

INTERACTIVE DIGITAL TECHNOLOGY SKILLS REQUIRED FOR VIRTUAL TEACHING AND LEARNING OF BUSINESS EDUCATION COURSES IN TERTIARY INSTITUTIONS IN PLATEAU STATE.

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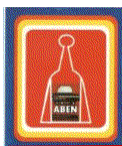
Abstract

The study examined interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State. One research question and one hypothesis of no significant difference guided the study. Descriptive survey design was adopted. The population of the study consisted of 54 lecturers drawn from tertiary institutions offering business education courses in Plateau state. The entire population was adopted as the sample in view of the small size. The main instrument for data collection was a four point rating scale questionnaire. The data collected were analyzed using mean and standard deviation. The mean was used to answer the research questions while the standard deviation was used to determine the closeness or otherwise of the responses from the mean. The null hypothesis stated was tested using the independent t-test at 0.05 level of significance. The finding revealed that lecturers in tertiary institutions required interactive digital technology skills for virtual teaching and learning of business education courses in tertiary institutions in Plateau State to a high extent. The findings further revealed that there was no significant difference between the mean response of lecturers in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions ($t_{52} = 0.22, P > 0.05$). It was concluded that the acquisition of interactive digital skills by lecturers and the participation in digital education is critical as failure to do this will result in widening the social and digital gaps instead of narrowing them. Based on the findings and conclusion of the study, it was recommended among others that business education lecturers should endeavor to be up to date on the interactive digital technology skills required for teaching and learning business courses by making personal efforts to update themselves in order to be more effective and efficient in teaching using interactive digital technologies.

Keywords: Interactive Technology; Skills; Virtual Teaching and Learning; Business Education

Introduction

Digital technologies have developed rapidly in recent decades, changing how we access information as well as human interaction and communication. Most importantly, however, they have



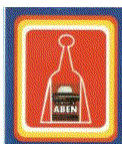
also transformed various jobs, impacting the global economy and society (Bejinaru, 2019). Digital technologies denote a wide range of technologies, tools, services and applications using various types of hardware and software. They facilitate services or activities by electronic means to create, store, process, transmit and display information (Zakka, Bewaran & Moris, 2021). The rapid evolution of digital technologies and the increasing complexity that comes with its exploding potential, explains why digitalization in business education continues to receive special attention. Digital technologies also drive innovation in many different spheres of life. The innovative capacity of technology is very much conditioned by the level of digital skills of the population (Kyari, Adiu-Ku-Brown, Abechi, & Adelokun, 2018). No wonder there is a very strong correlation between education and skills and the uptake and use of digital technologies in various spheres of life.

Digital technology skill involves the ability, confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, digital content creation (including programming), safety (including digital well-being and competences related to cyber security), and problem solving (UNESCO, 2020) This definition emphasizes engagement with digital technologies, the growing importance of digital technology use for education purposes and the need to actively promote digital technology use in teaching and learning and seize technological opportunities so that business education can keep up with other sectors.

Business education is an educational program, which involves acquisition of skills, knowledge and competencies, which makes the recipient proficient in the area of business. Umoru and Jimoh (2020) view business education as a conglomerate of courses that is concerned with the acquisition, development and inculcation of the proper values for the survival of the individual and the society. Thus business education helps individuals to acquire saleable skills that will enable them fit into various business organizations or be self-employed in the absence of paid employment. Similarly, Amoor (2010) maintains that the goal of business education is primarily to produce competent, skillful and dynamic business teachers, office administrators and businessmen and women that will effectively compete in the world of work. Its primary aim is the preparation of people for roles in enterprises, such roles could be as employee, entrepreneur and employer or simply self-employed. A well-articulated business education, if properly implemented with efficiently delivered infrastructure can help bridge the skill gaps existing between the school graduates and the requirements of the corporate business organizations thereby reducing the huge cost of human resource development in business organizations.

Teaching and learning form the core of the educational system. Duktur (2015) views teaching as an active, constructive process in which the teacher assumes the role of a strategic planner, making decisions about the content and the appropriate instructional strategies. On the other hand, learning is the apparent modification of a person's behavior through his activities and experiences, so that his knowledge, skills and attitudes including modes of adjustment towards his environment are changed more or less permanently (Akpan & Farayola, 2015). Teaching therefore is a set of events, outside the learners which are designed to support internal process of learning, while learning is about a change: the change brought about by developing a new skill, understanding a scientific law, changing an attitude.

Virtual teaching and learning is a learning experience that is enhanced through utilizing computers and/or the internet both outside and inside the facilities of the educational organization. The instruction most commonly takes place in an online environment. The teaching activities are carried out online whereby the teacher and learners are physically separated (in terms of place, time, or both) (Singh & Thurman, 2019). Similarly, Gordon (2014) views virtual education as instruction in a learning environment where the teacher and students are separated by time or space, or both, and the teacher provides course content through course management applications, multimedia



resources, the internet, videoconferencing, etc. Students receive the content and communicate with the teacher via the same technologies.

According to Littlefield (2018) virtual teaching and learning could either be synchronous or asynchronous. "Synchronous learning" (meaning that two or more learners are connected simultaneously or in real-time using the same platform or communication channel, for instance, a video conference) and asynchronous learning" (meaning that learners access the same material at different times and locations, for instance, using an e-learning websites at different points).

Onojetah (2014) observes that tremendous improvements in new technologies have certainly impacted the education sector in all societies. These improvements have been very pronounced and especially invaluable in business programs. Similarly, Ekwue, Anyeabunam and Alfa (2016) opine that the increased use of new technologies in business education makes teaching and learning increasingly flexible, multi-tasking and performance based, hence the need for business education teachers to acquire the necessary skill needed to be able to teach effectively using the interactive technology.

Interactivity refers to the function of technology which enables rapid and dynamic feedback and response. Interactive technology is any technology that digitally facilitates interaction between people and allows for user content creation and manipulation (Vaterlaus, 2018). It is any form of technology that allows the users to interact with it and/or other users by opening up a whole new realm of possibilities in communications, manipulation of images and exploration. Dick and Burrill (2016) define interactive digital technology as any technology that allows for a two-way flow of information through an interface between the user and the technology; the user usually communicates a request for data or action to the technology with the technology returning the requested data or result of the action back to the user. Interactive digital technology therefore is any digital materials, including software programs, applications (apps), broadcast and streaming media, some television programming, e-books, the internet, and other forms of content designed to facilitate active and creative use by students and to encourage social engagement with other students and teachers.

Certain factors play a major role on how interactive technologies are used in educational settings. Nwokocha and Onwuchekwa (2014) opine that the most common factors that impact on the use of interactive technologies for teaching include: school culture, teacher training, time to practice and prepare materials, teacher confidence and technical support. Others include; classroom setup and quality of equipment. Jamal (2014) explains that interactive teaching begins with a philosophy about teaching with technology and results in a new process of interactive teaching and learning. In this framework, both students and teachers are central to the process. Teachers are responsible for planning, teaching, and facilitating sequences integrated with technology. Students are responsible for constructing and demonstrating knowledge as well as collaborating with peers to create knowledge. In the planning phase, teachers reflect on what tools will enhance cognitive expansion for students such as the implementation of Web 2.0 tools that aid students in accessing and processing information. In the interactive teaching phase, teachers model uses of technology to construct knowledge and demonstrate concepts through dynamic interactions. In the third phase, teachers facilitate knowledge construction through discourse as students participate in whole class instruction. This is a reciprocal process of using technology to demonstrate and present knowledge. Interactive learning on the other hand means that students are active participants in the learning process (Sultan, 2010). In a learning environment that integrates the interactive board, students are focused on stimulus presented by the teacher on the interactive board and the student, either verbally or physically, interacts with the interactive board. This type of student-centered learning follows the principles of constructivist learning, a building block of an interactive learning environment. Students are encouraged to control their learning and to construct meaning.



Agbatogun in Adeola (2017) observes that the use of tools such as the interactive white board, web 2.0 technologies, individual response pads, interactive multimedia, interactive forms, on-line survey tools, collaborative editing software, instant messaging/chat room, multimedia projectors etc. are becoming popular. This therefore informs the need for the development of relevant skills, knowledge and ability in the use of interactive digital devices. As a matter of fact, the rapid change that interactive digital technology is bringing to teaching and learning is almost un-believable because the learning scenario is imperceptible like never before.

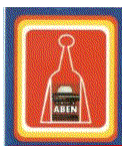
The use of interactive digital technologies for pedagogical delivery has undoubtedly affected teaching, learning and research. The integration of these technologies into the school system can help revitalize teachers and students alike (Olise, 2014). Interactive digital technologies have been found to possess the capacity to improve teaching and learning in the school classroom. They have the great potential to support education across curriculum (business education curriculum inclusive) and this provides opportunities for an effective communication between teachers and students in ways that have not been possible before (Utoware, Ken-Ikidi & Apreala, 2016).

Despite the huge potentials of interactive digital technologies for fostering and enhancing learning, the impact of digital technologies on education itself has been slow. Ali (2019) argues that public higher institutions in Nigeria have suffered the problem of inadequate funding. It has also suffered the problem of insufficient supply of and perhaps non-functional infrastructure and less competent human resources to impart the necessary skills to the learners. These situations has limited the extend of skill acquisition by students and as such, has led to the failure of the tertiary institutions to produce the much needed skilled manpower that will contribute positively to national development. Wahab (2020) submits that the Nigerian education sector is not adapting to the challenges posed by the Covid-19 pandemic and is expected to struggle on that front for the foreseeable future due to certain deficiencies such as inadequate funding, the weakness of digital teaching infrastructure, the information gap and the inexperience of teachers. It is against this backdrop that the study examines interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State.

Statement of the Problem

The application of interactive digital technology in educational setting by itself acts as a catalyst for change in this domain and by their nature are tools that encourage and support independent learning, thereby giving way to new scenerios which favors both individual and collaborative learning. Regrettably, it appears that most public tertiary institutions in Nigeria have not been able to embrace virtual teaching and learning using interactive digital technologies to the detriment of their students and the society at large. Various factors might be responsible for these, such as inadequate funding, inadequate digital technology equipment, and students' population, training of lecturers and students, sustainable internet facilities amongst others (Adeoye, Adanikin & Adanikin, 2020).

Interactive digital technologies have also posed many challenges to business educators globally. Series of studies conducted by various researchers revealed that schools do not adequately embrace the acquisition and utilization of digital instructional technologies in business education (Ido & Asuquo, 2014; Ojo & Akhademe, 2016). The schools are faced with the problems of inadequate computer laboratory, inadequate computer systems, inadequate facilities and other modern teaching aids. Therefore the inadequacies of these technological tools make it difficult to teach and prepare students for use of these technologies. Added to the problem of inadequate facilities is the lack of skills or capacity on the part of the teachers. Ajie-Uche and Jumbo, (2016) observe that most Nigerian teachers lack basic skills and competencies required for effective use of digital technologies for teaching. The case of business teachers is not an exception. The problem of



this study therefore is to examine interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State.

Research Question

To what extent are interactive digital technology skills required for virtual teaching and learning business education courses in tertiary institutions?

Research Hypothesis

There is no significant difference between the mean ratings of respondents in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State.

Methods

The descriptive survey design was used for the conduct of the study. The population of the study consisted of all lecturers in the departments of business education and office technology and management in tertiary institutions in Plateau State. These institutions include Federal College of Education, Pankshin (24), College of Education, Gindiri (11) and Plateau State Polytechnic, Barkin Ladi (19). There are 54 lecturers in these departments. The entire study population was used for the study since the population was not too large. There was therefore no sampling. The instrument used was the Interactive Digital Technology Skills Required for Virtual Teaching and Learning of Business Education Courses Questionnaire (IDTSRVTLBECQ). The questionnaire consisted of 15 items based on the purpose of the study and the research question. The instrument was validated by two Senior lecturers in the Department of Business Education, Kwara State University Malet. A pilot study was conducted at the College of Education, Akwanga, Nassarawa state in order to establish the reliability of the instrument. Cronbach Alpha was used to determine the reliability of the instrument which yielded a reliability coefficient of 0.76. Each of the items was assigned four response options of High Extent (HE-4 points), Moderate Extent (ME-3 points), Low Extent (LE-2 points) and No Extent (NE-1 point). A total of 54 questionnaires were filled and returned, consisting of 19 (35.19%) from the polytechnic and 35 (64.81%) from the colleges of education. The data collected were analyzed using the mean and standard deviation. The mean was used to answer the research questions while the standard deviation was used to determine the closeness or otherwise of the responses from the mean. Positive decision rule for this study was established at a mean of 2.50 and above while any mean less than that was regarded as negative. The null hypothesis stated was tested using the t-test at 0.05 level of significance. Hypothesis of no significant difference was accepted when the observed probability value was greater than or equal to 0.05 level of significance. Where the calculated probability value was less than 0.05 level of significance, the null hypothesis was rejected.

Results

Research Question

To what extent are interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions?



Table 6: Mean and standard deviation of responses on the extent to which interactive digital technology skills are required for virtual teaching and learning of business education courses

S/ N	Item Statements	\bar{x}	SD	Remark
1.	Ability to use interactive white board or electronic board for teaching and learning.	3.83	0.42	High Extent
2.	Ability to use interactive web applications for interactive teaching and learning.	3.72	0.56	High Extent
3.	Ability to use interactive e-books for educational purposes.	3.26	0.73	Moderate Extent
4.	Ability to develop interactive multimedia learning module for teaching.	3.61	0.74	High Extent
5.	Ability to use interactive authoring tools such as authorware.	3.50	0.82	High Extent
6.	Ability to use interactive multimedia digital technologies for teaching.	3.65	0.70	High Extent
7.	Ability to use interactive survey tools (Survey Monkey, Zoomerang, etc.) for online survey and research.	3.20	0.83	Moderate Extent
8.	Ability to use digital student response systems for instant feedback during teaching and learning.	3.24	0.78	Moderate Extent
9.	Ability to use interactive digital video/audio for teaching and learning purposes.	3.67	0.64	High Extent
10.	Ability to use interactive multimedia projectors for teaching purposes	3.26	0.85	Moderate Extent
11.	Ability to use interactive features of the social media for instructional purposes.	3.43	0.77	Moderate Extent
12.	Ability to use simulations or virtual worlds for instruction purposes.	3.48	0.61	Moderate Extent
13.	Ability to use interactive forms on the net to create feedback or ask questions.	3.26	0.78	Moderate Extent
14.	Ability to use educational cloud services store, manage and process data.	3.63	0.71	High Extent
15.	Ability to use interactive features of mobile devices to view or listen to teaching contents.	3.80	0.56	High Extent
Weighted average		3.50	0.70	High Extent

Source: Field Survey, 2020

Table 1 above shows the responses of lecturers on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State. The result revealed that all the interactive digital technology skill items outlined were required to a high extent for virtual teaching and learning of business education courses in tertiary institutions in Plateau State with a weighted average mean of 3.50. Items 3, 7, 8, 10, 11, 12 and 13 were however required to a moderate extent with mean scores of between 3.26 to 3.48. All the 15 items have standard deviation scores ranging from 0.42 to 0.85. This means that the responses of the respondents are not wide spread as they are close to the mean. This implies that interactive



digital technology skills are required to a high extent for virtual teaching and learning of business education courses in tertiary institutions.

Test of Hypothesis

There is no significant difference between the mean ratings of respondents in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State.

Table 2: Summary of t-test of the difference between the mean responses of lecturers in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for teaching and learning business education courses

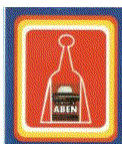
Group	N	Mean	SD	t-cal	Df	p-value	Decision
Polytechnics	19	3.51	0.28	0.22	52	0.845	NS
Colleges of Education	35	3.53	0.24				

Source: Field survey, 2020 P>0.05

The data in Table 2 reveals that there are 19 lecturers from polytechnics and 35 lecturers from colleges of education. The response of polytechnics and colleges of education lecturers indicated that interactive digital technology skills are required to a high extent for virtual teaching and learning of business education courses in tertiary institutions ($\bar{x} = 3.51$; $SD = 0.28$) and ($\bar{x} = 3.53$; $SD = 0.24$). Their responses are close to the mean as the standard deviations are very low. The table reveals that there was no significant difference in the mean ratings of lecturers in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions ($t_{52} = 0.22$, $P > 0.05$). Therefore, the null hypothesis that states that there is no significant difference between the mean ratings of respondents in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau State was not rejected. This implies that polytechnics and colleges of education lecturers did not differ in their responses regarding the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions.

Discussion of Findings

The study sought to determine the extent to which interactive digital technology skills are required for virtual teaching and learning of business education courses in tertiary institutions. The null hypothesis stated that there is no significant difference between the mean ratings of respondents in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions in Plateau state. The result showed that ability to use interactive white board or electronic board, ability to use interactive web applications, ability to use interactive digital video/audio, ability to develop interactive multimedia learning module for teaching, ability to use interactive authoring tools, ability to use interactive multimedia digital technologies and ability to use interactive features of mobile devices were required to a high extent for virtual teaching and learning of business education courses in tertiary institutions. Also ability to use interactive e-books, ability to use interactive survey tools, ability to use digital student response systems for instant feedback during teaching and learning, ability to use interactive multimedia projectors, ability to use interactive features of social



media, ability to use simulations and virtual worlds and ability to use interactive forms were revealed to be required to a moderate extent for teaching and learning business education courses in tertiary institutions. The findings further revealed that there was no significant difference in the mean ratings of lecturers in Polytechnics and those in Colleges of Education on the interactive digital technology skills required for virtual teaching and learning of business education courses in tertiary institutions ($t_{52} = 0.22, P > 0.05$).

This finding is in line with Nwokocha and Onwuchekwa (2014) who opine that the most common factors that impact the use of interactive technologies for teaching include: school culture, teacher training, time to practice and prepare materials, teacher confidence and technical support. Others include classroom setup and quality of equipment. This therefore informs the need for the development of relevant skills, knowledge and ability in the use of interactive digital devices. Dick and Burrill (2016) express a similar view and report that interactive digital technology include any digital materials, including software programs, applications (apps), broadcast and streaming media, some television programming, e-books, the internet, and other forms of content designed to facilitate active and creative use by students and to encourage social engagement with other students and teachers.

Conclusion

Based on the findings of this study, it is concluded that the acquisition of interactive digital skills by lecturers and the participation in digital education is critical. This has necessitated the need for extraordinary solutions and alternative for virtual teaching and learning in Nigeria's tertiary institutions. However, Government and all stakeholders must optimize the use of digital technologies for virtual teaching and learning in tertiary institutions and be committed to the implementation of policies that will propel the adoption, development and deployment of digital technologies in the educational system. Failure to do this will result in widening the social and digital gaps instead of narrowing them as students are now being disadvantaged by school disruptions caused by the pandemics, banditry and crisis.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:

1. Business education lecturers should endeavor to be up to date on the interactive digital technology skills required for teaching and learning business courses. Teachers who are still deficient in the identified interactive digital technology skills should also make personal efforts to update themselves in order to be more effective and efficient in teaching using interactive digital technologies.
2. There is need for government to provide the necessary leadership, direction and vision to guide interactive digital technology infrastructure development that will ensure equitable access to all users and stakeholders. Conscious effort is also required to bridge the digital divide, by ensuring that the cost of technology adoption is low. Government and other stakeholders must ensure the provision of devices to both students and teachers.

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