Online Learning Experience during COVID-19 Pandemic Lockdown in Yaba College of Technology: A Case of Computer Engineering Students

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ABSTRACT

The COVID-19 pandemic disrupted virtually everything globally including the educational sector. The Nigerian education system was not left out as educational institutions across the nation were directed to lockdown all face-to-face engagements. An alternative resumption of learning was however heralded when the Honourable Minister of Education pronounced that institutions could start virtual classes. This helped some Higher Education Institutions (HEIs) including Yaba College of Technology commence online teaching of students in order to close the gaps in learning caused by the pandemic lockdown .Online learning for Computer engineering students as an alternative to face-to-face approach to learning involves some tasks and activities including student attendance, assignment submission, practicals, examination and assessment amongst others. This paper presents feedback of computer engineering students in Yaba College of Technology regarding their experiences about online learning approach used by their lecturers during the lockdown. A Student Online Learning Experience (SOLE) questionnaire was developed using Googleform and purposive random sampling was used to select the respondents. Responses were gathered from sixty (60) students who participated in online classes from 1st May to 31st July, 2020.The data collected was analyzed using frequency analysis. The results of the response analysis were reported and it led to the design of a framework for effective teaching method for computer engineering students. This proposed framework is recommended for use and adoption even after reopening of institution (post-COVID) by other departments in the faculty of engineering in Yaba College of Technology and in other HEIs.

KEYWORDS: COVID-19, Lockdown, Online Learning, Online Tools, Pandemic

1. INTRODUCTION

The COVID-19 pandemic disrupted educational systems globally. The managers educational systems in various countries swung into action by switching teaching method from face to face to online to close the gap created in learning as a result of the lockdown.

Virtual Classroom as an online learning environment has many advantages which include interactivity, flexibility, stretching the temporal and spatial barriers, and interoperability (Wheeler, 2000; Huang & Hu, 2000; Khalifa & Lam, 2002; Curran, 2002; Kinshuk & Yang, 2003).The online learning have numerous advantages over the traditional face-to-face learning. However, its limitations include among others most of the existing learning materials (graphics and text) and , lack of contextual understanding, lack of oral presentation by instructor, in time interaction and feedback ,and no synchronisation and match on course materials and explanations (Leidner & Jarvenpaa, 1995; Sloane, 1997; Lim & Benbasat, 1997; Weeler, 1998; Chou, 1999; Wulf, 2000).

In Kanwar (2020), a justification for need of online learning was noted, as over 1.5 billion students which represent more than 90% population of students worldwide was affected by the closure of schools. However, different countries put measures in place as palliatives for students these include among others, Canada deferment of student loan repayments for six(6) months, Technology funding by the Australian Government. Similarly, as noted in Michael and Uliana 2020) more than one hundred and thirty countries have been affected by COVID-19 outbreak. Some of the Higher Educational Institutions managed to offer online and distance education and some could not offer online education because of their

lack of preparedness and readiness which thus resulted to total shutdown of educational system (Michael and Uliana, 2020).

On 25th April, 2020, the executive Governor of Lagos State, Mr. Babajide Sanwo-olu approved that the Lagos State University (LASU) and other state-owned tertiary institutions e should commence online lectures in order to maintain the institutions academic calendar despite COVID-19 pandemic. The Governor urged students to maximize the opportunity of the virtual classes to engage academically while pandemic lockdown lasts. According to ireporteronline (2020) Governor Babajide Sanwo-Olu approved special e-portals that allows tertiary institutions in Lagos State to commence online lectures in a bid to reduce impact of COVID-19 on education. The Special Adviser to the Governor, Tokunbo Wahab asserted that seven (7) schools will benefit accordingly from the initiative. The schools include LASU and Lagos State Polytechnic. Students however disagree with the option of online learning, noted that the option may promote laziness amongst their lecturers and some students might use the platform for frivolities.

The Federal Ministry of Education (FME) in conjunction with Universal Basic Education Commission (UBEC) set up a separate Task Team for coordination of education response during COVID-19 pandemic lockdown. The purpose of the team was to support students across the thirty-six (36) states of the federation and the Federal Capital Territory (FCT) Abuja with provision of information, resources and guidance. This is to ensure a no gap in education and continuation of learning at home. In realization of this task, the FME has created a dedicated webpage for task team to be providing a real-time learning guidance and support for learners at home (World Bank, 2020).The team also developed a Learn at Home Programme (LHP).The status of implementation of LHP, options available for teaching and learning equitably, advice on channels for states of federations, systems for resource monitoring and tracking and online resources are constantly being updated on the webpage. The FME and UBEC are working with Federal and state governments in provision of home-based learning resources for students, teachers and the schools. Some of the resources include reading material, homework assignments, online learning, radio and television World (2020).

For more than a month, there was no teaching and learning did not take place. However, at the instance of Honourable Minister of Education, the Heads of Higher Educational Institution (HEIs) were summoned to a crucial meeting. It was resolved that heads of HEI should direct Lecturers and teachers in their various institutions to commence online teaching of students. Yaba College of Technology being a foremost HEI directed lecturers to commence teaching of students online. This study therefore present online learning experience of students in department of computer engineering during the COVI-19 pandemic lockdown .It specifically seeks to; identify the online teaching and learning activities/modes that happened during online classes ; identify online teaching tools used by lecturers in computer engineering during lockdown; know the challenges experienced by students on online classes during the lockdown; and propose a framework for effective teaching method for computer engineering students after lockdown .

2. REVIEW OF RELATED WORKS

Amita (2020) revealed that many faculty opined that online education can only be an appendage to face-to face form of education, and should not be considered as a substitute .It has continued to be a temporary aid during COVID-19 lockdowns.

According to World Bank's Edtech team, the initial response to schools' closure due to the COVID-19 pandemic in different countries was occasioned with use of edtech in order to support access to online learning during COVID-19 lockdowns. The edtech include the use of radio and television). Meanwhile, the World Bank is currently working with the education ministries of different countries on provision of opportunities for students while schools are closed.

Owolabi said lectures, tutorials, tests and examinations can be done at one's comfort zone, though some students may experience difficulties such as low data, lack of electricity, low percentage and not meeting up with time, among others.(The Guardian,2020).

According to Rufai (2015), three (3) models of e-learning pedagogy are Salmon's E-tivities, Laurillard's Conversational Mode and Maye's Conceptualisation Cycle. The prominent of the models is Maye's Conceptualisation Cycle. The first stage is conceptualization of e-learning, the stage two is construction stage of e-learning where students perform task and the final stage of the model is dialogue stage of e-learning where students can give feedback. The first stage provides awareness for learner on their learning needs and what they need to understand. Also, at second stage, learners are

provided with online tasks that are meaningful and which allow application of concept as outlined in the first stage. The last stage i.e. stage 3 is where learning takes place with the use of technology.

Certainly, technology plays fundamental role in the teaching and learning processes before COVID-19 pandemic, elearning industry (2020) but more importantly useful during the pandemic as a reliable tool that enable teaching and learning online and remotely. While there are many online tools for teaching and learning, some are free and while some requires a payment as noted in Podia (2015), these include Idroo, baiboard, groupboard, WizIQ, Scribblar among others. Meanwhile, few teachers use these tools before the pandemic. The purposes of these include academic collaboration, communication between learners and teachers, and administration of processes. elearning industry (2020).

According to Lisa (2020), educators mention the following online tools mostly; canvas, brightspace, schoology, Google Docs, Email and Zoom, because of ease of use, customization and provision of collaboration between students and their teachers. It is noteworthy that some of the online tools are Learning Management System (LMS) , example of such are Moodle, blackboard, canvas, brightspace, schoology among others. These LMS are softwares that are used for organizing, tracking and recording multiple programs (online learning) (Lisa, 2020).

3. METHODOLOGY

A purposive random sampling was used to select sixty (60) online regular attendees including class governor and assistant governors who attended classes within the study period of 1st May to 31st July, 2020, a Student Online Learning Experience (SOLE) questionnaire was developed using Googleform and this was posted to the general group platforms for each level and course platforms for taking their responses. In total, SOLE questionnaire was completed by 59 students. Further, the Googleform was opened for submission for only three (3) days from 2nd -4th August, 2020.

Descriptive statistics was employed to analyse the data collected from respondents .Frequency analysis was performed on the data.

4. DESCRIPTION OF SURVEY RESULTS

The responses regarding the first objective to identify the online teaching and learning activities that happened during online classes are presented in Table 1. From table 1 above, 67% of the respondents indicated that there was interaction during lectures, this is shows the ability of lectures in the use of use of online tools for teaching. As a lecturer, a good coordination of classes, while the class is on-going is expected, 88% of the respondents indicated that there was coordination of the classes by the lecturer and 83% of the respondents revealed that there was cooperation amongst the students. Also, 92% of the respondents revealed that the attendance of students in online. According to 53% of the respondents, there were responses by the students during classes. According to 67% of the respondents, students responded to assignments and class work. Lecturers explanation and discussion of concepts during the classes was noted by 82% of the respondents.

According to 90% of respondents, lecturers were flexible on choice of online technology used for teaching of students. Also, 90% of respondents indicated that there was online teaching of core computer engineering courses. This implies that lecturers taking core computer engineering courses taught the students accordingly.

All of the respondents indicated that there was no practical demonstration of the concepts or aspects that involve experiments .The practical component of the courses from table obviously was a miss out .Essentially, practical constitute a major aspect of any engineering work, which is taught and monitored at the various laboratories in the department of computer engineering. Also, it was revealed that 47% of the respondents noted that learning during the COVID-9 lockdown study period was passive as against their learning before the COVID-19 pandemic i.e. before the classroom was switched to online.

The responses regarding the second objective; the various online teaching tools employed by lecturers in the department of computer engineering to teach students during lockdown are presented in Table 2. The table 2 above revealed that WhatsApp/Telegram was used to teach computer engineering courses according to 78% of the respondents.

Table 1: Online Teaching and Learning Activity

S/N	Teaching and Learning Activity/Mode	Frequency	Percent

1	Interactivity during lectures	40	67
2	Coordination of class by lecturer	53	88
3	Cooperation of students	50	83
4	Attendance of students in online classes	55	92
5	Students' responses during classes	32	53
6	Response of students to assignments and class work	40	67
7	explanation/discussion of concept by lecturers	49	82
8	lecturers flexibility on choice of online technology used for teaching	54	90
9	online teaching of core computer engineering courses	54	90
10	Activeness of Learning	28	47
11	Practical Demonstration of Concepts or Experiments	0	0

77% of the respondents revealed that study materials were provided in the form of pdf/ppt/word format.28% of the respondents indicated that video lectures were used. 20% of the respondents indicated that there was Information about Learning Resources on YCT Learning Management System(LMS).YCT supported tools for Online classes e.g Zoom, Hangout were used for lectures according to 5% of the respondents. However, there are many other tools which can be used for online education this include Cisco WebEx.8% of the respondents indicated that email was used. Also, 5% of the respondents indicated that tools such as Blog, Google Form, Googlemeet etc were used to teach computer engineering courses.

The responses regarding the third objective on challenges experienced by students on online classes during the lockdown. The difficulties were carefully identified from the literature. These are:

a. Erratic Power supply.
b. Lack of Internet Access
c. Poor internet connectivity
d. Non-availability of e-learning resources(Laptop, Desktop etc)
e. Lack of adequate technical skills

Responses of the respondents on the challenges experienced by students during lockdown ,were obtained on a 5 –point Likert scale, and these were converted to scores .This was achieved by multiplication of each of responses with a weight by taking very low as 1,low as 2, moderate 3, high 4 and very high as 5.The Table 3 above revealed that the highest score is the erratic power supply followed by poor internet connectivity .The non-availability of e-learning resources is a major challenge in shifting to online mode, and this is followed by lack of internet access. Lack of adequate technical skill is the lowest of the scores.

Table 2: Online Teaching Tools Used by Lecturers in Computer Engineering During Lockdown

S/N	Online Teaching Tool	Frequency	Percent
1	WhatsApp/Telegram	47	78
2	Study material provided in pdf/ppt/word format	46	77
3	Video lectures	17	28
4	Information about Learning Resources on YCT Learning Management System(LMS)	12	20
5	Online classes via platforms e.g Zoom, Hangout	3	5
6	Email	5	8
7	Any other, Blog, Googleform, Googlemeet	3	5

Table 3: Challenges Experienced During Lockdown

S/N	Challenges	Very Low	Low	Moderate	High	Very High	Score	Remark
		Frequency						
1	Erratic Power supply	0	0	4	5	51	287	High
2	Lack of Internet Access	5	11	8	11	25	220	High
3	Poor internet connectivity	0	6	4	7	43	267	High
4	Non-availability of e-learning resources	5	11	6	10	28	225	High
5	Lack of adequate technical skills	43	12	0	2	3	90	Low
Average Score = 218								

The response regarding the fourth objective i.e. a framework for effective teaching method for computer engineering students after reopening of HEIs are presented in Figure 1:

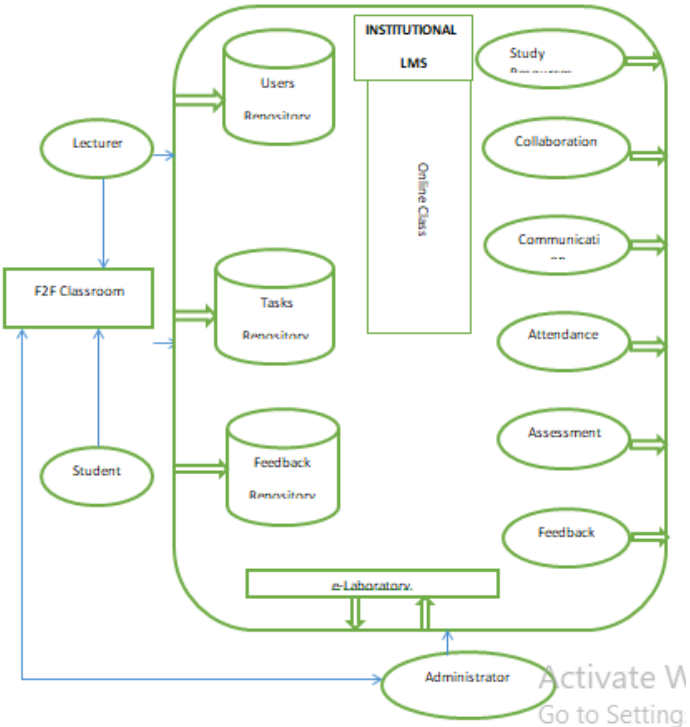

Fig 1: Framework for Effective Teaching Method

The figure 1 above shows the proposed framework for effective teaching method for computer engineering students. Three categories of users are Students, Lecturers and Administrator. The essential learning entities which include study resources, online classes, assessment, attendance, feedback communication, collaboration are presented within the Institutional Learning Management System (LMS).Three repositories are also presented within the LMS, these are users, tasks and feedback repositories. Essential entity which is used to handle practical courses whenever experiments are to be conducted is e-Laboratory. The e-laboratory provides software version of traditional equipment, instruments, devices and components which are used for practicals in a conventional laboratories. This is embedded within the LMS. Depending on schedule and timetable with appropriate privildeges, all the users can access either Face-to-Face classroom (F2F) or LMS for learning and teaching purposes.

5. CONCLUSION

In this paper, online learning experience of students in the computer engineering departments during COVID-19 pandemic lockdown was presented. Firstly, the online teaching and learning activities that happened during online classes were identified these include Attendance of students in online classes, interactivity during lectures, coordination of class etc. Secondly, the online teaching tools used by lecturers in computer engineering during lockdown include WhatsApp/ telegram and study material provided in pdf/ppt/word format as the topmost tools used by lecturers. Thirdly, the challenges experienced by students on online classes during the lockdown include amongst others erratic power supply and poor internet connectivity are the most challenging issues student had during the lockdown. Lastly, a framework for effective teaching method for computer engineering students after lockdown was proposed, and this entails an e-laboratory capable of handling the practical courses usually taken in laboratories. The framework is useful to other engineering programmes in Yaba College of Technology for effective teaching of students when the HEI is reopened. The framework is a useful tool for design of teaching method for engineering courses in other HEIs.

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