E-Learning User Satisfaction Survey in Technological Education: A Stepwise Approach Towards Reengineering of Elearning in TVET

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Abstract

This paper appraised the adoption of eLearning in some selected institutions of learning during COVID-19 pandemic. Questionnaire was designed to collect data related to teaching and learning experience from sampled population comprising students and teachers from selected higher institutions of learning within southwest geopolitical zone of the Federal Republic of Nigeria. Findings from the analysis of data collected showed that majority of sampled population were not comfortable with e-learning platform adopted during COVID-19 pandemic, especially for the courses that are practical-oriented. Overall rating/assessment of eLearning platform adopted by the institutions was **47.9%**. The response from students in Social Science was **33.79%**, **3.2%** for students from Engineering/Basic Science, **10%** for Academic Staff (lecturers) and **0.9%** for academic staff (Technologists). It was exposed that none of the institutions sampled has eLearning platform of their own, and further enquiries revealed that some social media platforms like WhatsApp, Facebook and Telegram were adapted as eLearning platforms, with a few institutions using zoom and Moodle applications. Consequent upon the findings, authors of this paper proposed Universal Hybrid Model of in-person, online and offline e-learning platform with embedded virtual Laboratory, to address technological educational strategy, process, technology, and TVET culture.

Keywords: COVID-19, TVET, e-learning, virtual Laboratory, eLearning, satisfaction survey.

Introduction

E-learning is a conglomeration of teaching and learning supported by electronic media and its application, which can be synchronous or asynchronous (**Ladipo, Oyeyinka, & Yekini, 2012)**. The use of eLearning is not new in educational system; but the concept has never been taken seriously until recent time when outbreak of COVID-19 forced government to shut down educational system, to prevent spread of the deadly virus and student/teacher were directed to embrace e-learning.

ELearning has totally changed the manner in which teaching and learning take place in this era of global village and ICT proliferation compared to the old chalk-and-board physical class method of teaching and learning. ELearning offers the following benefit, among others: It accommodates students' and teachers' needs, lectures can be taken any number of times, it gives access to updated content, quick delivery of lessons, scalability, consistency, reduced costs, effectiveness, and less impact on the environment **(Sunil, 2017).**

In Nigeria's context, e-learning has never been taken seriously, especially in area of its application for teaching and learning. The use of chalk and board, and convergence of students in a classroom with face to face methodology is predominant in our educational system until recent time when covid-19 forced students and teachers to embrace eLearning. While eLearning struggles to survive at government-owned institutions some private institutions have seamless transition to eLearning using online method to provide learning to students before and during this pandemic (**Abubakar, 2020).**

The focus of this paper is to examine users' satisfaction (students and teachers) in the use of eLearning during COVID-19 pandemic in Technological education, and subsequently provide a uniform and sustainable e-learning platform for the best transition to eLearning in Nigeria polytechnics. The focus revolves around the following research objectives: identifying students' and teachers' perceptions of using eLearning platform during covid-19, analyzing educational interaction between the students and teacher on eLearning platforms, and to propose a framework for universal eLearning platform for technological education in Nigeria.

Literature Review

ELearning is undoubtedly the best alternative to solve problems of access to education that requires a purposeful strategy and policy to be aggressively pursued. Outbreak of Covid-19 pandemic has shown that eLearning has become sine-qua-non for access to education by teaming population of Nigeria educational seekers that is currently growing geometrically, while the available infrastructures to give them quality education via face-to-face method is growing arithmetically. Challenges facing eLearning implementation revolved around availability of qualified ICT personnel, erratic power supply, non-availability of modern information communication technology (ICT) resources like bandwidth, internet etc., non-inclusion in the teacher training curricular and/or basic levels of education (**Kyari et al., 2018; Yekini et al., 2020).**

In recent times, Elearning is becoming very popular as the numerical strength of ICT knowledge applications are increasing; with eLearning, students will have 24/7 access to the educational resources compared to face-to-face instructor-led training. The recent outbreak of Covid-19 pandemic has revealed that eLearning is the future of education, which will soon replace the traditional method of face-to-face physical learning (**Sumit, 2012).**

Experiences from the use of eLearning platforms vary from one individual student/teacher to another, but there is revelation that teaching with eLearning platforms has been a great experience and welcome development in educational sector (**Dan, Bologa, & Ioan, 2014)**.

The first popular eLearning platform – Moodle (i.e. Modular Object-Oriented Dynamic Learning Environment) was released in year 2002. Moodle has continued to evolve since 1999 (since 2001 with the current architecture). "It has been translated into over 100 different languages and is accessible in many countries worldwide and Institutions can add as many Moodle servers as needed without having to pay license fees". Moodle can be used for blended learning, distance education, flipped classroom and other eLearning intervention in schools. Moodle is used for blended learning, distance education, flipped classroom and other e-learning projects in schools, universities, workplaces and other sectors (**Horvat, Dobrota, Krsmanovic, & Cudanov, 2015; Gavin, 2013; Costello, & Eamon, 2013; Krassa, 2013).**

There is no doubt that elearning production is growing fast with a shatterproof of evidence of emerging online learning platforms that offer the opportunity to create online courses such as LearnWorlds, Udemy, Skillshare, Coursera, Thinkific, Open-edX, WizIQ, Teachable, Kajabi, LearnDash, and Podia (Kyriaki, 2020).

Methodology

Questionnaire for User Interaction Satisfaction QUIS was used to gather data from sampled population of students and teachers on user satisfaction and perception of eLearning application during Covid-19 pandemic outbreak in the polytechnic educational sector in Nigeria. The sampled population comprises 219 respondents selected from public polytechnics in southwest Nigeria using the author-designed QUIS. We have two categories from the sampled population: students and academic staff. Students were further classified into Social sciences and Engineering/Basic Science, while Academic staff was classified into lecturers and technologists.

Data obtained are presented in the tables and figures as follow:

Table 1: Students

Category	*Respondent*
Social sciences	97
Engineering/Basic Science	42

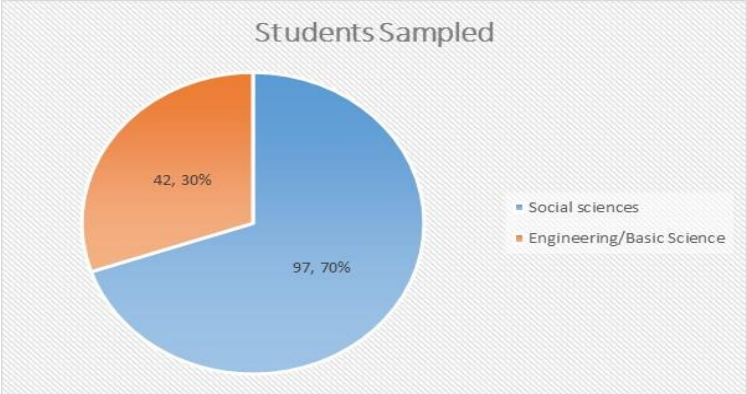

Figure 1: *Students sampled*

Table 2: Academic staff

Category	*Respondent*
Lecturers	57
Technologists	23

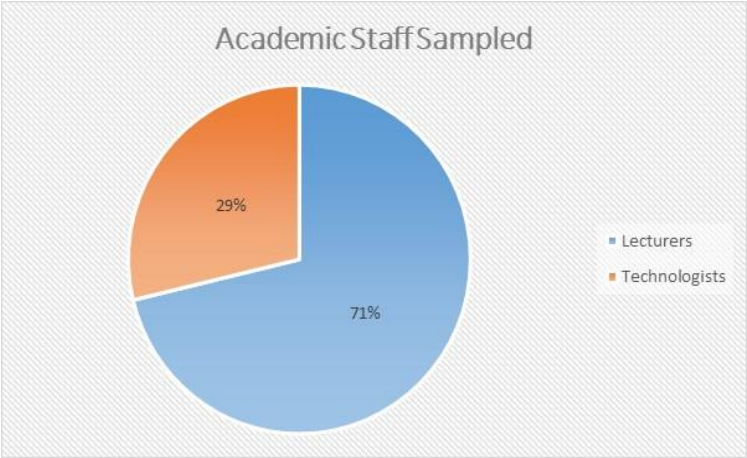

Figure 2: *Academic Staff sampled*

Responses by each category of participants are presented in Tables 3, 4, 5, 6 and 7.

Table 3. Response from Social Sciences Students

QUESTIONS	RESPONSE			
	YES	**%**	**NO**	**%**
Did your school support teaching and learning with eLearning platform during covid-19 lockdown?	97	100.0	0	0.0
Did your institution has its own eLearning platform before covid-19 outbreak?	0	0.0	97	100.0
Did the platform used facilitate the availability of course materials?	63	64.9	34	35.1
Did the platform used promote autonomous learning?	89	91.8	8	8.2

Did the platform used allow to deepen the mastering of the course?	76	78.4	21	21.6
Face-to-face method of teaching and learning in Technological education should be totally replaced with eLearning.	81	83.5	16	16.5
ELearning satisfactorily reduce unholy interaction between the students and lecturers	87	89.7	12	12.4
ELearning platform fosters didactic interaction between the students and lecturers.	77	79.4	20	20.6
There is need to redesign a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector.	93	95.9	4	4.1
The overall rating/assessment of eLearning platform adopted by your institutions is satisfactory with curriculum requirement of your course/s.	74	76.3	23	23.7

From Table 3, **100%** of respondents affirmed that their school used eLearning approach to support teaching and learning during Covid-19 lockdown. None of the institutions had eLearning platform before the lockdown**. 64.9%** and **91.7%** were respectively of the opinions that the platform used facilitated the availability of course materials and promoted autonomous learning. **78.4%** and **83.5%** testified that eLearning used allowed to deepen the mastering of the course, and it could replace Face-to-face method of teaching and learning in Technological education. **89.7%, 79.3%** and **95.9%** of respondents were respectively of the opinion that ELearning reduced unholy interaction between the students and lecturers, fostered didactic interaction between the students and lecturers, and there was need for a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector. **76.3%** of the respondents were satisfied with eLearning platform adopted by their institutions as regards curriculum requirement of their course/s.

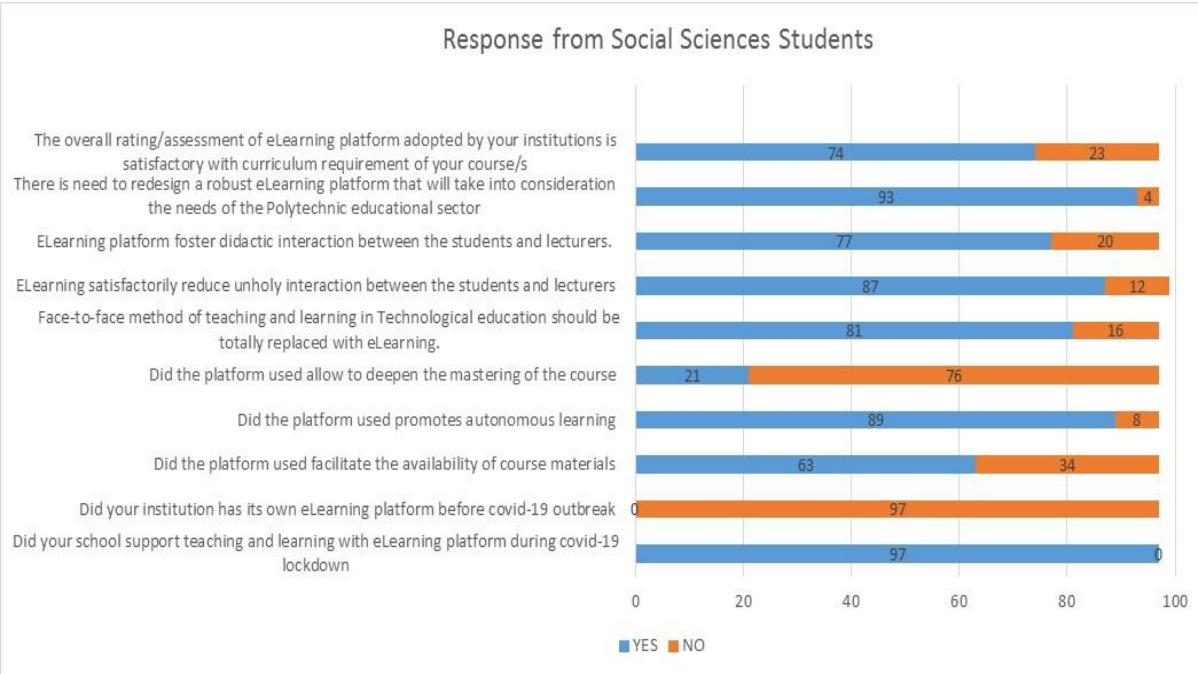

Figure 3: Response from Social Science students

Table 4. Response from Engineering/Basic Science Students

QUESTIONS	**RESPONSE**			
	YES	**%**	**NO**	**%**
Did your school support teaching and learning with eLearning platform during Covid-19 lockdown?	42	100	0	100
Did your institution has its own eLearning platform before Covid-19 outbreak?	0	0.0	42	0.0
Did the platform used facilitate the availability of course materials?	13	31.0	29	100
Did the platform used promotes autonomous learning?	18	42.9	24	69.0
Did the platform used allow to deepen the mastering of the course?	12	28.6	30	57.1
Face-to-face method of teaching and learning in Technological education should be totally replaced with eLearning.	9	21.4	33	71.4
ELearning satisfactorily reduce unholy interaction between the students and lecturers.	39	92.9	3	78.6
ELearning platform foster didactic interaction between the students and lecturers.	19	45.2	23	7.1
There is need to redesign a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector.	42	100	0	54.8
The overall rating/assessment of eLearning platform adopted by your institutions is satisfactory with curriculum requirement of your course/s.	7	16.7	35	0.0

From table 4, **100%** of the respondents affirmed that their school used eLearning approach to support teaching and learning during Covid-19 lockdown. None of the institution had eLearning platform before the lockdown**. 30.9%** and **42.8%** were respectively of opinion that the platform used facilitated the availability of course materials and promoted autonomous learning. **28.5%** and **21.4%** respectively testified that eLearning used allowed to deepen the mastering of the course and it could replace Face-to-face method of teaching and learning in Technological education. **92.8%, 45.2%** and **100%** of respondents were respectively of the opinion that ELearning reduced unholy interaction between the students and lecturers, fostered didactic interaction between the students and lecturers, and there was need for a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector. **16.7%** of respondents were satisfied with eLearning platform adopted by their institutions as regards curriculum requirement of your course/s.

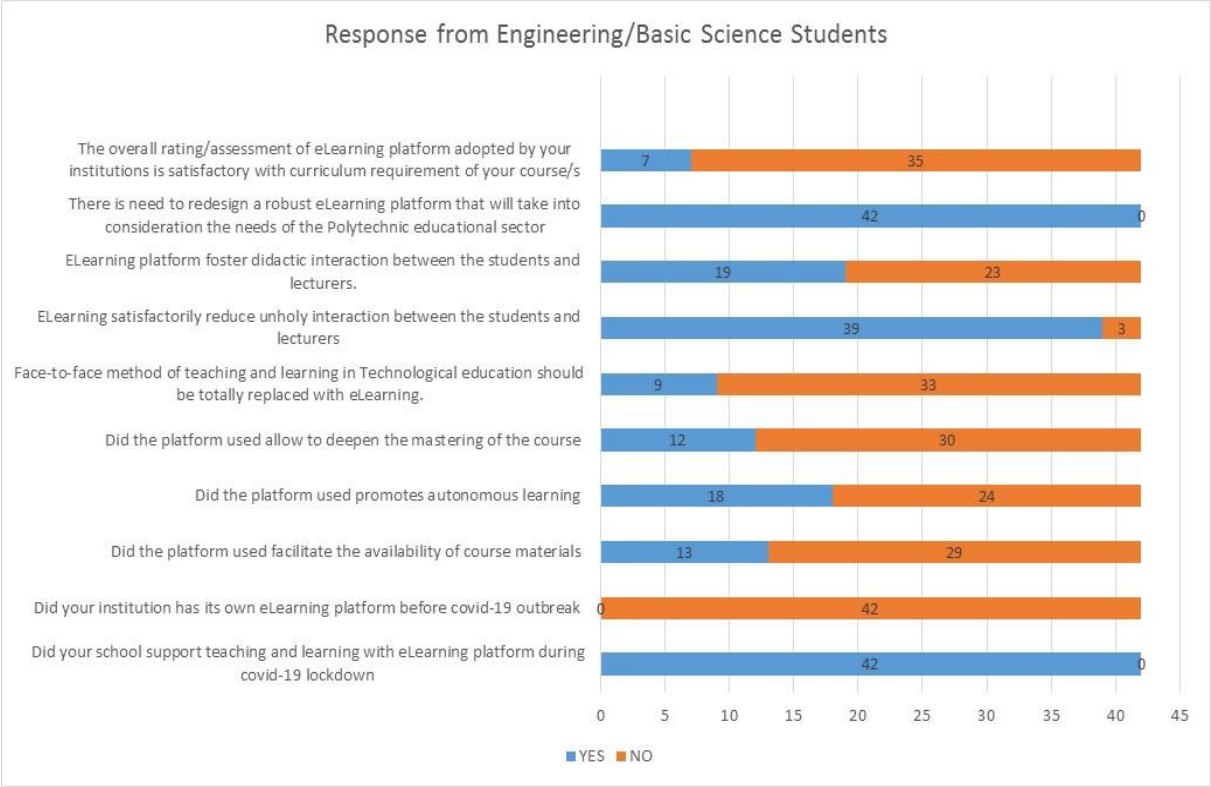

Figure 4: *Response from Engineering/Basic Science students*

Table 5. Responses from Academic Staff Lecturers

QUESTIONS	RESPONSE			
	YES	**%**	**NO**	
Did your school support teaching and learning with eLearning platform during Covid-19 lockdown?	57	100	0	0.0
Did your institution has its own eLearning platform before covid-19 outbreak?	0	0.0	57	100
Did the platform used facilitate the availability of course materials to students?	47	82.5	10	17.5
Face-to-face method of teaching and learning in Technological education should be totally replaced with eLearning.	19	33.3	36	63.2
ELearning satisfactorily reduce unholy interaction between the students and lecturers.	49	86.0	6	10.5
ELearning platform foster didactic interaction between the students and lecturers.	38	66.7	19	33.3
There is need to redesign a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector.	57	100	0	0.0
The overall rating/assessment of eLearning platform adopted by your institutions is satisfactory with curriculum requirement of your course/s.	22	38.6	35	61.4

From Table 5, all respondents (**100%)** affirmed that their school transformed to eLearning during Covid-19 lockdown, and that their institutions did not have eLearning platform before Covid-19 outbreak. **82.4%, 33.3%**, **85.9%**, and **66.7%** respectively affirmed that eLearning platform facilitated the availability of course materials to students, eLearning platform should replace Face-to-face method of teaching and learning, reduced unholy

interaction between the students and lecturers, and use of eLearning fostered didactic interaction between the students and lecturers. 100% of respondents supported redesign of robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector, while only **38.9%** were satisfied with eLearning platform meeting curriculum requirement.

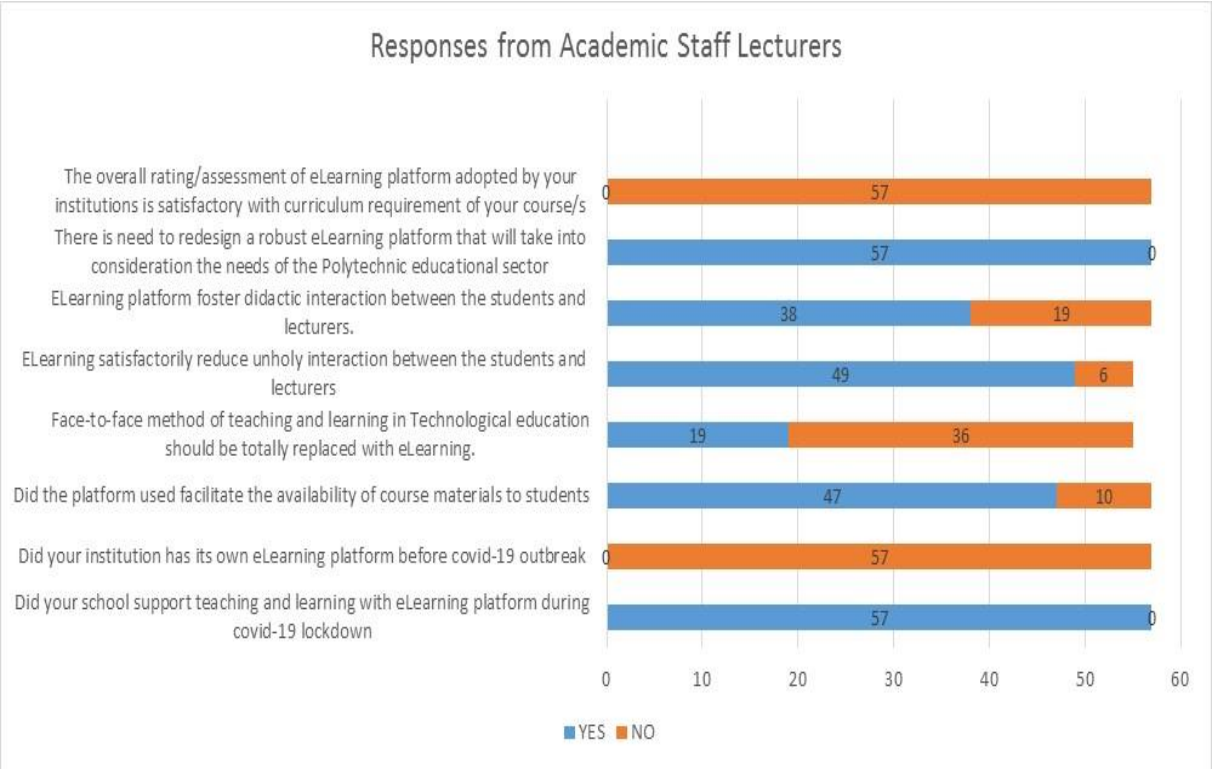

Figure 5: *Response from Academic Staff (Lecturers)*

Table 6. *Responses from Academic Staff Technologists*

QUESTIONS	**RESPONSE**			
	YES	**%**	**NO**	**%**
Did your school support teaching and learning with eLearning platform during covid-19 lockdown	23	100	0	0.0
Did your institution has its own eLearning platform before covid-19 outbreak	0	0.0	23	100
Did the platform used facilitate the availability of course materials	4	17.4	19	82.6
Face-to-face method of teaching and learning in Technological education should be totally replaced with eLearning.	0	0.0	23	100
ELearning satisfactorily reduce unholy interaction between the students and lecturers	19	82.6	4	17.4
ELearning platform foster didactic interaction between the students and lecturers.	21	91.3	2	8.7
There is need to redesign a robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector	23	100	0	0.0
The overall rating/assessment of eLearning platform adopted by your institutions is satisfactory with curriculum requirement of your course/s	0	0.0	23	100

From Table 6, all respondents (**100%)** affirmed that their school transformed to eLearning during Covid-19 lockdown, and that their institution did not have eLearning platform before Covid-19 outbreak. **17.4%, 0%**, **82.6%**, **91.3%** respectively affirmed that eLearning platform facilitated the availability of course materials to students, eLearning platform should replace Face-to-face method of teaching and learning, use of elearning platform reduced unholy interaction between the students and lecturers, and use of eLearning fostered didactic interaction between the students and lecturers. **100%** of respondents supported the redesign of robust eLearning platform that will take into consideration the needs of the Polytechnic educational sector, while none of the respondents were satisfied that the eLearning platform meet curriculum requirement.

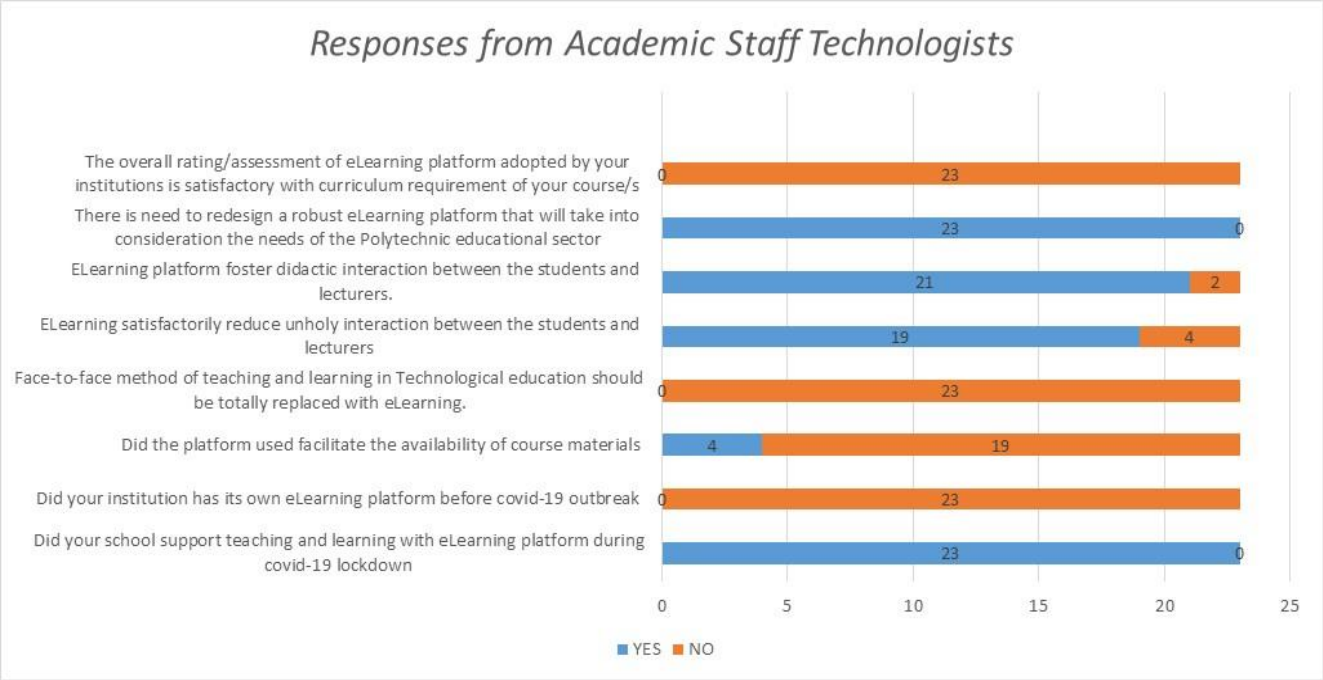

Figure 6: *Response from* Academic Staff (Technologists)

Findings

Findings from this research demonstrate that:

Majority of students from social sciences were satisfied with the use of eLearning platform, but strongly supported a robust eLearning platform that will take into consideration the needs of technological education in Nigeria.

Students that responded from engineering/basic science were not quite comfortable with the eLearning platform, and strongly supported a robust eLearning platform that will take into consideration the needs of technological education in Nigeria.

Majority of academic staff (lecturers) saw eLearning as a welcome development, but strongly supported reengineering of the platform to meet-up with technological education needs.

Majority of academic staff (Technologists) aw eLearning as a welcome development but were not satisfied with the one used during lockdown to meet curriculum need of technological education. Hitherto, they strongly supported the redesign of eLearning platform to meet with technological education requirement.

88.6% of respondents affirmed that eLearning satisfactorily reduced unholy interaction between the students and lecturers with percentage of responses as 8.68%, 22.37%, 17.8, and 39.73% for social science students, engineering/basic science students, lecturers and Technologists respectively.

Overall rating/assessment of eLearning platform adopted by the institutions was **47.9%.** The response from students in social science was **33.79%, 3.2%** for students from engineering/basic science, **10%** for academic staff (lecturers) and **0.9%** for academic staff (Technologists).

It was revealed that none of the institutions sampled had eLearning platform of their own, and further enquiries revealed that some social media platforms like WhatsApp, Facebook and Telegram were adapted as elearning platforms, with a few institutions using zoom and Moodle applications.

Conclusion and Recommendation

Summary of the findings is that eLearning is a welcome development in teaching and learning within technological education sector. The eLearning platform used during the lockdown was not tailored to meet the needs of teaching and learning in technological education; it fell short of satisfactory level of requirement. Hence, there is need for immediate response to redesign eLearning platforms for Technological education in Nigeria. The directive of the government for public schools to embrace eLearning, as a result corona virus disease pandemic, has uncovered the public institutions' shortfalls in using eLearning as teaching and learning resources. The outcome of this research work clearly indicated the need for urgent intervention by stakeholders in technological education to put in place strategy and policy to produce Universal Hybrid model of in-person, online and offline e-learning platform with embedded virtual Laboratory to address technological educational strategy, process, technology, and TVET culture.

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