



DIGITAL INSTRUCTIONAL TECHNOLOGIES FOR TEACHING AND SELF-LEARNING IN OFFICE TECHNOLOGY AND MANAGEMENT COURSES BY LECTURERS IN KANO STATE POLYTECHNIC.

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Abstract

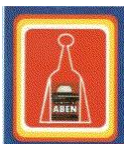
Use of Digital Technology is an individual's ability to find, evaluate, and compose clear information through writing and other media on various digital platforms. The research aimed at determining the level of utilization of digital instructional resources for teaching and learning office technology and management courses by lecturers in Kano state Polytechnic. The study was a descriptive type with two research questions and four null hypotheses tested at 0.05 level of significance. The population and sample comprised of 38 lecturers. The questionnaire was the instrument used and collected the data from the respondents. It has section A for personal data and section B for 22 items on a 5 point rating scale duly validated by expert. Cronbach alfa was used to obtain a reliability coefficient value of 0.86. Data collected were analyzed using mean and standard deviation to answer the research questions and determine the homogeneity of the respondents' views. T-test was used to test the hypotheses. The finding revealed that lecturers in Kano State Polytechnic do not utilize both hardware and software instructional technologies for teaching and learning OTM courses. The paper concluded that utilization of digital instructional technology is still in its infancy stage particularly in the department of office technology and management in Kano State Polytechnic. Experiences of the respondents have no influence regarding their rating of digital instructional technology for teaching and learning of OTM courses. The study recommends that, lecturers in Kano State Polytechnic should go for in-service or self-sponsored training programme so as to improve their exposure on utilization of digital instructional technology.

Keywords: Hardware, Software, Instructional technology, Teaching and learning, Office Technology and Management

Introduction

The trend in globalisation has paved way for the utilization of electronic tools in different sector of the Nigerian economy. In the education sector, teaching and learning has experienced a radical transformation as a result of digital technology. Digital technology in teaching and learning context refers to the assembling of the required variety of computer-based tools, realer and image instructional material to make teaching and learning interactive and effective. It is primarily concerned with teachers' presentation and the learners' understanding via by the use of electronic and non-electronic devices. Edna, Charity and Deborah (2022), the rising demand for new skills enable digital technology to create new opportunities for education and training. In the present day situation, teachers and students need to be acquainted with digital technology literacy for modern teaching and learning process. From the view of Nnaji for and Ejikeme (2020), method and techniques for achieving certain define set of learning objectives could be done smoothly by the use of digital instructional technology. This suggests that a teacher who instructs his students using modern technology is successful by making the students to be proficient and competent to respond as expected. In line with Wokocha, Nkem and Joe (2020) digital instructional technologies are methods, tools and machinery that will facilitate lesson delivery in schools. By this assertion, digital instructional technology could be the end result of creative ideas, invention of modern machines and gadgets to be used as an aid to achieving desired goals.

Office technology and management programme is a skilled based programme designed to acquaint its recipient with office competencies. The programme is developed by the National Board for Technical Education in the year 2004. As stated by the NBTE, curriculum and course specification, the grand objectives of OTM programme are; acquisition of secretarial skills, acquisition of general education and preparation of advance studies. Office technology and management programme is a component of vocational education that provides knowledge and skills to perform effectively in modern office (Paul-Mgbeafulike, 2022). In the opinion of Amoor and Magaji (2015) OTM involve acquisition of skills, knowledge and competencies that make the recipient a professional office manager. Since OTM curriculum

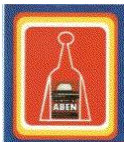


is a ICT compliant, digital technology tools could be the most effective tools to impart skills and competencies desirable to the recipient.

The combination of hard ware and software digital instructional technology has today transformed teaching and learning in most of the tertiary institutions. Hard ware is the physical component of instructional resource that aid in teaching and learning whereas software is a systematic process of solving a problem (Yusuf and Onasanya, 2015). It has proved to be the most popular and easy to use tools for imparting the necessary skills, knowledge and value to the students. Eze and lfeoma (2020) assert that the use of digital instructional technology in teaching and learning is very important because if used correctly could provide a concrete basis for conceptual thinking, motivates to learn and capture their imaginations. Digital instructional materials enable the teacher to convey information and motivate student to learn with interest (Adekunle in Eze and lfeoma,2020). Among the importance of these materials to the teacher is that it enables access to vast array of online resources, educational websites, multimedia content interactive tools (Inyiagu, 2015). Integrating digital technology into instruction can help create an interactive and dynamic learning environment by engaging students on games, quizzes and virtual simulations. Hard ware instructional resources is relevant to the modern teaching and learning process since it enables accessibility and convenience by using computers, laptops, tablets, and smartphones. Students could access digital instructional materials anytime and anywhere, making learning more convenient and flexible. Ile and Alonta (2020) added hardware resources provide various interactive learning opportunities to students' engagement with multimedia content, interactive simulations, virtual laboratories, and other digital tools can enhance their understanding of the subject matter. Hardware tools are cost-effective as it eliminates the need for physical books. It allows students to practice and gain proficiency in using software applications relevant to office technology and management such as word processing software or spreadsheet applications. Hard ware tools like interactive white board, cameras computers and visual reality enables both students and instructors to collaborate effectively via online platforms, video conferencing and digital communication channels for discussion and resource sharing (Edna, Charity and Deborah, 2022)

Among the importance of hard ware resource, is the gathering of information, conducting research, and staying updated with the latest trends and information related to office technology and management. Other hard ware tools that support the development of skills and proficiency include 3D printer, Clickers (handle that allows real-time response to question by students), robotics, projector and digital timer (Yusuf and Onasanya, 2015). Overall, the integration of hardware digital instructional technology enhances learning experiences, equips OTM students with necessary skills, and helps prepare them for the realities of a digital workplace.

Software digital instructional resources provide interactivity and engagement, enhancing the learning experience for the end users. They offer multimedia content such as videos, simulations, and interactive exercises, making it easier for learners to grasp complex concepts and acquire practical skills. Barker and Gossman (2013) that with software instructional resources such as simulations, learning management system and online apps, student learners can simulate tasks and workflows that they would encounter in an office environment. In the opinion of Ifeyinwa and Happiness (2022) Practical lessons could be offered by the use of google form tools, video conferencing and office software, such as word processors, spreadsheets, presentation tools. This helps in developing practical skills that are directly applicable to the OTM field. Digital resources software can be accessed anytime, anywhere, as long as there is an internet connection. Gambari (2027) opines that the flexibility and accessibility makes software resource easier for individuals to study and review course materials, even outside the classroom. Students' learners can access learning resources from their own devices, reducing the need for physical textbooks and materials. Software resources according to Okoro and Florence (2020), could be used to update the contents of the latest practices, technologies, and industry trends in the OTM field. This ensures that users could learn relevant skills and knowledge that will make them more employable in the modern workplace. Digital resources software can be more cost-effective than traditional textbooks and physical learning materials. They eliminate the need for printing and distribution costs. Moreover, using digital resources contributes to environmental sustainability by reducing paper waste (Barker and Gossman, 2013). Online discussion forums and virtual classrooms are easy for teachers and learners to connect, brainstorm, and share ideas with their peers, promote active learning and social interaction. (Ahmed, 2013). The relevance of software digital instructional resources could not be over looked especially in office technology and management profession because it enhance the learning experience, provide practical skills, and move on with modern trends.



For this study, the respondent variables are lecturers of office technology and management department, part time lecturers and lecturers from other department who were assigned to serve in the department. It is likely that experienced lecturers could rate their responses higher than less experienced lecturers based on exposure. On the contrary, it is also possible that lecturers with less experience but possess ICT skills to rate themselves higher than the experienced lecturers with lesser ICT exposure. Based on the above varying factors, the study was embarked.

Statement of Problem

The spread of digital technologies in education sector have led the Nigerian tertiary institution to embrace modern technologies for teaching and learning. Modern instructional technologies have now revolutionized education by expanding access to quality learning, enhancing teaching/ learning engagement and interaction. Yusuf and Onasanya (2016) state that digital teaching and learning resource empowers both educators and learners to embrace innovative and effective teaching and learning approaches in the digital age.

Unfortunately it has been discovered that office technology and management programme in most tertiary institution is seriously being challenged by the use of digital technologies. The implication is that the graduate could not be adequately equipped for the real digital work place and as well could not possess the relevant employable skills for modern office work. Gibson (2019) observed that lack of qualified tutors and the absence of modern instructional resource posed a challenge in modern teaching and learning process. In the same vein, Gambari (2027) reported that lack of digital technology skills is an impediment to the competency of teachers in the tertiary education sector. Therefore, if this trend is not addressed, resources and time will continue to be apportioned without yielding a positive result. Hence the study on the level of utilization of digital instructional resources for teaching and learning office technology and management courses by lecturers in Kano State Polytechnic

Purpose of the Study

The main aim of this study is to find out the level of utilization of digital instructional technology for teaching and learning office technology and management courses by lecturers in Kano State Polytechnic. Specifically, the study sought to:

1. Determine the level of utilization of digital instructional resources for teaching and self-learning office technology and management course by lectures in Kano state polytechnic.
2. Ascertain the level of utilization of software instructional resources for teaching and self-learning office technology and management course by lectures in Kano state polytechnic.

Research Questions

The study was guided by the following research questions

1. What is the level of utilization of digital instructional resources for teaching and self-learning office technology and management course by lectures in Kano state polytechnic?
2. What is the level of utilization of software instructional resources for teaching and self-learning office technology and management course by lectures in Kano state polytechnic?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

1. Experienced and less experienced Lecturers in OTM department do not differ significantly in their mean rating of utilization of hardware digital instructional resources for teaching and self-learning OTM courses in Kano State Polytechnic.
2. Experienced and less experienced Lecturers in OTM department do not differ significantly in their mean rating of utilization of software digital instructional resources for teaching and self-learning OTM courses in Kano State Polytechnic.

Method

The study used a descriptive survey research design aimed at collecting data from the population in a systematic way by the use of questionnaire. The area for the study is Kano State Polytechnic, particularly office technology and management department. The population comprised of 38 lecturers which consists of 16 core staff of the department, 12 Part-time lecturers and 10 servicing lecturers who were from other department but were allocated courses in OTM department. The entire population was used as the sample because the number is manageable. The instrument for data collection was a



structured questionnaire titled “Questionnaire on Utilization of Digital Instructional Resources for Teaching & Learning Office Technology and Management Courses”. The instrument has two sections. Section A for personal data and section B was for the 22 items on a five-point rating scale. Face and content validity test was established by the panel of experts. An overall reliability coefficient value of 0.86 was obtained using Cronbach alpha. 38 copies of the questionnaire were administered via e-mails to the respondents by the researcher himself and 34 copies were retrieved for analysis at the rate of 89%.

The generated data was analyzed with descriptive statistics of mean and standard deviation to answer the research questions and determine the homogeneity or otherwise of the respondents’ responses. Acceptance of any of the questionnaire item was based on the real limit of numbers thus: Always utilized (AU) = 4.50 – 5.00, Often utilized (OU) = 3.50 – 4.49, Sometimes utilized (SU) = 2.50 - 3.49, Rarely utilized (RU) = 1.50 – 2.49, Never utilized (NU) = 1.00 – 1.49. T-test was used to test the null hypotheses at 0.05 level of significance. Where p-value was equal to or greater than the alpha level of 0.05, the hypothesis was not rejected. Otherwise it was rejected if the p- value was less than the alpha level of 0.05.

Results

Research Question 1

Table 1: Respondents’ mean ratings on the utilization of hardware digital instructional resources for teaching and self-learning office technology and management courses in Kano State Polytechnic

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S/N	Hardware instructional resources	Mean	SD	Remarks
1	Interactive white board	4.51	1.33	Always Utilized
2	Digital camera	2.53	1.37	Sometimes Utilized
3	Tablet	3.50	1.90	Often Utilized
4	Clickers	2.25	1.22	Rarely Utilized
5	Visual reliability	3.01	2.01	Sometimes Utilized
6	3D printers	2.78	2.00	Sometimes Utilized
7	Robotic kits	2.21	1.92	Rarely Utilized
8	Digital microphone	2.60	2.00	Sometimes Utilized
9	Projector	2.54	1.11	Sometimes Utilized
10	Digital timer	2.00	1.20	Rarely Utilized
11	External storage device	2.81	1.72	Sometimes Utilized
Weighted mean		2.79		Sometimes Utilized

The data presented in Table 1 shows that the respondents always utilized interactive white board as per the mean of 4.51. The mean rating for item 3 is 3.50 which indicates that respondents often utilized tablet. The responses for items 2, 5, 6, 8, 9 and 11 had the mean ratings of 2.53, 3.01, 2.78, 2.60, 2.54 and 2.81 which implies that lecturers sometimes utilized hardware digital instructional technologies for teaching and learning OTM courses in Kano State Polytechnic. Additionally, they rarely utilized clickers, robotic kits and digital timer based on the mean scores of 2.25, 2.21 and 2.00. The weighted mean of 2.79 indicates a sometimes utilization of hardware digital instructional technologies for teaching and learning OTM courses in Kano State Polytechnic. Standard deviation for the 11 items shows the homogeneity of the respondents’ responses.

Research Question 2

Table 2: Respondents’ mean ratings on the utilization of software digital instructional resources for teaching and self-learning office technology and management courses in Kano State Polytechnic

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S/N	Software instructional resources	Mean	SD	Remarks
1	Presentation software	4.05	2.11	Often Utilized
2	Online course platform	4.33	2.09	Often Utilized
3	Learning management system	3.11	2.00	Sometimes Utilized
4	Collaboration tools	3.07	2.11	Sometimes Utilized
5	Simulation software	3.00	2.11	Sometimes Utilized
6	Internal storage device	4.62	1.98	Always Utilized
7	Video conferencing tool	2.63	1.94	Sometimes Utilized



8	Digital library	3.57	2.02	Often Utilized
9	Adobe Photoshop	3.59	2.19	Often Utilized
10	Google form	1.33	2.44	Not Utilized
11	Augmented environment	1.47	1.99	Not Utilized
Cluster mean		3.16		Sometimes Utilized

Table 2 reveals one item with a mean score of 4.62 indicates that OTM lecturers always utilized internal storage device for teaching and learning in Kano State Polytechnic. Four of the software instructional technologies had a mean ranging from 4.33 to 3.57 which means they are often utilized by the respondents. Items 3, 4, 5 and 7 from the list had the mean scores of 3.11, 3.07, 3.00 and 2.63 showing that they are sometimes utilized while the remaining 2 items have mean rating from 1.33 to 1.47 revealing they are not utilized by the lecturers. The cluster means score of 3.16 shows that in Kano State Polytechnic, lecturers are sometimes utilizing software instructional technologies for teaching and learning OTM courses. Standard deviation for all the items shows that respondents' opinions are spread across.

Table 3: T-test analysis of experienced and less experienced lecturers' mean ratings on utilization of hardware digital technologies for teaching and self-learning OTM courses in Kano State Polytechnic.

Group	N	Mean	SD	Df	Standard Error	t-val	P-value	α	Decision
Experienced	13	2.29	.18	32	0.05	-0.62	0.31	0.05	Not Sig
Less experienced	21	2.10	.97						

Table 3 reveals that the aggregate mean score of experienced and less experienced lecturers' mean ratings of utilization of hardware digital technologies in Kano State Polytechnic. is 2.29 and 2.10. The standard deviation is .18 and .97. The table indicates the t-value of -0.62 at 39 degree of freedom, while the p-value of 0.35 is greater than the alpha level of 0.05. This shows that there is no significant difference between the lecturers mean ratings of utilization of hardware digital technologies in Kano State Polytechnic as result of their experiences. Therefore the null hypothesis is not rejected.

Table 4: T-test analysis of experienced and less experienced lecturers' mean ratings on utilization of software digital technologies for teaching and self-learning OTM courses in Kano State Polytechnic.

Group	N	Mean	SD	Df	Standard Error	t-val	P-value	α	Decision
Experienced	13	2.73	2.19	32	0.05	-0.12	0.11	0.05	Not Sig
Less experienced	21	3.02	2.59						

Table 4 shows the t-value of -0.12 at 39 degree of freedom, the p-value of 0.11 is greater than the alpha level of 0.05. This shows that, experienced and less experienced lecturers' in Kano State Polytechnic do not differ significantly in their mean ratings on utilization of software digital technologies. Therefore the null hypothesis is not rejected.

Discussion

The finding on the research question one, revealed that lecturers' in Kano State Polytechnic, lecturers are sometimes utilizing hardware instructional resources for teaching and self-learning OTM courses based on the cluster means score of 3.16 which fell within the range of real limit of 2.50 – 3.49. Standard deviation for all the items shows that respondents' opinions are spread across. The implication for this study might be either the lectures do not possess the required skills on modern technology resources or that the facilities are inadequate for utilization. It could be as a result of poor power supply to man the facilities. The finding agrees with Edna, Charity and Deborah (2022) who reported that OTM lecturers in North-central polytechnics utilized multimedia technologies to a moderate extent. This finding



also corroborate that of Eze and Ifeoma (2020) who revealed that projected instructional resources were seldom utilized by business studies teachers in Anambra State. The test of the first hypothesis shows no significant difference between the lecturers mean ratings of utilization of hardware digital technologies in Kano State Polytechnic as result of their experiences. Therefore the null hypothesis is not rejected. This corroborate with the finding of Ifeyinwa and Happiness (2022) that there is no significant difference on the level of application of visual learning by business educator in tertiary institutions in Anambra State as result of their years of experience. It also supported the finding of Eze and Ifeoma (2020) which reported that business studies teachers in secondary school did not differ significantly in their mean ratings on the utilization of projected visual materials in teaching and learning of business studies in secondary schools in Anambra State based on their experiences.

The result in question two revealed the cluster means score of 3.16 which also fell within the real limit 2.50 – 3.49. Standard deviation for the items shows how the opinions of the respondents are close related. This implies that software instructional resources for teaching and self-learning OTM courses in Kano State Polytechnic are sometimes utilized by the lecturers. The resultant effect is that the lecturers' capacity to utilize software instructional technologies is grossly inadequate and that the lecturers do not possess the relevant skills to comply with the modern technology. This confirms the view of Nwaukwa, Okonkwo, Ezenwanne and Anozie (2019) who reported on the fact that business education students do not learn how to utilize e-portfolios to a very great extent implies that they may not be able to compete favourable in the labour market where skills for visual realities are required. The finding tallies with the investigation of Efeyinwa and Happiness (2022) who disclosed that the application of software in teaching and learning by business educators in tertiary institutions in Anambra State is at moderate extent. The finding also uphold that of Ile and Alonta (2020) who narrated that e-learning resources were moderately utilized in public tertiary institutions in Enugu State. The second hypothesis reveals no significant difference between lecturers mean ratings on the utilization of software digital technologies for teaching and self-learning OTM courses in Kano State Polytechnic as result of their experience. Therefore the null hypothesis is not rejected. This finding validates the view of Olatunde, Dambo & Omoni (2019) that no significant difference exist on the utilization of online platforms for e-learning among the would-be teachers of business education in South-south Nigerian Universities. On the contrary, Amesi & Alisone (2020) observed a significant difference on the lecturers mean rating on the use of digital technology software resources for teaching business courses in tertiary institutions in Rivers State.

Conclusion

Based on the result of the study, it was concluded that lecturers' in Kano State Polytechnic do not utilize both hardware and software instructional technologies for teaching and learning OTM courses. It means that utilization of digital instructional technology is still in its infancy stage particularly in the department of office technology and management in Kano State Polytechnic. The resultant effect portrays a zero chance for the acquisition of digital technology skills for future secretaries to work modern organizations. Experiences of the respondents have no influence regarding their rating of digital instructional technology for teaching and learning of OTM courses.

Recommendations

Based on the findings and conclusion of the study the researchers recommended as follows:

1. Lecturers in Kano State Polytechnic should go for in-service or self-sponsored training programme so as to improve their exposure on utilization of digital instructional technology
2. The institutions of higher learning where OTM courses are taught should lay much emphasis on the provision of adequate and modern instructional materials in order to accomplish the objective of the curriculum in terms of imparting the necessary skills and competencies to the would be secretaries.
3. Provision for adequate digital resource for teaching and learning should be made as mandatory and a pre-requisite for passing accreditation.

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