

EXTENT OF ADVERSE EFFECTS OF SUBSTANDARD COMPUTER LABORATORIES ON ICT SKILLS ACQUISITION OF HND STUDENTS OF OFFICE TECHNOLOGY AND MANAGEMENT IN PUBLIC POLYTECHNICS IN EBONYI STATE

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Abstract

The study empirically investigated the extent of adverse effects of substandard computer laboratories on ICT skills acquisition of HND students of Office Technology and Management in public polytechnics in Ebonyi State. Two research questions and one null hypothesis guided the study. Descriptive survey research design was adopted. A population of 60 consisting of HND/II OTM students of Akanu Ibiyam Federal Polytechnic Unwana, Afikpo was studied without sampling because the size was not too large. A four-point rating scale questionnaire containing thirty-seven items in two clusters which was validated by two experts, one from the Department of Office Technology and Management and the other from Computer Science Department, was used for data collection. Mean and standard deviation were used to answer the research questions and determine the homogeneity of the respondents' means respectively while analysis of variance (ANOVA) was used to test the null hypothesis at 0.05 level of significance. The findings showed that computer laboratories equipped with modern ICT facilities are required to a high extent, for effective ICT skills acquisition by HND OTM students in Ebonyi State. It also found that, to a great extent, substandard computer laboratories affect ICT skills proficiency of HND OTM students in Ebonyi State. Result from the test of the null hypothesis revealed that the gender of the respondents did not significantly influence their mean ratings on the extent substandard computer laboratories affect ICT skills proficiency of HND OTM students. Based on the findings, it was concluded that a well-equipped computer laboratory is essential to the success of OTM programme. Sequel to the findings, it was recommended that institutions running OTM programme should, as a matter of urgent priority, ensure the provision of well-equipped computer laboratories for effective teaching and learning in OTM. It was also recommended that government should increase the annual budgetary allocation to education.

Introduction

The need for competitive and saleable skills, especially information and communication technology (ICT) skills, today cannot be overemphasized. Our world has compacted into a global village, connected through information and communication/digital technologies. By implication, anyone, particularly youths, who desires to be a valuable, visible and relevant player in the business and corporate world of the 21st Century must, of necessity, possess relevant ICT skills. This is particularly correct for Office Technology and Management (OTM) programme. Ovbiagele and



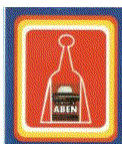
Mgbonyebi (2018) affirmed that the acquisition of skills and competencies such as ability to use ICT equipment for communication, manage information at the right time, recognise and utilise office automation, recognise technological trends, and so on, are very relevant in OTM. Ebenezer-Nwokeji, Amasike and Dike (2018) stated that OTM students are expected to be equipped with relevant skills and competencies in ICT and other electronic gadgets needed to function effectively in the global work environment. Report of studies by Agomuo and Onyenokwe cited in Nwaiwu (2021) agreed that relevant computer skills are essential to the production of employable and job creating business education graduates.

Office Technology and Management programme, an aspect of the business education taught in polytechnics in Nigeria, is one unique course that is tailored towards equipping its beneficiaries with relevant ICT skills (while not neglecting others) that will help them adequately take their place in the 21st Century information/technology driven world of business. Baba and Akarahu in Iheukwumere, Uteh and Nkoro (2018) viewed OTM programme as a comprehensive term that refers to aspects of the educational process that involves general education, study of new technologies and related sciences, the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Ojo and Akhadame (2016) opined that OTM is an efficient, effective, productive and functional education that focuses on combining office information and technical skills with adequate and relevant business knowledge in solving organisation wide problems, thereby leading itself to self-employment, self-reliance, paid employment self-actualisation. The objectives of the programme, according to NBTE (2014) include but not limited to, equipping its products with effective work competence to fit properly into the office of any organisation and perform professionally, the functions of a secretary.

Ebenezer-Nwokeji, Amasike and Dike (2018) observed that the current OTM curriculum has an international perspective owing to the assistance of UNESCO, which incorporated into it the global best practices in office technology, including convergence of computer, telecommunication, internet and information and communication competencies that were lacking in the previous curricula. To buttress this, the curriculum is rich with courses that encapsulate these skills and designed in a manner that will see to their deliberate systemic transfer. At HND level, the courses offered include ICT office application I & II, Management Information System (MIS), Advanced Desktop Publishing, Advanced Webpage Design, Database Management, amongst others. To effectively teach these courses, transfer the necessary skills inherent in them and attain the objectives of OTM programme, basic infrastructure including standard computer laboratories that consist of energy friendly desktop computers in the ratio of 1:1, steady supply of electricity (at least eight hours each working day), relevant software, printers, internet facilities, photocopying machine, web-conferencing facilities, to mention but a few, are required.

The need for the acquisition of relevant ICT skills by OTM students cannot be overemphasised. The ever evolving and competitive world of business with respect to the process, production, distribution, marketing of goods and services as well as the mode of transmitting information, demand that the strategies in teaching and learning OTM application areas should be reorganised to reflect the use of ICT in educational service delivery (Ebenezer-Nwokeji, Amasike and Dike, 2018). According to Amiaya in Iheukwumere, Uteh and Nkoro (2018), in a skill-based course like OTM where graduates are expected to demonstrate skills and competencies that are highly competitive and technology driven, use and mastery of relevant cutting-edge technologies are invaluable. Whether as an employee or an entrepreneur, it is imperative that one is equipped with skills that meet the needs and answer societal challenges of the age. A major part of the challenge to relevant skills transfer in OTM, however, is unavailability of the necessary facilities.

Emeasoba (2014) observed that many tertiary institutions where OTM is taught seem to be in short supply of the complementary ICT gadgets and invariably, the quality of graduates are negatively affected. Akpomudjere in Sokyos, Wetnwan and Bewaran (2018) lamented the

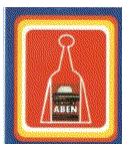


deplorable state of physical facilities in many Nigerian polytechnics that is characterised by shortage of equipment and facilities, which in turn affect the quality of teaching and learning. Nwabufor and David (2018) identified inadequate teaching resources as part of the factors that negatively affect effective teaching and learning experience in Nigeria education system.

Olowookere and Iyiola (2015) mentioned some of the problems to the integration of ICT in a business course like OTM to include inadequate ICT infrastructure (such as hardware, software, appropriate accommodation, cooling and ventilation system), inadequate/erratic power supply, and inadequate funding of the programme, which affects the provision of relevant infrastructure and facilities. This implies that poor funding is at the core of the challenges of education, particularly vocation education in Nigeria. Alaba and Ibrahim (2019) lamented that Nigerian government had incessantly neglected the education sector in its yearly budgetary allocation, despite the fact that education is a huge capital investment enterprise. Over the last ten years, budgetary allocations for education in Nigeria have been on the decline with 2021 witnessing the worst allocation of the review period. For instance, Nigeria's education budget for the years 2017 – 2021 is as follows: 7.4% – 2017, 7.04% - 2018, 7.05% - 2019, 6.7% - 2020 and 5.6% - 2021 (Olufemi, 2021). In the current fiscal year 2022, education was allocated a mere 7.9% percent of the national budget, falling below the international benchmark of 15-20% set by UNESCO convention, which Nigeria was “committed” to (Onyeji & Ileyemi, 2021). Other African countries like Rwanda and South Africa seemed to have better understanding of the place of education in development, and this reflects in their annual education budget in contrast to Nigeria's. A look at their budget over a period of five years (2017 – 2021) showed education budget of Rwanda as follows: 11.1% - 2017, 11.80% - 2018, 11.0% - 2019, 10.78% - 2020, and 11.32 – 2021; while South Africa's education budget for the period under review is thus: 18.78% - 2017, 18.9% - 2018, 19.6% - 2019, 19.5% - 2020, 11.32% - 2021 (World Bank, 2022). A glossary look at this data explains why quality of education in Nigeria, especially at the tertiary level, kept deteriorating and is bedeviled with an infamous “annual event” called strike, thereby further popularising education tourism.

In a bid to survive the harsh economic realities enforced on it by inadequate funding, several tertiary institutions tried to develop alternative means of survival. Alternative to practical, a situation where the essential consumables needed for practical oriented courses cannot be provided due to paucity of funds and so in a bid to make up, the practical sessions are theorised, has become common and gradually a norm. This, needless to say, has further degenerated our education standard leading to the production of unskilled, ill equipped and unemployable graduates. For a core skilled course like OTM, where skills must be exhibited and not “quoted”, employing anything but world best practices in the production of its graduands will, undoubtedly, jeopardise the essence of the programme.

Akanu Ibiam Federal Polytechnic, Unwana, Afikpo, Ebonyi State, is the only public polytechnic in Ebonyi State, and it is not exempted from the scourge of financial downturn threatening the education sector in Nigeria. By extension, its OTM programme is encumbered with several fund related challenges, some of which include inadequate computer systems for teaching and learning, poorly equipped computer laboratories (both at ND and HND level), lack of electricity, and so on. One clear advantage OTM graduates ought to have is that the programme, being ICT/digital skills oriented, should equip its beneficiaries with skills that will make them saleable even in the midst of rising rate of unemployment. Indeed, the nature of the business environment today has made acquisition of computer application skills in order to utilise computers and its related technologies efficiently and effectively inevitably, if one must triumph therein. It is, therefore, on this premise that this paper will attempt to ascertain the extent to which substandard computer laboratories can affect the ICT skills acquisition of HND OTM students in Ebonyi State.



Statement of the Problem

Office Technology and Management programme has a well-planned curriculum, enriched with relevant ICT courses and their inherent skills expectations such that, if diligently implemented, is capable of producing a 21st Century compliant professional, whether as an employee or entrepreneur. To maximise the benefits of the programme, however, the needed facilities and infrastructure have to be adequately provided. Unfortunately, one albatross of tertiary education in Nigeria today is inadequate funding which has led to infrastructural decay in the sector. Paucity of funds has seen several government institutions adopting several unhealthy cost cutting measures including foregoing the provision of certain necessary teaching and learning facilities at the expense of the learners, all in the bid to survive and remain in business. At the extreme of these control measures is the issue of theorising practical in the name of alternative to practical. For a skill-oriented course like OTM that demands high level skills demonstration, alternative to practical cannot replace the planned practical steps to skills acquisition, neither will substandard computer laboratories help attain the objectives of the programme. Despite knowing this, many public tertiary institutions running OTM programme still continue with the programme without providing the basic infrastructure like well-equipped computer laboratories for meaningful teaching and learning. It is, therefore, left to be seen how these have affected the effective transfer of ICT skills at a high proficiency level to HND OTM students in Akanu Ibiam Federal Polytechnic, Unwana, Afikpo, Ebonyi State.

Purpose of the study

The main purpose of the study was to ascertain the adverse effect of substandard computer laboratories on ICT skills acquisition of HND OTM students in public polytechnics in Ebonyi State. Specifically, the study sought to ascertain the extent:

1. ICT facilities are required for effective ICT skills transfer to HND OTM students
2. Poor state of computer laboratories affects HND OTM students' ICT skills proficiency.

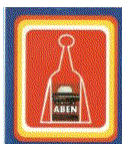
Research questions

The following questions guided the study:

1. To what extent is ICT facilities required for effective ICT skills transfer to HND OTM students?
2. To what extent does poor state of computer laboratories affect students' ICT skills proficiency?

Method

Descriptive survey design was adopted for the study. The design was considered appropriate because it allowed the researcher to collect data from the population in their natural environment without manipulation. The population of the study comprised of 60 HNDII students of Office Technology and Management, Akanu Ibiam Federal Polytechnic, Unwana, Afikpo, Ebonyi State. The population was chosen because the researcher believed that, being at the receiving end, they are in a better position to evaluate the extent of the adverse effect of substandard computer laboratories on ICT skills proficiency. The entire population was studied because the size was manageable. The instrument for data collection was a structured questionnaire entitled "questionnaire on extent of adverse effect of substandard computer laboratory on ICT skills acquisition" (QEAESCLICTSA). The instrument was divided into two main sections – A and B. Section A had two items on demographic data of the respondents, which are class level and gender while section B contained two clusters of B₁ and B₂, according to the research questions, with a total of 37 questionnaire items. Section B was a four-point scale with Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). The instrument was validated by two



experts, each from business education and computer science, both of Akanu Ibiam Federal Polytechnic, Unwana. The instrument was directly administered to the respondents in their computer laboratory and was retrieved within two days. A total of 53 copies of the instrument, which equals 88% of the total distributed, was retrieved and used for data analysis. Data collected were analysed using the descriptive statistics of mean and standard deviation to answer the research questions and ascertain the homogeneity or otherwise of the respondents' means. Decisions on the research questions were based on the cluster means relative to the real limits of numbers on a four-point scale as follows:

Response Option	Point	Real Limit of Numbers
Very High Extent	4	3.50 – 4.00
High Extent	3	2.50 – 3.49
Low Extent	2	1.50 – 2.49
Very Low Extent	1	0.50 – 1.49

Analysis of variance (ANOVA) was used to test the null hypotheses at 0.05 level of significance. The analysis was done with the statistic package for social science (SPSS).

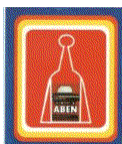
Results

Research question 1: To what extent are ICT facilities required for effective ICT skills transfer to HND OTM students?

Table 1: Respondents' mean ratings on the extent modern ICT facilities are required for effective ICT skills transfer to HND OTM students

SN.	Computer laboratory equipment/ICT Facilities	\bar{x}	SD	Remarks
1	Energy friendly desktop computer systems in the ratio of 1:1 for a class of forty	3.51	0.75	VHE
2	Constant/steady supply of electricity for at least eight hours per work day	3.25	0.88	HE
3	Overhead projector	2.93	0.90	HE
4	Standard printers	3.11	0.82	HE
5	Internet facilities	3.04	0.96	HE
6	Adjustable chairs	3.11	0.89	HE
7	Electronic board	2.60	0.97	HE
8	Camcorder	3.02	1.01	HE
9	Photocopying machines	3.04	0.88	HE
10	Scanning machines	2.98	0.93	HE
11	Laptops	3.09	0.95	HE
12	Wireless Local Area Network (WLAN)	2.77	1.09	HE
13	Shredding machine	2.72	1.10	HE
14	Video teleconferencing facilities	2.66	1.12	HE
Cluster Mean		3.09		

Table 1 shows that the first item had a mean score of 3.51 and so respondents are of the view that it is required at a very high extent. The remaining thirteen items had mean scores within 2.50 – 3.49 real limits of numbers, indicating they were required at high extents. The cluster mean of 3.09 indicates that HND OTM students in Ebonyi State rated all the listed computer laboratory equipment/ICT facilities as things required at a high extent for effective ICT skills transfer to OTM students. The standard deviation scores are within the same range showing that the respondents were not wide apart in their ratings.



Research question 2: To what extent do substandard computer laboratories affect HND OTM students' proficiency in ICT skills?

Table 2: Respondents' mean ratings on the extent substandard computer laboratory affects HND OTM students' proficiency in ICT skills

SN.	Poor computer laboratory has affected HND OTM students' ability to:	\bar{x}	SD	Remarks
1	Create html document	3.45	0.82	HE
2	Work with images	3.19	0.86	HE
3	Edit web pages using text apps	3.08	0.96	HE
4	Create forms	3.04	0.92	HE
5	Add multimedia elements	2.98	0.91	HE
6	Format web documents	3.09	0.97	HE
7	Add links	3.02	0.88	HE
8	Use cascading style sheet (CSS)	2.77	1.03	HE
9	Create a web page	3.04	0.92	HE
10	Understand basic workspace in Publisher	2.85	1.08	HE
11	Use page layout in publishing apps	3.00	1.04	HE
12	Publish a project on the internet	2.96	1.00	HE
13	Attach files to emails	3.09	0.84	HE
14	Save a publication	3.02	0.97	HE
15	Convert files from one form to another	3.09	0.97	HE
16	Keep a tab on online communication	3.02	0.89	HE
17	Create a database	2.89	0.97	HE
18	Maintain and modify a database regularly	3.00	0.86	HE
19	Query data	3.09	0.90	HE
20	Prepare reports using database management system	3.23	0.91	HE
21	Interpret data accurately	2.91	0.95	HE
22	Link information in different environments	2.91	0.99	HE
23	Encrypt files	2.83	0.89	HE
Cluster Mean		3.02		

Table 2 shows that the twenty-three items had mean scores within the real limit of numbers 2.50 – 3.49, indicating they were all required at high extents. The cluster mean of 3.02 indicates that HND OTM students in Ebonyi State agreed that substandard computer laboratories affect ICT proficiency of OTM students. The standard deviation scores are within the same range showing that the respondents were not wide apart in their ratings.

Test of Hypothesis

The null hypothesis: There is no significant difference in the mean ratings of female respondents from those of male respondents on the extent substandard computer labs affect ICT skills proficiency of HND OTM students in Ebonyi State

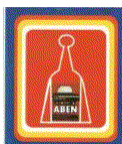


Table 3: Summary of the statistical analysis of variance (ANOVA) of the mean ratings of female and male respondents on the extent substandard computer labs affect ICT proficiency of HND OTM students in Ebonyi State

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	0.029	1	0.029	0.617	0.435	Not significant
Within Groups	3.330	72	0.046			
Total	3.359	73				

Table 3 shows a calculated F of 0.617 and a $sig(p\text{-value})$ of 0.435, which is greater than the alpha level ($0.435 > \alpha = 0.05$) at 1 and 72 degrees of freedom. This indicates that there is no significant difference in the mean ratings of the respondents on the extent substandard computer labs affect ICT proficiency of HND OTM students in Ebonyi State.

Discussion of findings

Data on Table 1 revealed that all respondents agreed with the listed items as facilities required for effective ICT skills acquisition by HND OTM students in Ebonyi State. This agrees with the findings of Aishah (2017) which showed computer lab, computer sets, multimedia projector, office stationery and internet facilities as facilities needed for relevant ICT skills acquisition. The result is further corroborated by Ojo and Akhademe (2016) who listed new technologies needed for effective teaching and learning in OTM to include ICT hardware, radio set, television, telephone, computer systems, overhead projectors, electronic white board, video tape recorder, photocopiers, scanners, printers, ICT software, multimedia facilities, internet facilities, among others. Results from Table 2 showed that the respondents agreed that substandard computer laboratory affects the ICT skills proficiency of HND OTM students in the listed areas to a high extent. The finding is supported by Amiaya (2014) which found that lack or inadequate facilities affect the quality of graduates produced in OTM programme. Findings of Table 3 showed that gender did not play a significant role in the response of respondents. By implication, poor infrastructure and lack of ICT facilities affect ICT proficiency of HND OTM students in Ebonyi State to a high extent, irrespective of their gender.

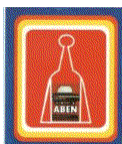
Conclusion

Based on the findings of the study, it was concluded that ICT facilities and other cutting-edge technologies are very essential to the success of Office Technology and Management programme, hence, the need for a well-equipped computer laboratory. The nature of the OTM programme does not give room to any alternative to relevant skills demonstration by its products. Any alternative that does not result in ICT skills proficiency (among others) by beneficiaries of the programme will only lead to short-changing the students and production of unemployable graduates.

Recommendations

Consequent upon the findings of the study, the following recommendations were made:

1. Institutions running Office Technology and Management programme should, as a matter of urgency, prioritise the provision of standard computer labs for the programme so as to ensure their students are well exposed to the relevant tools in the world of work.
2. NBTE should intensify monitoring with a view to ensuring effective implementation of its curriculum and reduction in unhealthy sharp practices that could negatively affect the quality of polytechnic graduates.



3. Government at all levels should understand that education, especially skill-oriented education programme like OTM, is quite capital intensive, hence they should drastically increase budgetary allocation/release to education.

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