ASSESSMENT OF E-LEARNING SKILLS NEEDED BY TEACHERS DURING COVID-19 FOR INNOVATIVE DISTANCE LEARNING IN NIGERIAN UNIVERSITIES

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Abstract

The effect of the novel Corona virus on education systems worldwide is massive. Almost every school has been shut down and teaching and learning process has been relocated to distance learning in the form of e-learning for teaching and learning to continue. Nigeria has also been trying to adjust to the impact of the Corona virus on her education system by promoting the use of e-learning, especially in the universities. Lecturers have been advised and directed to make use of e-learning for teaching and learning. However, no adequate preparations were made to prepare the lecturers for the use of these technologies; therefore, we propose to assess the skills needed in using e-learning. Specifically, the study focused on synchronous and asynchronous e-learning. The study sought to determine the skills needed in synchronous and asynchronous e-learning by lecturers. Two research questions guided the study. Two hypotheses were also tested in the study. The study made use of descriptive survey design and was carried out in Nigeria. The participants for the study were 276, comprising lecturers and computer technologists in the Management and Information Systems unit. A structured questionnaire was developed by the researchers and used for data collection. The participants' responses were analysed using mean and standard deviation for the

research questions, while t-test was used to test the hypotheses at 0.05. The results indicated that lecturers do not possess some skills needed in using e-learning for innovative distance learning. It was recommended that there is need to implement the findings of the study into training workshops for lecturers in Nigerian universities.

Introduction

COVID-19 has disrupted educational systems around the world. Educational institutions around the world closed the doors in 2020 due to the COVID-19 pandemic. The pandemic has created an enormous disruption of educational systems, affecting 94 percent of learners in more than 190 countries in all continents (UNESCO, 2020). In an attempt to contain the spread of the pandemic, different countries, including Nigeria, responded with widespread closures of schools as part of social distancing policies (Van Lancker & Parolin, 2020). However, the education system of most developing countries, including Nigeria, was not built to deal with such extended shutdowns (Dorn et al., 2020).Teachers, administrators and parents have worked hard to keep learning alive; nevertheless, these efforts were not likely to provide the quality of education that is delivered in the classroom (Dorn et al., 2020). To combat this problem, the introduction of e-learning and distance learning programmes has become an overwhelming response to these closures and a game changer in the way teaching and learning is conducted (Mulenga & Marban, 2020). The use of e-learning for appropriate distance learning has been adopted in various levels of education, most especially at the university level. The serious effect of COVID-19 has called for an implementation of distance learning and e-learning in Nigerian universities.

It is very critical to note that as the world continues to deal with the realities of COVID-19 and its challenges, especially in the education sector, appropriate strategies need to be employed to continue to

engage learners for teaching and learning. Universities have been adopting instructional approaches that will help them meet the increasing demands of education. One major area where this is happening is in the usage of new models, new innovations and new ways of delivering content, connecting with students and measuring outcomes. The need for exploring alternatives that will, therefore, make university education accessible to prospective students and to ensure continuous instructional delivery during this pandemic (COVID-19), more particularly, is very important. To ensure inclusive and equitable access to quality education and the promotion of lifelong learning opportunities for all, it is imperative to adhere to global trends that will help in the achievement of this sustainable development goal indicator. E-learning offers such an alternative (Tagoe, 2012).

The concept of e-learning has been considered by different authors in various perspectives. In literal terms, e-learning can be looked at as electronic learning that includes all learning situations that employ new technologies. Yelland & Tsembas (2008) considered e-learning as a broader concept than online learning due to the fact that the former uses electronic devices that are detached and do not depend on being online. Such devices include videos, CD ROMS, slides and photographs. This implies that whereas online learning basically depends on computer networks for delivering instruction, with a connection to computer networks by users in all cases, e-learning moves beyond network connectivity to the use of electronic devices that are used offline. In an interesting twist, e-learning is seen as an educational means that involves technology, communication, efficiency and self-motivation (Bloomsburg University, 2006). This perspective goes further to indicate that due to the limited social interaction that involves student-student and that of student-instructor, it is very necessary for the students to motivate themselves and have frequent communication to ensure that assigned tasks could be accomplished. For further distinction and clarity, online learning,

which is an aspect of e-learning, entirely replaces face-to-face classroom teaching and learning, and the needs of the new stakeholders are met through self-virtualization. The problems of space and time and face-to-face and distance are easily dealt with (Ravanelli & Serina, 2014).

Distance learning is a computer-based teaching and learning method in which the interaction between students and education practitioners is provided from a certain center in cases where classroom education cannot be performed due to limitations in general education and training process (Eygü & Karaman, 2013; Moore, Deane & Galyen, 2011). Distance learning has many benefits such as ensuring the sustainability of education (Akinbadewa & Sofowora, 2020; Omiles et al., 2019; Seage & Türegün, 2020), providing lifelong learning (Alharthi, 2020; Pambayun et al., 2019; Serhan, 2019) and reducing education costs (Al-Husban, 2020). Although the learner and the teacher are in different places, there are some limitations in terms of methods, schedule and time (Albalawi, 2018; Hilton & Canciello, 2018). In addition, many factors such as lack of infrastructure (software, hardware), economic reasons, technical staff problem, lack of awareness of the society and especially students in this regard, and regional differences in the level of utilization of information technologies are seen as obstacles to e-learning and, accordingly, distance learning (Gökdaş & Kayri, 2005). Distance learning is considered as a promising innovation with its flexible learning environments (Allen et al., 2010). Distance learning was first implemented by mail and then continued by letter. Thanks to the developments in radio and television technology, distance learning courses started to be broadcast on radio and television. With the development of satellite, fiber optic and computer technology, virtual learning environments started to be maintained with these technologies (İşman, 2011). To make distance learning more innovative and more effective during the pandemic in Nigerian universities, the inclusion of e-learning becomes important.

Web-based distance education is a relatively new form of teaching which requires new technologies. It is a favourite format in educational settings due to its flexibility and adaptability to students' needs (Allen & Seaman, 2016). It delivers teaching and learning using some tools across far distances (Xu & Xu, 2019). One of the primary aims of traditional in-person instruction is to provide learners with necessary knowledge and skills, which is also valid for distance learning (Girginer, 2002). Distance learning has been the only solution for university education to enhance access to education for students who have no chance to attend traditional classes in the pandemic period. Thanks to the advances in technology, e-learning has become the primal system among other distance education formats, such as telecommunication courses, and correspondence study (Xu & Xu, 2019). Although it has been helpful in the pandemic period, some forms of distance learning lack interaction between students and instructors, which has been very problematic. According to Offir, Lev and Bezalel (2008), students have been required to be independent learners much more than the traditional system. Undergraduates are adults and they are expected to be independent students, as defined by Ural (2007). So distance learning may be a useful practice for students who are independent learners.

Jarvis (2003) stated that e-learning-based distance education has two forms: synchronous and asynchronous, which provide organized technological opportunities to students who study individually. In synchronous distance learning, all of the attendants participate in digital classes in real time, which require two-way communication (Tsipianitis & Groumpos, 2018). In this system, teachers lead the learning and participants communicate with one another directly, so it increases student involvement (Shi & Morrow, 2006). Students' interactivity accompanies effective learning and satisfaction (Stephens & Mottet, 2008). According to Bernard, Abrami, Lou, Borokhovski, Wade, Wozney, Wallet, Fiset& Huang (2004), in synchronous learning students and instructors are away physically but

communicating immediately as in video conferencing method. In the synchronous form of distance learning, students receive immediate feedback (Almosa & Almobaraka, 2005), and also this form of learning provides social presence more than the asynchronous form (Münzer, 2003). While the synchronous form of distance education provides quiet interactive learning environments with real-time knowledge sharing and immediate access to the answers of the questions in mind, fixed date and time for the meeting contradicts the anywhere-anytime learning promise of distance education (Skylar, 2009).

In asynchronous distance learning, on the other hand, students and instructors do not have to participate in the learning event simultaneously. Instead, students who are given more control over their learning can learn anywhere and anytime (Tsipianitis & Groumpos, 2018). Bernard et al. (2004) also indicated that the communication between students and instructors is separated by distance and time as in web-based courses. In this kind of learning, instructors do not have to follow strict time schedules; instead, they can post their course materials by wikis, blogs and e-mail. They can arrange online appointments in case of student need (Daniel, 2020). Thus, group interactions among students are limited in this kind of learning. Cleveland-Innes and Ally (2004) tested the two delivery forms for affective learning outcomes. The researchers discussed the interaction among students in terms of being flexible or not. Participants found asynchronous learning platforms more convenient. This is due to their having more time to reflect on their learning, while the synchronous platform requires joining the interactive classes in time, which is sometimes very difficult. They claimed that in asynchronous learning environments, interaction among students is more flexible. In other words, students can interact with one another whenever and wherever they like. On the other hand, asynchronous learning platforms create a sense of disconnection between students and teachers due to the lack of social interactions and feedback (Hines

& Pearl, 2004). When comparing synchronous distance education to asynchronous distance education, the former is claimed to improve students' brainstorming and group decision-making skills (Branon & Essex, 2001). Using synchronous or asynchronous distance education has its importance nowadays, especially in the pandemic period. Thus, assessing the e-learning skills needed by teachers in universities during the pandemic distance education period has a great impact on improving it for the future.

Research Questions

The following research questions were formulated to guide this study:

1. What are the e-learning skills needed by lecturers for synchronous distance learning in Nigerian universities?
2. What are the e-learning skills needed by lecturers for asynchronous distance learning in Nigerian universities?

Hypotheses

The following null hypothesis will be tested at 0.05

1. There are no significant differences in the mean responses of university lecturers, computer science experts and Management Information System experts on the e-learning skills needed for synchronous distance learning in Nigerian universities.
2. There are no significant differences in the mean responses of university lecturers, computer science experts and Management Information System experts on the e-learning skills needed for asynchronous distance learning in Nigerian universities.

Methodology

The study adopted descriptive survey research design. Descriptive survey design was necessary as the study sought opinions of lecturers, computer science experts and Management Information System experts. The area of study was Enugu State, Nigeria, involving the two public universities in the state. The institutions include; Enugu State University of Science and Technology (ESUT) and University of

Nigeria, Nsukka (UNN). Data were collected for the study by the use of a questionnaire that was developed by the researchers. Copies of structured questionnaire were administered on the respondents at these universities with the use of google forms. This was done due to the restrictions caused by the COVID-19 pandemic. The population of the study was 276 lecturers, computer science experts and Management Information System experts.

Cronbach alpha reliability method was employed to find out whether the questionnaire items were reliable. Statistical Package for Social Science (SPSS) was used for computation and 0.87 reliability coefficient was obtained. The questionnaire was on five point Likert scale and structured in three sections. First, background information was gathered on respondents' age, gender and highest qualifications, as well as experiences in the university as ICT experts or lecturers. Second, questions on the e-learning skills needed by lecturers for synchronous distance learning were asked. Finally, questions related to e-learning skills needed by lecturers for asynchronous distance learning in Nigerian universities were addressed.

Method of Data Analysis

The data collected from the study were analyzed using mean for answering the research questions and one-way ANOVA for testing the hypotheses at probability level of 0.05 and 95 degree of freedom (df). Any item with a mean value of 2.50 and above implied needed, while any item with a mean below 2.50 was considered not needed. Data analyses were carried out using IBM Statistical Package for Social Sciences (SPSS) version 22. The statistical tools employed are mean, standard deviation, Cronbach's alpha and one-way ANOVA. For the test of significance, the probability (*p*) value was used in comparison with the alpha value of .05 and at other relevant levels.

Results

The results for the study were obtained from the research questions answered and hypotheses tested through data collected and analyzed.

Table 1: Mean responses and ANOVA of respondents on the e-learning skills needed by lecturers for synchronous distance learning in Nigerian universities

S/N	Item Statements	Mean	SD	Decision	Sig.	H_0
1	Identify and put relevant facilities in place to aid e-learning	3.71	0.45	Needed	.408	NS
2	Make adequate connection to e-learning facilities	3.66	0.49	Needed	.345	NS
3	Prepare e-learning contents	3.64	0.53	Needed	.800	NS
4	Upload prepared lesson on to the internet	3.64	0.55	Needed	.126	NS
5	ıect laptops to server for ɛssful e-learning	3.57	0.62	Needed	.894	NS
6	Connect internet coaxial cable to laptops or other device	3.53	0.61	Needed	.342	NS
7	Install relevant software on laptops for transmitting lesson contents to students at different locations	2.98	0.94	Needed	.064	NS
8	Set up studio or office to aid e-learning	3.22	0.79	Needed	.950	NS
9	Power on every e-learning facility	3.12	0.77	Needed	.800	NS
10	Use information and communication technologies to plan instruction	3.12	0.79	Needed	.435	NS

11	Put other supportive gadgets or facilities to aid e-learning	3.48	0.58	Needed	.887	NS
12	Testrun the prepared platform before commencement of the e-learning	3.35	0.60	Needed	.500	NS
13	Create interactive e-teaching contents	3.48	0.61	Needed	.738	NS
14	Manage learning activities online	3.53	0.59	Needed	.838	NS

Data in Table 1 revealed that 14 items had their mean values ranging from 2.98 to 3.71, and this showed that the mean value of each item was above the cut-off point of 2.50, indicating that all the 14 e-learning skills were required by lecturers for synchronous distance learning in Nigerian universities. The standard deviation of these items ranged from .45 to .94, indicating that the respondents were close to one another in their opinion. The table also indicated that all the items had their P-value greater than 0.05. This indicated that there was no significant difference in the mean responses of respondents on the 14 e-learning skills required by lecturers for synchronous distance learning in Nigerian universities. Therefore, the null hypothesis of no significant difference was upheld for the 14 e-learning skills.

Table 2: Mean responses and ANOVA of respondents on the e-learning skills needed by lecturers for asynchronous distance learning in Nigerian universities

S/N	Item Statements	Mean	SD	Decision	Sig.	H_0
1	Give online assignments, tests and examinations for asynchronous distance learning	3.35	0.70	Needed	.971	NS
2	Coordinate and	3.43	0.58	Needed	.849	NS

	monitor assignments, tests and examinations online					
3	Make slideshows for asynchronous distance learning	3.49	0.63	Needed	.594	NS
4	Upload prepared lesson on to the internet	3.38	0.66	Needed	.565	NS
5	Create media rich contents for the teachers and students as well as global audience	3.48	0.58	Needed	.192	NS
6	Install relevant software on laptops for transmitting lesson contents to students at different location	3.29	0.62	Needed	.072	NS
7	Power on every e-learning facilities for asynchronous distance learning	3.24	0.74	Needed	.057	NS
8	Upload notes on websites and blogs for students.	3.39	0.73	Needed	.541	NS
9	Testrun the prepare platform before commencement of asynchronous distance learning	3.43	0.62	Needed	.305	NS
10	Create interactive	3.50	0.68	Needed	.842	NS

	e-learning contents for asynchronous distance learning					
11	Manage learning websites and blogs for asynchronous distance learning	3.34	0.63	Needed	.971	NS

Data in Table 2 revealed that the 10 items had their mean values ranging from 3.24 to 3.50, and this showed that the mean value of each item was above the cut-off point of 2.50, indicating that all the 10 e-learning skills were required by lecturers for asynchronous distance learning in Nigerian universities. The standard deviation of these items ranged from .58 to .74, indicating that the respondents were close to one another in their opinion. The table also indicated that all the items had their P-value greater than 0.05. This indicated that there was no significant difference in the mean responses of respondents on the 10 e-learning skills required by lecturers for asynchronous distance learning in Nigerian universities. Therefore, the null hypothesis of no significant difference was upheld for the e-learning skills needed for asynchronous distance learning in Nigerian universities.

Discussion

The result of this study has shown how teaching and learning can still take place despite the challenges that COVID-19 poses. The study revealed that 14 e-learning skills were required by lecturers for synchronous distance learning in Nigerian universities. This means that there are some skills that Nigerian university lecturers require for them to use e-learning for synchronous distance learning. This finding is in agreement with previous findings of Bakare et al (2020), who observed that there are some skills required of university lecturers for them to be able to successfully use e-teaching and e-learning facilities and equipments. This lack of skills could be attributed to the fact that

these university lecturers have not been making use of e-learning; therefore, they do not have the required skills in conducting e-learning. This finding is also in agreement with previous findings of Kakoty, Lal & Sarma (2011), who stated that there are new skills required for acceptance and use of e-teaching and learning facilities.
The result of the study also shows that 10 e-learning skills were required by lecturers for asynchronous distance learning in Nigerian universities. This means that there are some skills that Nigerian university lecturers require for them to use e-learning for asynchronous distance learning. This finding is in line with the findings Ananga (2020), who observed that there are some skills needed for e-learning in the face of COVID-19. The study stated that e-learning should become an option for distance learning delivery, and instructors should have the required skills needed in using them. Since e-learning has been suggested as an option for asynchronous distance learning, it is important that lecturers have the skills needed to use e-learning for asynchronous distance learning.

Conclusion

COVID-19, which started in December 2019 and became a pandemic all over the world in a short time, affected the education sector as well as fields such as health, economy and tourism. Many countries around the world have temporarily closed educational institutions in an attempt to control the spread of the COVID-19 pandemic. These nationwide closures have affected more than 91% of the world's student population. As at the end of April, it is seen that approximately 1.6 billion students have been affected (UNESCO, 2020). To reduce the impact of COVID-19 on learning, the use of e-learning and distance learning has become essential; therefore, the purpose of this study was to assess the e-learning skills needed by university teachers for effective distance learning.

E-learning should be an option for higher education delivery, especially in Nigeria and globally, when COVID-19 has become a

thorn in the flesh. Due to the peculiar situation in these times, it is strongly recommended that higher education institutions in Nigeria and globally should adopt an e-learning/online mode of delivering instruction in a well and carefully planned manner, until COVID-19 has been properly managed and physical contact could be tolerated again. This would ensure that effectiveness and efficiency, as far as the goals of education for development are concerned, are realized.

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