research skills essential for academic and industry success (NBTE, 2024). From 2024, all Polytechnic students must complete a Mandatory Skills Qualification (MSQ) before graduation. The NSQ ensures that lecturers have both academic knowledge and hands-on skills.

Computer literacy among lecturers in higher education institutions has been recognized as a critical factor in enhancing teaching quality and research productivity. Research by Ojeniyi (2023) indicated that E-mail and Websites were the most available resources to lecturers of both universities. Lecturers in ACU had high ICT literacy skills in General Computer Operation while those in LCU had high ICT literacy skills in General Computer applications. This suggests

varying levels of computer competence across different institutions and geographical locations in Nigeria.

The significance of computer skills in educational settings extends beyond basic operations to encompass advanced applications in research, curriculum development, student assessment, and administrative functions. Studies have shown that lecturers with enhanced computer skills demonstrate improved job efficacy and effectiveness in various academic responsibilities (Adebayo & Olatoye, 2014). Furthermore, the COVID-19 pandemic highlighted the critical importance of digital literacy among educators, as institutions worldwide shifted to online and hybrid learning models (Mardiana, 2024).

In the context of Nigerian polytechnics, computer skills utilization faces unique challenges including inadequate infrastructure, inconsistent power supply, limited funding for technology acquisition, and insufficient training programs. Findings from this study revealed among others that that ICT and digital literacy skills when applied will to a very large extent be a tool for efficient teaching aid for lecturers in colleges of education in Nigeria, that computers, printers, photocopiers, projectors, interactive white boards and other ICT tools are essential for effective teaching.

Port Harcourt Polytechnic, being one of the prominent polytechnics in the Niger Delta region, serves as an important case study for understanding computer skills utilization among lecturers in Nigerian polytechnics. The institution's strategic location in an oil-rich region and its mandate to provide technical education aligned with industry needs make it imperative to assess how effectively its lecturers utilize computer skills in their academic and administrative responsibilities.

Statement of the Problem

Despite the increasing emphasis on ICT integration in Nigerian tertiary education, there remains a significant gap in understanding the actual utilization of computer skills by lecturers in polytechnics. While various studies have examined ICT literacy in universities and colleges of education, limited research has specifically focused on computer skills utilization in polytechnic settings, particularly in the Niger Delta region.

Recent studies have indicated challenges in ICT implementation across Nigerian educational institutions. Research conducted in colleges of education revealed that while educators recognize the importance of digital literacy skills, actual utilization remains suboptimal due to various institutional and individual barriers (Adeyemi & Olaleye, 2019). Similarly, investigations in universities have shown disparities in ICT competence levels among lecturers, with implications for teaching effectiveness and research productivity (Obioma & Eze, 2020).

The problem is further compounded by the evolving nature of computer technology and the increasing demands for digital competency in polytechnic education. Therefore, addressing the digital ... researcher, Wei (2023), indicated that faculty development and training programs emphasize the significance of continuous support to lecturers in developing their digital literacy

skills. This highlights the ongoing need for assessment and improvement of computer skills among polytechnic lecturers.

Port Harcourt Polytechnic, like many other polytechnics in Nigeria, faces challenges related to infrastructure development, staff training, and resource allocation for ICT initiatives. Without a comprehensive understanding of the current state of computer skills utilization among its lecturers, the institution may struggle to develop effective strategies for capacity building and technological advancement.

Furthermore, the lack of empirical data on computer skills utilization hinders evidence-based decision making regarding ICT policy formulation, resource allocation, and professional development programs. This study addresses this critical knowledge gap by providing systematic assessment of computer skills utilization among lecturers at Port Harcourt Polytechnic.

Objectives of the Study

The main objective of this study was to assess the utilization of computer skills by lecturers in Port Harcourt Polytechnic. The specific objectives were:

1. To determine the level of computer skills possessed by lecturers at Port Harcourt Polytechnic across various applications and functions.
2. To examine the extent of utilization of computer skills by lecturers in teaching, research, and administrative activities.
3. To identify the challenges faced by lecturers in the effective utilization of computer skills in their academic and administrative responsibilities.

Research Questions

Based on the stated objectives, the following research questions guided this study:

1. What is the level of computer skills possessed by lecturers at Port Harcourt Polytechnic across various applications and functions?
2. To what extent do lecturers at Port Harcourt Polytechnic utilize computer skills in teaching, research, and administrative activities?
3. What are the challenges faced by lecturers in the effective utilization of computer skills in their academic and administrative responsibilities?

Literature Review

Computer Skills in Higher Education

Computer skills in higher education encompass a broad range of competencies including basic computer operations, software applications, internet navigation, data management, and digital communication. According to Azad (2024), Nowadays, information and communications technology literacy (ICT) means more than achieving isolated digital and technological skills.

ICT literacy means the synthesis of knowledge, skills, and attitudes required for effective use of technology in various contexts.

Research has consistently shown that computer skills among lecturers significantly impact teaching quality and student learning outcomes. Studies conducted in Nigerian universities have revealed varying levels of computer competence among faculty members, with implications for institutional effectiveness and competitiveness (Okonkwo & Ezenwa, 2021). The integration of computer skills in academic activities has been associated with improved research productivity, enhanced teaching methodologies, and better administrative efficiency.

ICT Integration in Nigerian Polytechnics

The Nigerian polytechnic system has undergone significant transformation in recent years, with increased emphasis on ICT integration. The National Board for Technical Education has established guidelines for technology integration in polytechnic education, recognizing the critical role of computer skills in preparing students for the modern workforce.

Research conducted in various Nigerian polytechnics has highlighted both opportunities and challenges in ICT implementation. Studies have shown that while institutional policies support technology integration, actual implementation often faces barriers including inadequate infrastructure, limited funding, and insufficient technical support (Adebayo & Ogunmade, 2022).

Challenges in Computer Skills Utilization

Despite the recognized importance of computer skills in higher education, various challenges hinder effective utilization among lecturers. Research has identified several key barriers including inadequate training opportunities, insufficient infrastructure, power supply challenges, and resistance to change among some faculty members (Eze & Okonkwo, 2023).

Studies conducted in Nigerian educational institutions have consistently reported infrastructure challenges as major impediments to effective ICT utilization. These challenges include inadequate computer facilities, poor internet connectivity, and unreliable power supply (Adeyemi & Olaleye, 2019).

Methodology

Research Design

This study employed a descriptive survey design to assess the utilization of computer skills by lecturers at Port Harcourt Polytechnic. The descriptive survey design was considered appropriate as it allows for the collection of data from a representative sample to describe characteristics of a larger population.

Population and Sample

The population of this study comprised all full-time lecturers at Port Harcourt Polytechnic across various departments and schools. The total population consisted of 420 lecturers as obtained from the institution's personnel records. Using Taro Yamane's formula for sample size

determination with a 95% confidence level and 5% margin of error, a sample size of 180 lecturers was determined for the study.

A stratified random sampling technique was employed to ensure proportional representation across different schools and departments within the polytechnic. The sample was stratified based on schools (Engineering, Applied Sciences, Business Studies, and Environmental Studies) and academic ranks (Graduate Assistant, Assistant Lecturer, Lecturer II, Lecturer I, Senior Lecturer, and Principal Lecturer).

Research Instrument

A structured questionnaire was developed as the primary data collection instrument. The questionnaire consisted of four sections:

- Section A: Demographic information of respondents
- Section B: Level of computer skills possessed by lecturers (20 items)
- Section C: Extent of computer skills utilization (25 items)
- Section D: Challenges in computer skills utilization (15 items)

The questionnaire items were developed based on extensive literature review and validated by experts in educational technology and measurement. A four-point Likert scale was used for sections B, C, and D, with response options ranging from "Very High" (4) to "Very Low" (1) for skill levels and utilization, and "Strongly Agree" (4) to "Strongly Disagree" (1) for challenges.

Validity and Reliability

Content validity of the instrument was established through expert review by three professors in educational technology and computer science. Their suggestions were incorporated to improve the clarity and relevance of the questionnaire items.

Reliability of the instrument was determined through a pilot study conducted with 30 lecturers from a similar polytechnic not included in the main study. Cronbach's alpha coefficient was calculated for each section of the questionnaire. The reliability coefficients obtained were: Computer skills level ($\alpha = 0.87$), Computer skills utilization ($\alpha = 0.91$), and Challenges ($\alpha = 0.85$), all indicating acceptable levels of internal consistency.

Data Collection Procedure

Data collection was conducted over a period of four weeks with the assistance of trained research assistants. Prior to data collection, permission was obtained from the management of Port Harcourt Polytechnic and informed consent was secured from all participants. The questionnaires were administered during departmental meetings and faculty gatherings to ensure maximum response rate.

Data Analysis

Data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to analyze the data. The following criteria were used for interpreting mean scores:

- 3.50 - 4.00: Very High
- 2.50 - 3.49: High
- 1.50 - 2.49: Low
- 1.00 - 1.49: Very Low

Results

Demographic Characteristics of Respondents

A total of 180 questionnaires were distributed, and 167 were returned, representing a response rate of 92.8%. The demographic analysis revealed the following characteristics:

Table 1: Demographic Characteristics of Respondents (N = 167)

Variable	Category	Frequency	Percentage
Gender	Male	98	58.7
	Female	69	41.3
Age Group	25-35 years	42	25.1
	36-45 years	67	40.1
	46-55 years	48	28.7
	Above 55 years	10	6.0
Academic Qualification	HND	15	9.0
	Bachelor's	38	22.8
	Master's	89	53.3
	PhD	25	15.0
Academic Rank	Graduate Assistant	22	13.2
	Assistant Lecturer	31	18.6
	Lecturer II	45	26.9

Variable	Category	Frequency	Percentage
	Lecturer I	38	22.8
	Senior Lecturer	23	13.8
	Principal Lecturer	8	4.8
Years of Experience	1-5 years	48	28.7
	6-10 years	52	31.1
	11-15 years	41	24.6
	Above 15 years	26	15.6

Research Question 1: Level of Computer Skills Possessed by Lecturers

Table 2: Level of Computer Skills Possessed by Lecturers (N = 167)

Computer Skill Area	Mean	SD	Interpretation
Basic Computer Operations	3.21	0.78	High
Word Processing (MS Word)	3.45	0.65	High
Spreadsheet Applications (MS Excel)	2.89	0.82	High
Presentation Software (PowerPoint)	3.12	0.74	High
Internet Navigation and Search	3.38	0.69	High
Email Communication	3.52	0.58	Very High
Social Media Platforms	3.41	0.71	High
Database Management	2.34	0.89	Low
Programming and Coding	1.87	0.94	Low
Web Design and Development	1.95	0.88	Low
Graphic Design Software	2.21	0.91	Low
Statistical Software (SPSS, R)	2.45	0.86	Low
Online Learning Platforms	2.78	0.83	High

Computer Skill Area	Mean	SD	Interpretation
Video Conferencing Tools	3.15	0.77	High
Cloud Storage Services	2.91	0.81	High
Digital Content Creation	2.56	0.79	High
Cybersecurity Awareness	2.67	0.84	High
Mobile Applications Usage	3.29	0.72	High
Digital Assessment Tools	2.43	0.87	Low
Research Database Navigation	2.62	0.83	High
Overall Mean	**2.84**	**0.78**	**High**

The results indicate that lecturers at Port Harcourt Polytechnic possess a high level of computer skills overall (M = 2.84, SD = 0.78). The highest skill levels were observed in email communication (M = 3.52), word processing (M = 3.45), and social media platforms (M = 3.41). However, lecturers showed low skill levels in advanced areas such as programming and coding (M = 1.87), web design and development (M = 1.95), and database management (M = 2.34).

Research Question 2: Extent of Computer Skills Utilization

Table 3: Extent of Computer Skills Utilization by Lecturers (N = 167)

Utilization Area	Mean	SD	Interpretation
Teaching Activities			
Preparing lesson notes and materials	3.34	0.73	High
Creating presentations for lectures	3.18	0.76	High
Using multimedia in classroom instruction	2.67	0.85	High
Online content delivery	2.45	0.89	Low
Digital assessment and grading	2.23	0.91	Low
Research Activities			
Literature search and review	3.41	0.68	High

Utilization Area	Mean	SD	Interpretation
Data collection using digital tools	2.78	0.82	High
Data analysis using software	2.34	0.88	Low
Writing and formatting research papers	3.26	0.71	High
Collaboration with research partners	2.89	0.79	High
Administrative Activities			
Email correspondence	3.48	0.61	High
Record keeping and data management	2.91	0.83	High
Report writing and documentation	3.15	0.74	High
Student information management	2.56	0.86	High
Financial and budget management	2.12	0.93	Low
Professional Development			
Online training and courses	2.67	0.84	High
Webinar participation	2.43	0.87	Low
Professional networking online	2.78	0.81	High
Conference presentation preparation	2.89	0.78	High
Digital portfolio development	2.21	0.89	Low
Communication and Collaboration			
Student communication via email	3.37	0.69	High
Colleague collaboration platforms	2.54	0.85	High
Video conferencing for meetings	2.91	0.79	High
Social media for academic purposes	2.73	0.82	High
Online discussion forums	2.38	0.88	Low
Overall Mean	**2.81**	**0.80**	**High**

The overall extent of computer skills utilization among lecturers was high (M = 2.81, SD = 0.80). Lecturers showed highest utilization in email correspondence (M = 3.48), literature search and review (M = 3.41), and student communication via email (M = 3.37). Lower utilization was observed in areas such as financial and budget management (M = 2.12), digital portfolio development (M = 2.21), and digital assessment and grading (M = 2.23).

Research Question 3: Challenges in Computer Skills Utilization

Table 4: Challenges Faced by Lecturers in Computer Skills Utilization (N = 167)

Challenge	Mean	SD	Interpretation
Inadequate computer facilities	3.67	0.58	Very High
Poor internet connectivity	3.54	0.62	Very High
Frequent power outages	3.71	0.51	Very High
Lack of technical support	3.42	0.69	High
Insufficient training opportunities	3.38	0.71	High
Limited financial resources for technology	3.59	0.64	Very High
Outdated computer equipment	3.46	0.67	High
Lack of time for computer skills development	3.21	0.75	High
Resistance to technology adoption	2.89	0.81	High
Inadequate institutional ICT policy	3.15	0.78	High
Limited access to software licenses	3.33	0.73	High
Poor maintenance of computer equipment	3.41	0.68	High
Lack of motivation for technology use	2.78	0.83	High
Security concerns about digital platforms	2.94	0.79	High
Language barriers in software interfaces	2.43	0.86	Low
Overall Mean	**3.26**	**0.70**	**High**

The analysis revealed that lecturers face significant challenges in computer skills utilization (M = 3.26, SD = 0.70). The most pressing challenges were frequent power outages (M = 3.71), inadequate computer facilities (M = 3.67), and limited financial resources for technology (M = 3.59). The least challenging factor was language barriers in software interfaces (M = 2.43).

Discussion of Results

Level of Computer Skills Among Lecturers

The findings indicate that lecturers at Port Harcourt Polytechnic possess a high overall level of computer skills (M = 2.84), which aligns with recent research emphasizing the growing digital competency among educators in Nigerian higher education institutions. This result is consistent with studies conducted in similar contexts, where lecturers demonstrated moderate to high levels of basic computer competencies (Ojeniyi, 2023).

The high proficiency in email communication and word processing reflects the widespread adoption of these fundamental tools in academic environments. E-mail and Websites were the most available resources to lecturers of both universities, which supports our finding that these remain the most utilized computer applications among polytechnic lecturers.

However, the low skill levels in advanced areas such as programming, database management, and statistical software suggest a significant skills gap that could limit lecturers' effectiveness in research and advanced teaching methodologies. This finding is particularly concerning for a polytechnic institution where technical skills are expected to be at the forefront of educational delivery.

The moderate skills in online learning platforms and video conferencing tools reflect the impact of the COVID-19 pandemic, which necessitated rapid adoption of digital teaching tools. This is consistent with global trends where educators were compelled to develop digital competencies for remote instruction (Mardiana, 2024).

Utilization of Computer Skills

The high overall utilization of computer skills (M = 2.81) demonstrates that lecturers are actively applying their digital competencies in various academic activities. The extensive use of computers for email correspondence, literature search, and student communication indicates successful integration of technology in routine academic functions.

The finding that lecturers heavily utilize computers for research-related activities, particularly literature search and research paper writing, aligns with global trends in academic research where digital tools have become indispensable. This is supported by research indicating that ICT and digital literacy skills when applied will to a very large extent be a tool for efficient teaching aid for lecturers in colleges of education in Nigeria.

However, the lower utilization in areas such as digital assessment, online content delivery, and data analysis suggests untapped potential for enhancing teaching and research effectiveness. This gap between skill possession and actual utilization may indicate the need for more targeted training and institutional support.

The moderate utilization of multimedia in classroom instruction and online content delivery reflects ongoing challenges in fully integrating technology into pedagogical practices. This finding is consistent with studies showing that while educators possess technical skills, translating these into effective teaching strategies remains challenging (Wei, 2023).

Challenges in Computer Skills Utilization

The identification of infrastructure-related challenges as the most significant barriers to computer skills utilization highlights systemic issues that require institutional and governmental intervention. The prominence of power outages (M = 3.71) as the top challenge reflects the broader infrastructure deficits in Nigeria that significantly impact educational technology implementation.

The high rating of inadequate computer facilities and limited financial resources aligns with findings from similar studies in Nigerian educational institutions, where resource constraints consistently emerge as primary barriers to ICT integration (Adebayo & Ogunmade, 2022). These challenges require comprehensive institutional planning and investment strategies.

The moderate challenge posed by resistance to technology adoption (M = 2.89) suggests that most lecturers are receptive to technology use, which is encouraging for future ICT integration initiatives. This finding contradicts some earlier studies that identified resistance to change as a major barrier among older faculty members.

The insufficient training opportunities challenge (M = 3.38) underscores the need for continuous professional development programs. faculty development and training programs emphasize the significance of continuous support to lecturers in developing their digital literacy skills, highlighting the ongoing nature of digital competency development.

Conclusion

This study has provided valuable insights into the utilization of computer skills by lecturers at Port Harcourt Polytechnic. The findings reveal that while lecturers possess adequate computer skills and demonstrate high utilization rates in basic applications, significant gaps exist in advanced technical competencies and their application in teaching and research.

The high level of basic computer skills among lecturers indicates a solid foundation for further digital competency development. However, the limited proficiency in advanced applications such as programming, database management, and statistical software suggests the need for specialized training programs tailored to polytechnic education requirements.

The extensive utilization of computer skills in communication, research, and administrative activities demonstrates successful integration of technology in routine academic functions. Nevertheless, the lower utilization rates in digital assessment, multimedia instruction, and online content delivery indicate opportunities for enhancing pedagogical effectiveness through technology.

The infrastructure-related challenges, particularly power supply issues and inadequate computer facilities, represent significant barriers that require institutional and policy-level interventions. These challenges underscore the need for comprehensive infrastructure development and sustainable funding mechanisms for educational technology initiatives.

The study concludes that while Port Harcourt Polytechnic lecturers demonstrate commendable computer skills and utilization patterns, strategic interventions are needed to address

infrastructure deficits, enhance advanced technical competencies, and optimize technology integration in teaching and research activities.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Port Harcourt Polytechnic should establish a comprehensive ICT training center to provide continuous professional development opportunities for lecturers in advanced computer applications including database management, statistical software, and programming languages.
2. The institution should invest in robust backup power systems including solar panels and generators to address the persistent power supply challenges that significantly hinder computer skills utilization.
3. Management should develop a systematic computer equipment procurement and replacement plan to ensure lecturers have access to modern, functional computing facilities that support advanced applications and research activities.
4. The polytechnic should partner with telecommunications companies to establish reliable high-speed internet connectivity across all departments and offices to facilitate effective utilization of online resources and collaboration tools.
5. A dedicated ICT support unit should be established to provide technical assistance, equipment maintenance, and troubleshooting services to lecturers, ensuring minimal disruption to technology-dependent activities.
6. The institution should implement a phased approach to integrating digital assessment tools and learning management systems, providing adequate training and support to facilitate smooth adoption by lecturers.
7. Regular ICT skills assessment and certification programs should be instituted to monitor progress and identify areas requiring additional support or training interventions.
8. Port Harcourt Polytechnic should develop strategic partnerships with technology companies and other educational institutions to access software licenses, training resources, and technical expertise at reduced costs.
9. The management should establish an institutional ICT policy that clearly defines expectations, standards, and support mechanisms for computer skills utilization among faculty members.
10. A mentorship program should be implemented pairing technology-savvy lecturers with those requiring additional support to foster peer learning and collaborative skill development in computer applications.

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