

Trending Issues IN EVALUATION

**A Book in Honour of
CHARLES OGHENERUME
ONOCHA**

Edited by
**Eugenia A. Okwilagwe
Monica N. Odinko**

Trending Issues in Evaluation

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Chapter Eleven

Virtual Learning Environment Usage among Federal University Lecturers in Nigeria in the 21st Century

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Abstract

The 21st century has witnessed digitisation of the university classroom and the education system as a whole with a flood of new technologies that has changed the pattern of teaching-learning process from face-to-face to the internet-based classrooms. This study investigated the federal university lecturers' usage of virtual learning environment in the 21st century. The study adopted a mixed method design to collect, analyse and integrate both quantitative and qualitative data in order to provide a multi-dimensional perspective of innovative teaching practices via the virtual learning environments within the context of the federal universities in Nigeria. Multistage sampling technique was employed in the study to select a total of ten federal universities, seven Faculties, 70 Deans, 210 HoDs, 840 lecturers and 8,400 undergraduates for the study. Three research questions and one instrument – Lecturer Questionnaire (Virtual Learning Environment Inventory), Focus Group Discussion and Key Informant Interview Schedules were used to gather data in the study and descriptive statistics and Atlas-ti were used to analyse the data collected. Results revealed that federal university lecturers in Nigeria used audio-visual learning materials (88 per cent), computer mediation learning (82 per cent) and Compact Disc-based (CD) learning (85 per cent) in the VLE to some or great extent. In addition, the required facilities to enhance VLE in some federal universities were not adequate and suffered maintenance challenges. It is recommended that there should be more provision of needed VLE resources and facilities in federal universities, regular trainings and sponsorship for capacity reinforcements to meet international best practices should be extended to federal university lecturers in Nigeria.

Keywords: Virtual learning environment, Federal university lecturers, learning resources

Introduction

The Virtual Learning Environment (VLE) is an “online” platform that has replaced the educational processes in the physical classroom, which is the traditional way of instruction where students and lecturers interact face-to-face, to the internet-based, remote classrooms where students and lecturers participate in online or electronic interactions of various kinds. The university VLE platform has the capability to increase students' tendency to learn, multitask and develop social autonomy through added tools and flexible learning environment. Students receive instructional content, submit assignments, take tests, and interact entirely online or virtually. This can happen “synchronously” and “asynchronously”. The former allows students to discuss with the instructors and with one another via the internet at the same time with the possibility of receiving instantaneous feedback (Bamiro, 2006) while the latter allows students to post communications to other participants over the internet after the learning materials are deposited by the instructor (Algahtani, 2011).

Another form of online interaction is a 'hybrid' of the aforementioned ones, which include possible combinations of any of these learning interaction platforms. Thus, the virtual learning environment is simply the use of multimedia information and communication technologies to extend diverse processes of education to support and enhance teaching and learning in higher institutions across the globe (Organization for Economic Co-Operation and Development, 2005). Among the gadgets needed by lecturers to facilitate in a virtual learning environment are: ergonomic chair, laptop and laptop stand, wi-fi booster, projectors, compact disc, headphones, wireless microphone, webcam upgrade, desk writing pad, orthopedic backrest, standing desk, smart reusable notebook, wireless keyboard and mouse, and e-library. It is pertinent to know that as with every other process, virtual learning has its advantages and disadvantages for both university lecturers and students.

Virtual learning has been christened varieties of names among which are: online learning or facilitation (Shahzad, et al., 2020; Junaid & Ojetunde, 2021), distance learning, e-learning (Harsasi & Sutawijaya, 2018) and remote learning (The Albert Team, 2022). The belief is that online or virtual learning should ameliorate some of the difficulties posed to the teaching and learning process by the COVID-19 pandemic. This medium of learning was favoured because it does not require physical contact between the teacher and the students. It provides teachers and students the opportunity to achieve what traditional face-to-face teaching and learning mode does. According to Hettiarachchi, et al., (2021), virtual learning is the only medium in the contemporary world where seclusion is prioritised over socialisation. It guarantees uninterrupted teaching and learning activities.

Contributing to the relevance of Virtual Learning Environments (VLE's) in the education sector, Johnston, et al., (2005) reported that in terms of quality and learners' performance, face-to-face learning does not have superiority over virtual learning. The authors found that the students' characteristics, the flexibility of the programme, not being tied to a specific space, influenced their satisfaction in virtual learning.

However, the National Universities Commission (NUC) plays a major role in ensuring that facilities in universities meet some minimum standards as prescribed in the Benchmark Minimum Academic Standards (BMAS) documents against which facilities are assessed. Despite this effort, recurrent report on the status of basic Information and Communication Technology (ICT) facilities in Nigerian universities both private and public, centred around lack of ICT knowledge and experience among university teaching staff (Nwachukwu & Asom, 2015) and lack of training in the usage of basic and emerging ICT facilities (Amusa & Atinmo, 2016; Nkoyo & Egbe, 2016; Junaid, 2021).

Statement of the Problem

Universities worldwide, Nigerian Federal Universities inclusive are expected to contribute to sustainable development by producing high level skilled manpower, deliver quality teaching and learning, and foster teaching quality culture. It becomes expedient to examine the extent to which virtual learning environments are being used by federal university lecturers in Nigeria. Therefore, this study investigated the federal university lecturers' usage of virtual learning environment (in terms of compact disc-based learning resources, online facilitation, audio-visual learning resources, dedicated server, networking, web-based learning resources, virtual resource rooms and computer mediated learning in the 21st century).

Research Questions

The following research questions guided the study:

1. To what extent do federal university lecturers in Nigeria employ a virtual learning environment?
2. Which of the virtual learning resources is/are the most preferred by federal universities lecturers in Nigerian?
3. How does the virtual learning environment cater for the 21st century federal university lecturers in Nigeria?

Methodology

This study adopted a mixed method design to collect, analyse and integrate both quantitative and qualitative data in order to provide a multi-dimensional perspectives of innovative teaching practices via the virtual learning environments within the context of the federal universities in Nigeria. Multistage sampling technique was employed in the study. Institutional sample of 10 federal universities from 10 States were selected from the six geo-political zones in Nigeria, using stratified random sampling technique. Seven faculties comprising Science, Arts and Law, Education, Engineering, Medicine, Agriculture and the Social Sciences; seven Deans and 21 Heads of Departments (HoDs) were purposively selected for uniformity and comparison in each selected university, while the lecturers and students sample were selected, using proportionate to size sampling technique. In all, a total of 10 federal universities, seven faculties, 70 Deans, 210 HoDs, 840 lecturers and 8,400 undergraduates participated in the study. Three research questions and one instrument – Lecturer Questionnaire (Virtual Learning Environment Inventory), Focus Group Discussion and Key Informant Interview Schedules were used to gather data in the study. Descriptive statistics was used to analyse data the collected and Atlas-ti was used to interpret and report the qualitative aspect.

Results

Table 1

Use of Virtual Learning Resources among Federal University Lecturers

S/N	Forms of Virtual Learning	Never Per cent	Some Extent Per cent	Great Extent Per cent
1	Compact Disc-based Learning e.g. e-Book, Instructional Video CD	77 (15%)	350 (70%)	75 (15%)
2	Online Facilitation e.g., ODE. ODL.	114 (23%)	317 (63%)	71 (14%)
3	Audio-visual Learning e.g., PowerPoint Presentation, Video Presentation.	58 (12%)	268 (53%)	176 (35%)
4	Dedicated Server e.g., Learning Management Server (LMS)	180 (36%)	261 (52%)	61 (12%)
5	Networking e.g., Intranet etc.	140 (28%)	278 (55%)	84 (17%)
6	Web-based Learning e.g., Khan Academy etc.	201 (40%)	248 (49%)	53 (11%)
7	Virtual Resource Rooms e.g., E-Library, virtual resources etc.	98 (20%)	307 (61%)	97 (19%)
8	Computer-mediated Learning	92 (18%)	296 (59%)	114 (23%)

i) Use of Compact Disc Learning

Figure 1

Use of Compact Disc-based Learning among Federal University Lecturers

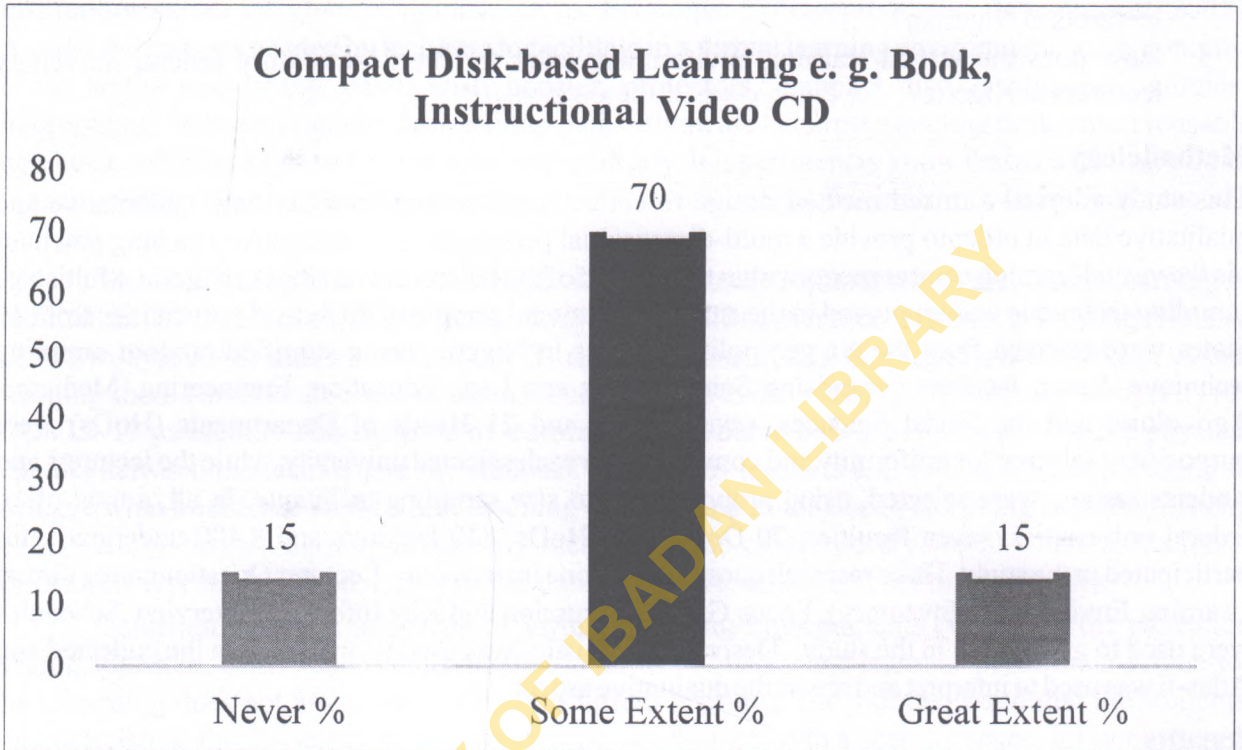
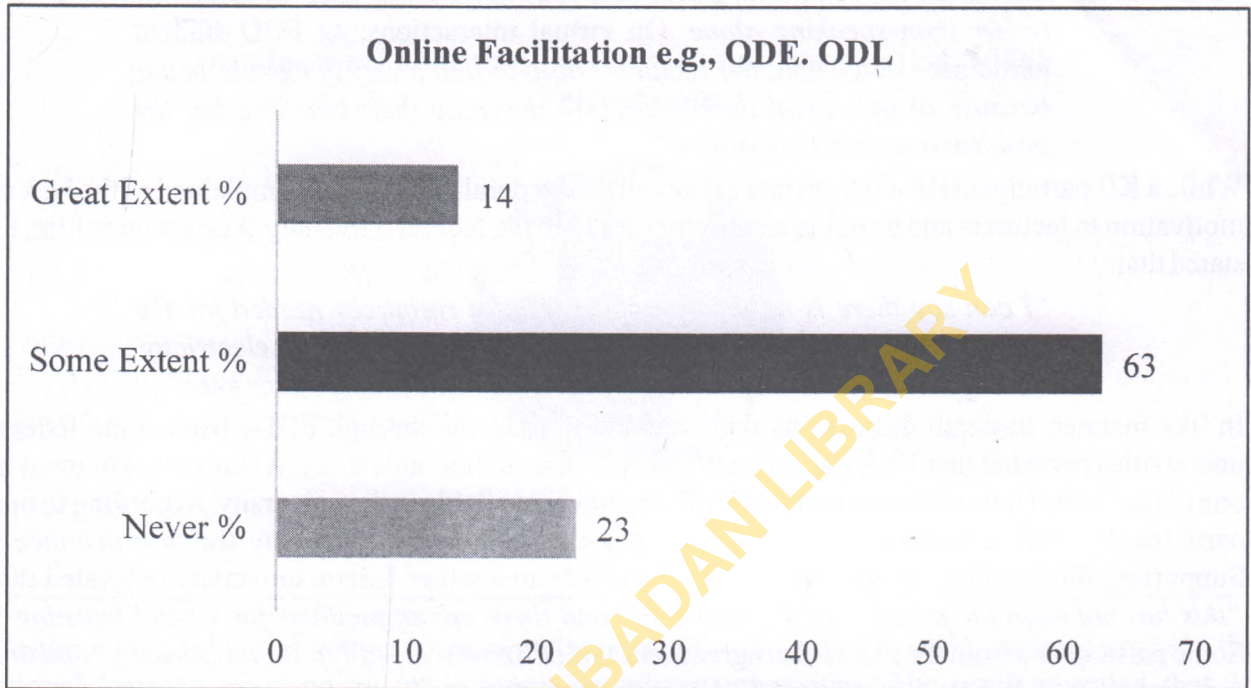


Table 1 and Figure 1 present the extent to which federal university lecturers embraced Compact Disc-based learning such as e-books and instructional video CDs in the virtual learning environment. The result revealed that 15per cent of the federal university lecturers used compact Disc-based learning in their interaction to a great extent, 70 per cent used it to some extent while 15% never used it to facilitate in the virtual learning environment. This could probably be due to the fact that teaching-learning activities had shifted from compact Disc-based learning to the very modern ones. Further enquiries were made through the Key Informant Interviews (KIIs) held with selected participants from federal universities that participated in the study and the reports were similar to the quantitative result.

Use of Online Facilitation

Figure 2

Use of Online Facilitation among Federal University Lecturers



Also, the result in Table 1 and figure 2 showed the extent of adoption of online facilitation in the virtual learning environment among federal university lecturers in Nigeria. It revealed that 14 per cent of the sampled federal university lecturers adopted online facilitation to a great extent, 63 per cent embraced online facilitation to some extent while 23 per cent never used online facilitation in the virtual learning environment. The implication of this result is that many federal university lecturers in Nigeria are familiar with online facilitation of lectures in the virtual learning environment. The progression is not very impressive but acceptable in the 21st century virtual learning. The result corroborated with the findings from the qualitative report on the FGDs with selected students and KIIs with Deans and HoD participants from selected federal universities in Nigeria. The reports revealed that lecturers in federal universities adopted the virtual learning to facilitate teaching and learning process. Federal university managements provided infrastructural facilities in a bid to make the virtual learning environment more conducive and comfortable for students. Some universities provided support and attached trained ICT staff to departments to assist lecturers in their various capacities.

One of the KII participants (Dean of a faculty in a federal university) stated that “*trained people and ICT staffs were attached to each department*” to provide assistance to lecturers and students in various capacities. Another KII participant (a HoD of a Department in another federal university) affirmed that “*it is just in the new normal that we started Virtual learning*”. Other HoD participants through KIIs also asserted that “*indeed the Covid-19 pandemic has brought to light the use of Virtual learning for teaching and learning in the university*”. Another participant from another federal university stated that “*by the new policy of the university, only final year students are*

on virtual learning while other students are taught physically in their classrooms". Through FGDs, some selected student participants from a federal university affirmed that:

"Most lecturers are not using virtual teaching but prefer to have student around physically, which gives them the chance to interact with students rather than speaking alone. On virtual interactions, an FGD student participant stated that, our lecturers need to find a way to explain better because of individual differences. We do enjoy their teaching but the problem is on practical aspect".

While a KII participant (HoD) from one of the selected federal universities complained of the lack of motivation to lecturers and unstable electricity supply in the federal university. According to him, he stated that:

"I can say there is no motivation in term of resources needed for the teaching. Lecturers are not provided with laptops, unstable electricity, Virtual learning environment is not available in the first instance here".

In like manner, in-depth discussions with student participants through FGDs from some federal universities revealed that VLE has not really been in use in their university. A student participant in one of the federal universities stated that VLE was never available in the university. According to one participant, *"virtual learning environment is not available in the university the first instance"*. Supporting this, another student participant in FGD from another federal university reiterated that *"this has not been the practice in this university and there are no facilities for virtual learning"*. Some participants from the FGDs also agreed and said, *From a scale of 1 to 10, it is zero (0)" and this was agreed upon by a student who said, "No virtual learning at all.*

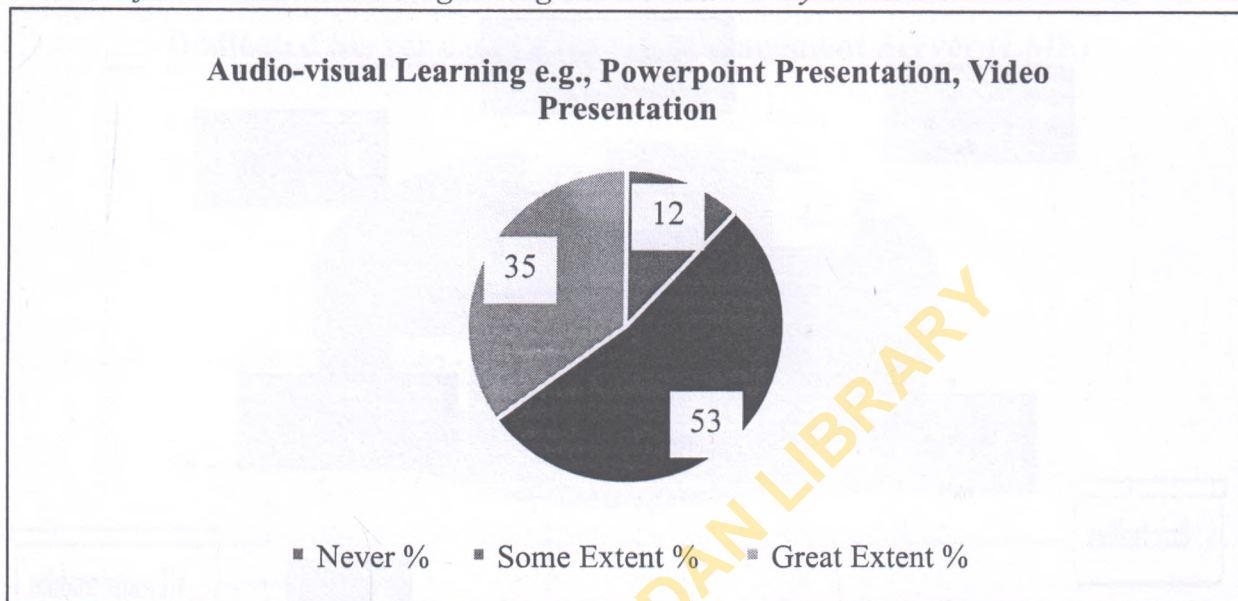
Conversely, another student participant from FGD in one of the federal universities disagreed with others and confirmed that lecturers facilitated online during COVID-19 pandemic. He expounded that:

"I think we have done a lot of virtual learning in the course of lock down. I could remember I did several presentations personally on my project using the zoom application with my supervisor and other group members and then coming back to school, a lot of our assignment are being done online through email and other available means. I think in that regard they have really been trying but they need to do more

I) Use of Audio-visual Learning

Figure 3

Use of Audio-visual Learning among Federal University Lecturers



Additionally, Table 1 and Figure 3 present the result of audio-visual learning material usage in the virtual learning environment by lecturers in federal universities. The result revealed that 35 percent of the lecturers from federal universities embraced and used audio-visuals to a great extent, projecting their lectures with slides and organising video presentations during virtual interactions with students, 53 per cent of their counterparts indicated to some extent while 12 per cent of revealed to have never used audio-visuals such as video presentations and power point projections to foster learning in the virtual learning environment. The result supports the KIIs and FGDs reports from Deans, HoDs and student participants. A KII participant (Dean of a faculty) in one of the selected federal university asserted that *“we all use virtual learning to a large extent. Actually there is none of our lecturers that does not use power point”*.

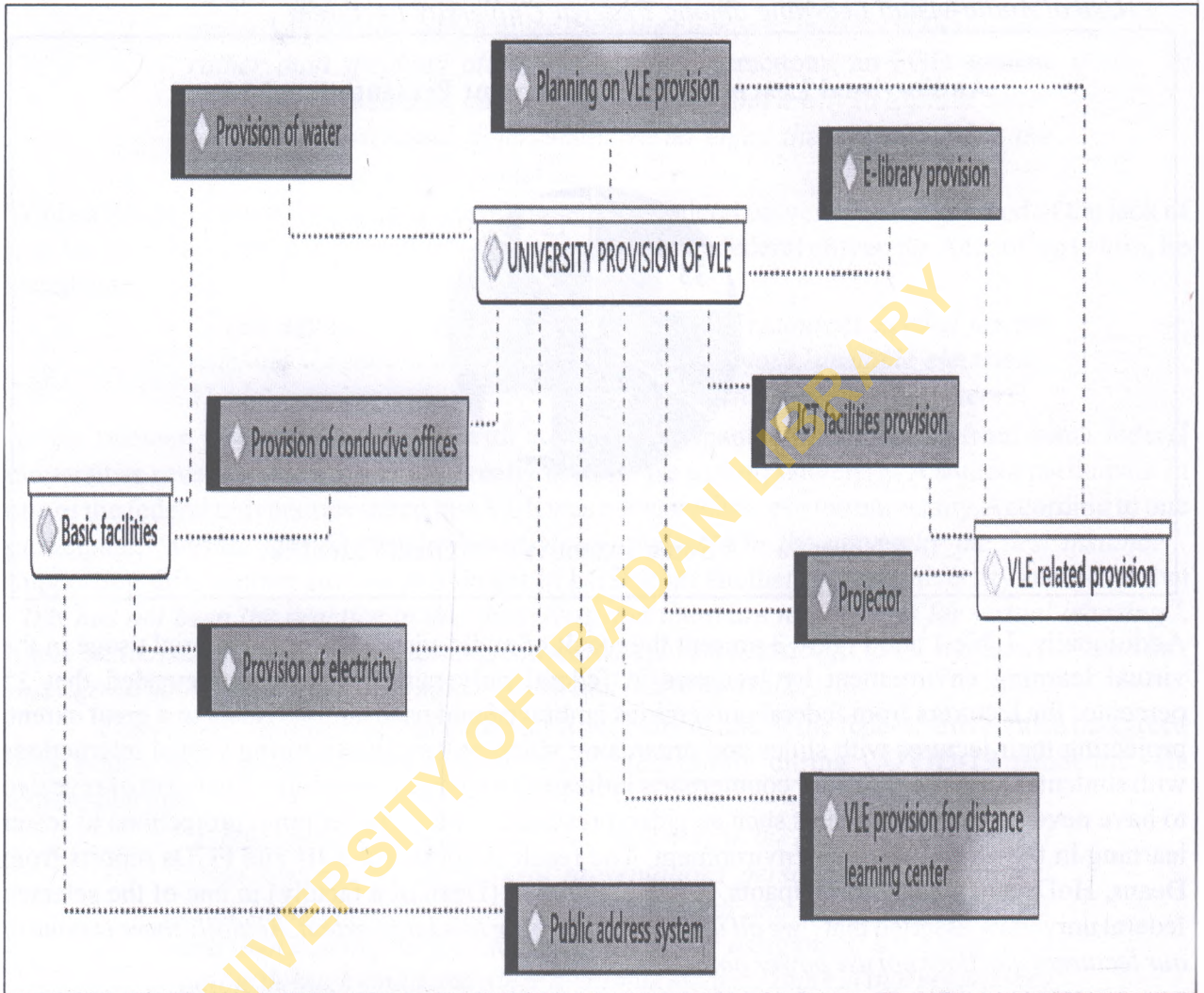
Another KII participant (Dean of a faculty) from another federal university reported that

“Public address system is provided for large classes overhead projectors are available in some classes. Functional interactive boards are provided in some classrooms and lecture rooms”.

Yet another participant from another federal universities made a similar assertion about the use of audio-visual learning in his university. He pointed out that *“Our department has projectors for lectures and presentations, and a generating set that is put to use when there is power outage especially during presentations”*

However, FGD participants (students) from federal universities complained of the unequal provision of VLE gadgets and internet service. One of the student participants stated that *“We students also have challenges of Wifi and data”*. The point agreed with another participant who said, *“many students complained that there is no data, because of the lack of smart phone”*.

Figure 4
Provision of Basic Facilities for the Virtual Learning Environment



I) Use of Dedicated Servers

Figure 5

Use of Dedicated Server among Federal University Lecturers

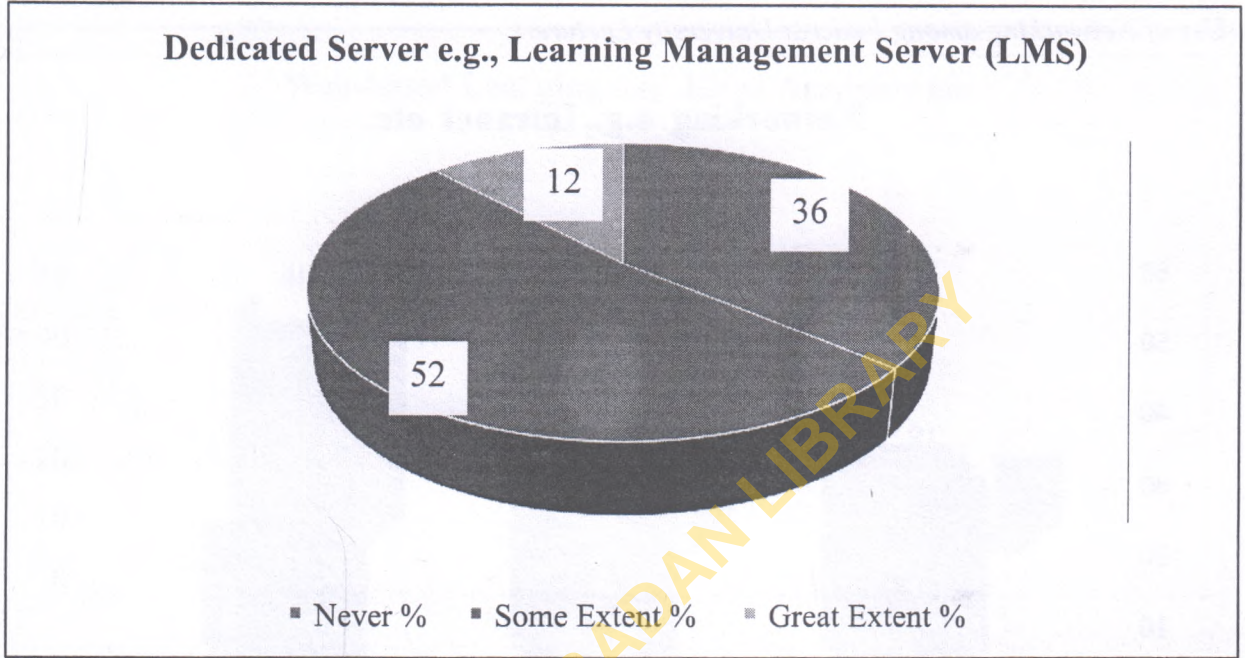


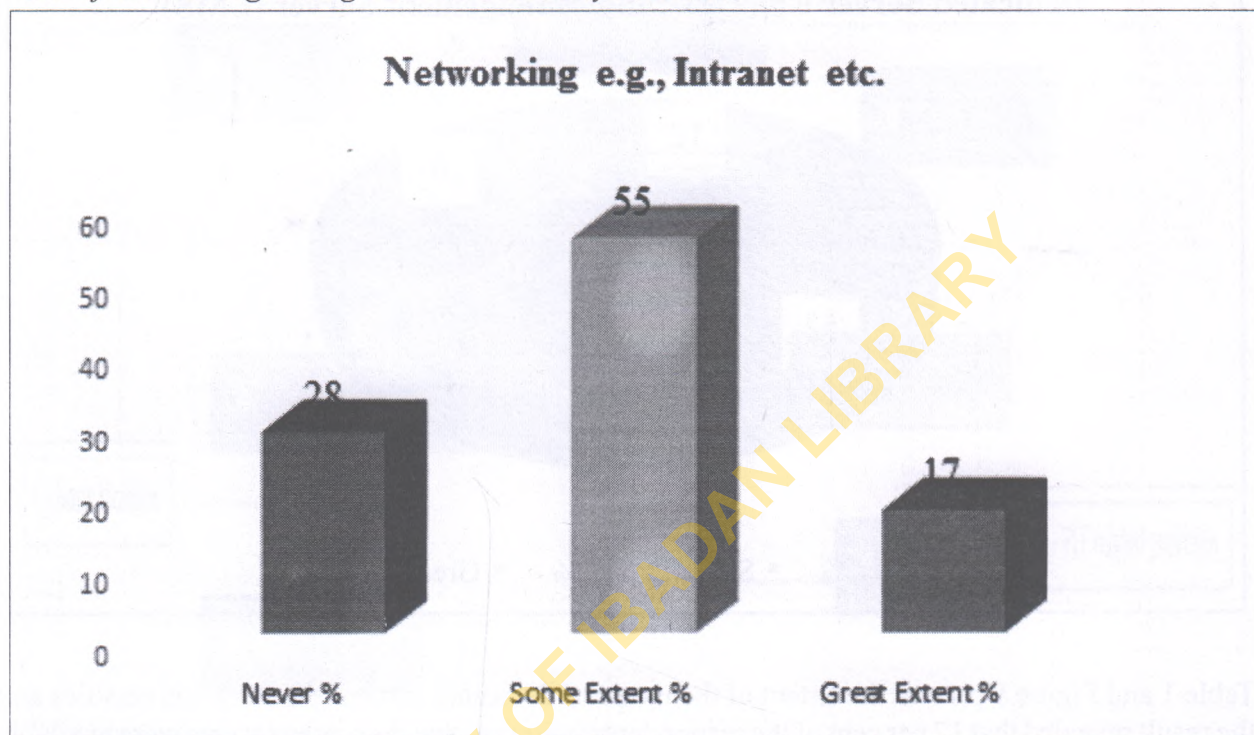
Table 1 and Figure 5 present the extent of the usage of dedicated servers in federal universities and the result revealed that 12 per cent of the respondents indicated that dedicated servers were available to a great extent in their respective federal universities in Nigeria, 52 per cent responded that dedicated servers were available to some extent while 36 per cent indicated that dedicated servers were never available for use in their universities. This implies that a significant number of federal universities did not have adequate dedicated servers to cater for the virtual learning environment as it was also revealed through reports of the KIIs and FGDs with selected Deans, HoDs and student participants from the selected federal universities that the dedicated servers in some federal universities were under different functioning conditions (functional, less functional or non-functional) while some federal universities did not have them.

It is pertinent to know that without Web-based learning and dedicated servers, it will be difficult to effectively operate virtual learning in Federal universities in Nigeria. This shows that there is a need for a growing commitment to ensure that every university in Nigeria has adequate access to the internet through the availability of functional and dedicated servers to cater for effective virtual learning environment. Corroborating the result, in-depth interactions with KII participants revealed that the needed facilities to enhance VLE in some federal universities were not provided. One of the participants (a HoD of a department) in one of the federal universities complained that “*Students almost protested because they said that they wanted free access to the virtual learning materials but they were told that the services were not provided by the University*”. Also, another participant (HoD from another department) from a federal university added that “*the major challenge is that the students are complaining about how will they get data to be able to stream. So the students and the lecturers are asking questions on how to get data to be able to stream*”

D) Use of Networking

Figure 6

Use of Networking among Federal University Lecturers



Furthermore, the extent of network availability (intranet) as a major determinant of virtual learning was equally assessed and the result on Table 1 and Figure 6 indicated that 17 per cent of federal university lecturers had access to networks within their respective universities to support the virtual learning environment to a great extent while 55 per cent others indicated that networks were available to some extent and 28 per cent of them did not have access to network. In contrast, reports from FGDs with some student participants from some of participating federal universities revealed that the challenge of networking was encountered by students who are at the receiving end of the online interactions in the virtual learning environment. In-depth interview with KII participants also revealed that poor internet and intranet connectivity is a challenge to virtual learning environment in some universities. One of them reiterated that:

"Some students are not too comfortable with it because they have this issue of internet connectivity because of the nature of the locations where they live thus, most of them may not be able to connect because of poor internet and intranet connectivity".

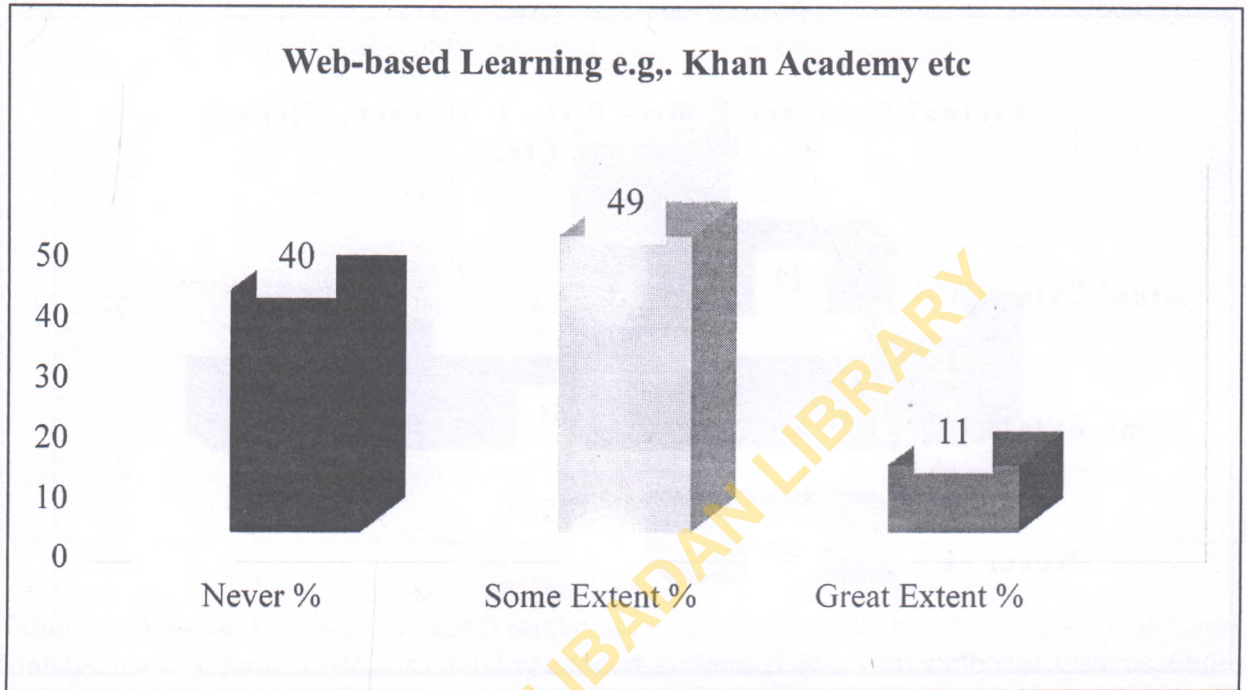
Furthermore, student participants through FGDs in federal universities complained bitterly about the electricity issues encountered in the institution. According to one of the student participants:

"Electricity supply is epileptic in some facilities in the university. The TETFUND building too has no electricity. Electricity is epileptic and the students need to charge their phones".

I) Use of Web-based Learning

Figure 7

Use of Web-based Learning among Federal University Lecturers



Moreover, Table 1 and Figure 7 present the result on the extent to the use of Web-based learning among federal university lecturers in Nigeria. The table revealed that 11 per cent of federal university lecturers have been using Web-based learning to a great extent, 49 per cent indicated its use to some extent and 40 per cent revealed that they never attempted it before. This shows that there is a wide gap of university lecturers that have never engaged in the use of web-based learning. The result agrees with the qualitative reports from in-depth interactions with students, HoDs and Deans from federal universities through FGDs and KIIs. Few participants (Deans of faculties and Departmental HoDs) in some federal universities listed what their universities provided to support the virtual learning environment as:

- i. Availability of e-resources,
- ii. Availability of Smart Boards, and
- iii. Availability of internet facilities.

However, these resources are not adequately provided and utilised in their respective federal universities.

vii) Use of Virtual Resource Rooms

Figure 8

Use of Virtual Resource Rooms among Federal University Lecturers

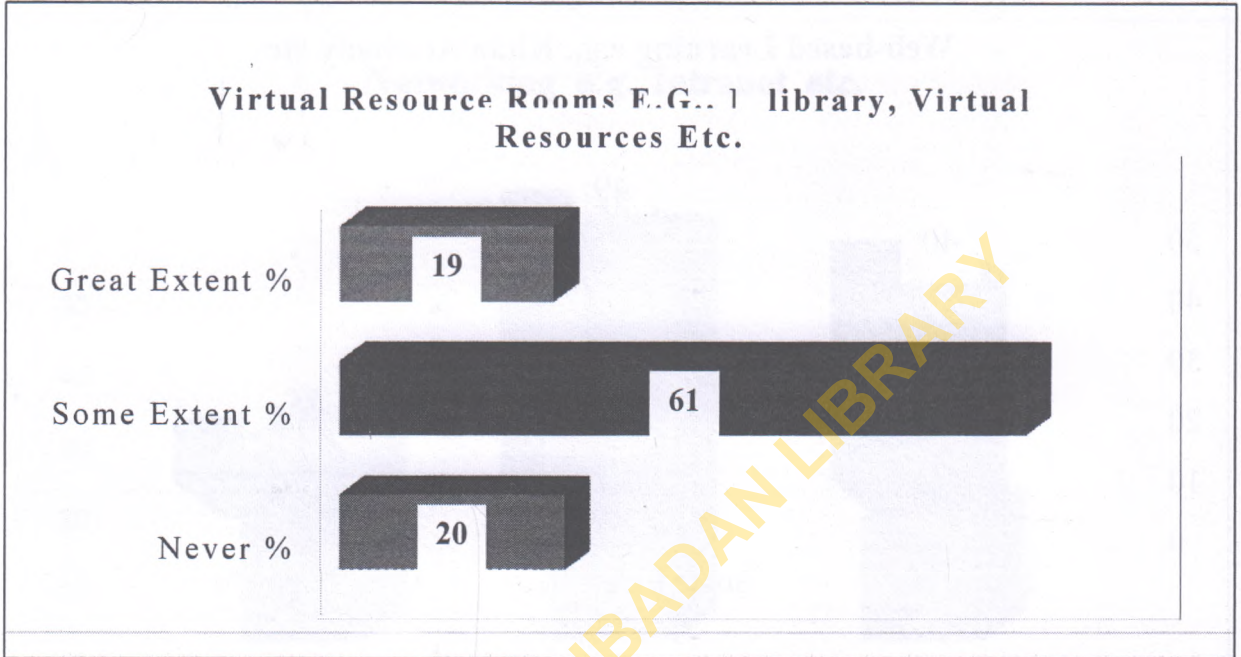


Table 1 and Figure 8 present the extent to the use of the virtual resource rooms among lecturers in federal universities in Nigeria and the result revealed that virtual resource rooms such as e-library and resource centres were being used by 19 per cent of lecturers in federal university to a great extent and 61 per cent of their colleagues used virtual resource rooms to some extent while 20% of them never made use of virtual resource rooms in the virtual learning environment. It was observed that few of lecturers did not substantially make use of virtual resource rooms such as e-libraries and resource rooms as it was expected of them in the 21st century virtual learning environment in Nigerian universities. Further enquiry was also made through FGD and KII. A participant (Dean of a faculty) from one of the federal universities ascertained that

“there is an e-library and resource rooms in the university. Also, there are computers in the university installed with internet facilities and statistical software, Wifi service is also available and staff have LAN in their offices but not all of them are functioning”.

viii) Use of Computer Mediated Learning

Figure 9

Use of Computer Mediated Learning among Federal University Lecturers

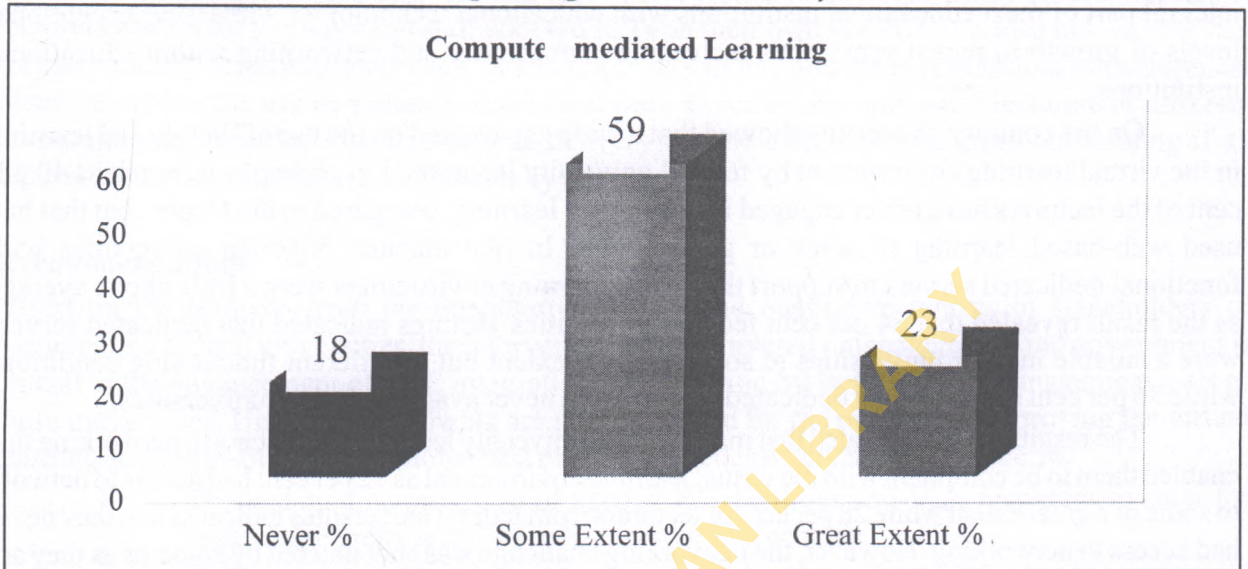


Table 1 and Figure.9 showed the result on the use of computer mediation learning such as Course Management Systems (CMS) or Learning support systems (LSS), Bulletin board systems, Online chats, e-mail, Wiki and Instant Messenger (IM) by lecturers in federal universities in Nigeria. The result indicated that 23 per cent of the federal university lecturers' in Nigeria were involved in using computer mediation learning to a great extent while 59 per cent of their counterparts either used it to some extent and 18 per cent never involved themselves in it. The result also corroborates the qualitative report of KII with the selected Faculty Deans and HoDs from federal universities. Almost all the respondents (Deans and HoDs) asserted that required facilities to enhance VLE were available but not adequate. In their submission, one some Deans and HoDs participants, through KIIs said

“There was this research we carried our during the COVID, trying to assess the readiness of Nigeria Universities to key into the online learning, we found that even our federal university did not have the virtual learning facilities as are available in some private universities.

Another KII participant (a HoD) affirmed that *“facilities have been the problem. We started it when the university just resumed but now population has increased and the facilities cannot go round”*.

Discussion of Findings

Results on the use of virtual learning environments by federal university lecturers in Nigeria revealed that majority of them used audio-visual learning materials in the virtual learning environment, as the results indicated that 88 per cent of federal universities lecturers used audio-visual learning materials to some or great extent. The result also indicated that federal university lecturers were adequately involved in computer mediated learning as 82 per cent of federal

university lecturers used it to some or great extent. The results of findings further showed that most of the federal university lecturers are now familiar with facilitating lectures virtually and this supports the opinion of Becta (2003) which states that e-Learning and the use of VLEs are now an integral part of most educational institutions with educational technologies witnessing exceptional levels of growth in recent years, thus increasing connectivity and networking within educational institutions.

On the contrary, the results showed that a wide gap existed on the use of Web-based learning in the virtual learning environment by federal university lecturers. For example, as much as 40 per cent of the lecturers have never engaged in web-based learning, compared to the 60 per cent that had used web-based learning to some or great extent. In like manner, Nigerian universities with functional dedicated servers to support the virtual learning environment were a little above average as the result revealed that 64 per cent federal universities' lecturers indicated that dedicated servers were available in their universities to some or great extent but in different functioning conditions while 36 per cent indicated that dedicated servers were never available in their universities.

The results further revealed that many federal university lecturers had access to networking that enabled them to be compliant with the virtual learning environment as 72 per cent had access to network to some or a great extent while 28 per cent of lecturers from federal universities indicated that they never had access to networking. However, the networking challenge was encountered by students as they are at the receiving end of the online interactions. These results could be so because there are factors such as ICT facilities to be put in place, level of internet bandwidth subscription to be made for academic staff and students for effecting interactions and technologists or employment of experts for troubleshooting activities, all of which boil down to level of funds available at federal universities in Nigeria. These results corroborate the report of Gewin (2020) and Junaid and Ojetunde, (2021), who observed that some institutions have no prior general arrangement on how to facilitate learning via online platforms. Thus, the future of the Virtual Learning Environment has many innovative and exciting possibilities, if issues of cost and programming are resolved (Alves, et al., 2017). This implies that for the adoption of a virtual learning environment to be highly effective among lecturers in federal universities in Nigeria, it will require urgent training and re-trainings through workshops, seminars and conferences for capacity reinforcement of all lecturers in federal universities in Nigeria.

In addition, many federal universities have dedicated internet servers under different functioning conditions (functional, less functional, or non-functional) while some did not have them and without Web-based learning and dedicated servers, it will be difficult to effectively operate virtual learning in federal universities in Nigeria. This shows that there is a need for a growing commitment to ensure that every university in Nigeria has adequate access to the internet through the availability of functional and dedicated servers to cater for effective and innovative teaching and learning.

Furthermore, Nigerian federal universities have very good networking opportunities as the extent of availability of the majority fell above average. Networking goes beyond lecturers as it also affects students they interact with as well. Low networking challenges within the university area will hinder effective virtual learning environments and impede learning. There is also a considerable percentage of federal universities' lecturers that have never engaged in web-based learning before (40 per cent). It was also reported and observed that few federal university lecturers (20 per cent) do not substantially make use of virtual resource rooms such as e-libraries and resource rooms as expected of them in the 21st century virtual learning environment in Nigerian universities and the proportion of those that were compliant is 80 per cent.

Conclusion

Although, there is an Information and Communication Technology (ICT) policy in operation in federal universities in Nigeria, university stakeholders have not prioritised Virtual Learning Environment (VLE) for teaching-learning activities optimally. However, many federal university lecturers and senior management staff adopted ICTs on their own volition. It is also noteworthy that formal capacity reinforcements such as training, workshops, and other professional development plans, related to the use of virtual learning had been executed for university lecturers at different levels and had impacted effective service delivery but the effects can be more outstanding if all federal universities in Nigeria are financially upgraded.

Recommendations

Based on the findings from the quantitative results and qualitative reports of stakeholders of participating federal universities, the intervention of the university managements and government is crucial to the advancement of VLE integration and adoption by lecturers and management staff of these universities. Hence, the following are recommended for the purpose of improving the virtual learning environment for international best practices in federal universities in Nigeria:

- i. There should be provision of needed ICT facilities and VLE resources to cater for federal university lecturers in Nigeria the 21st century.
- ii. Programmes curricula should be designed in a way that will be fit for remote and onsite implementation among learners of different academic abilities, location and socio-economic status.
- iii. Non-functional Virtual Learning Environment tools such as smart boards, servers, web-based learning and virtual resource rooms such as e-libraries, e-books and intra-networking facilities should be resuscitated and improved upon for an enabling virtual learning environment in federal universities in Nigeria.
- iv. Federal university lecturers should be supported more with adequate data and internet accessibility to facilitate online teaching effectively.
- v. Electricity supply through the national grid, generating sets, inverters and solar panels should be optimised by federal universities to boost accessibility and practicality of VLE by all stakeholders in Nigeria universities.
- vi. Individual federal university management should regularly organise seminars, workshops, and training for their lecturers for optimum work readiness.
- vii. There should be regular sponsorship for federal university lecturers and senior management staff on capacity reinforcements and conferences to meet the 21st century international best practices.

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universities in Nigeria are financially empowered. It is believed that the recommendations from this study will be taken into consideration and implemented in due course.

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