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Competency Needs Improvement for Effective Content Delivery in the Era of Covid-19 Pandemic among Electrical/Electronic Lecturers in Colleges of Education in North-East Nigeria

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Abstract: ***This study highlighted critical concepts for managing the COVID-19 issue and its impact on electrical and electronic curricular content in colleges of education, arguing that the country cannot lose core principles and acknowledged strengths while also facing unprecedented disruption to educational systems. It is obvious that countries cannot make the globe into what it once was. This study intended to ascertain the competency gaps among Electrical/Electronics professors in colleges of education in North-East Nigeria in order to deliver content effectively in the face of the COVID-19 epidemic. The study used a descriptive survey research design and was led by two research questions and two hypotheses. The study's 62 participants were drawn from Federal Colleges of Education (Technical) in North-East Nigeria, where there were 49 lecturers and 13 technologists.There was no sampling because the complete population was used. As a tool for data collection, the researcher created a structured questionnaire titled Questionnaire for Lecturers' Competency Needs in Teaching Electrical/Electronics Curriculum Content in the Era of Covid-19 Pandemic. The instrument was validated by three professionals, and the Cronbach Alpha reliability method yielded a reliability of 0.87. The study questions were answered using the mean statistic, and the hypotheses were tested using the t-test at 0.05 level of significance. Learning Management System (LMS), Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous and Asynchronous Online Teaching Strategies are among the teaching strategies that needs improvement, according to the study's findings in the area of COVID-19. It was also discovered that lecturers need to develop their skills in using interactive whiteboards, PowerPoint, and online tools like LMS, CML, and CAI, among other things. As such, College administration should make sure that the ICT unit located at the institution holds training sessions for instructors on the various e-teaching apps. In order to keep lecturers' abilities in the use of ICT facilities up to date,***

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the National Commission for Colleges of Education (NCCE) should make sure they receive refresher courses on a regular basis.

Keywords: Competency Needs, Improvement, Content Delivery, COVID-19 Pandemic, Electrical/Electronics, Lecturers, Colleges of Education, North-East Nigeria.

1. INTRODUCTION

It is crucial to take care of students' educational needs during crisis period (health pandemic and war) as the COVID-19 pandemic wreaks havoc over the globe. The COVID-19 pandemic is a public health issue, and finding a vaccine or other drugs to prevent or treat COVID-19 infections, as well as developing methods to deliver such medications on a large scale, will be crucial to reducing the impact of the pandemic. According to Kaur, Dwivedi, Arora, and Gandhi (2020), public health and government officials must take non-pharmaceutical steps to prevent the spread of infection, such as social segregation (distancing), in order for pharmaceutical interventions to effectively lessen the effects of the pandemic.

In accordance with Rapanta, Botturi, Goodyear, Guàrdia, and Koole (2020), the large-scale non-pharmaceutical interventions of the COVID-19 pandemic vary by country but may include social isolation (such as prohibiting large gatherings and advising people not to socialize outside of their homes), border closures, school closures, steps to isolate symptomatic individuals and their contacts, and large-scale lockdowns of populations with all but essential internal travel prohibited.

As students and lecturers would be unable to physically meet in the various Colleges of Education in North East, Nigeria, the limitations brought on by non-pharmaceutical interventions like social distancing have also affected education at all levels and will continue to do so for at least several months (if not years). The options for pupils to learn throughout the period of social isolation will probably be limited by these restrictions on our capacity to meet during a protracted epidemic. It is common knowledge that time spends on learning (learning time), is one of the best indicators of a student's chance to learn.

Zalat, Hamed, and Bolbol (2021) contend that prolonged interruptions to one's studies result in both the suspension of learning time and the loss of knowledge and skills acquired. This disturbance will have an impact on people's livelihoods, educational aspirations, and community possibilities.

Because of this, it is essential that Electrical/Electronic lecturers design and put into practice solutions that lessen the pandemic's negative educational effects, adopt a proactive approach to teaching students, and guard against learning loss during the necessary social withdrawal. It is anticipated that lecturers in electrical and electronics would also help create possibilities to help reskill those affected by the epidemic and make it easier for them to reintegrate into the workforce.

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Competency is the collection of abilities needed to complete a task in a particular situation (Jones, Voorhees & Paulson, 2002). Competency was also defined by Marija and Palmira (2007) as the capacity to do an action satisfactorily as judged against a standard, particularly the capacity developed via experience or training. Competency includes abilities and dispositions that can be observed, measured, and required to carry out a task at a predetermined proficiency level independently (Sefyrin, 2005). Being competent refers to having the necessary knowledge and abilities to complete a task to a high quality. In order to teach Electrical/Electronic technology effectively and to be employable once the program is through, a qualified Electrical/Electronic lecturer should have the necessary skills and knowledge. In this new period of the COVID-19 pandemic, instructors must have the skills necessary to fill the void left by the epidemic. Information and communications technology (ICT), which mostly refers to the use of computers and the internet, is practically where these competencies are located.

ICT can help and improve learning, according to Beuermann, Cristia, Cueto, Malamud, and Cruz-Aguayo (2015). Lecturers who have access to computers and the Internet can conduct research and learn more than what is provided in textbooks. ICT also gives professors new opportunities to hone their craft. For example, they can maintain a personal website or online publication, program computers, converse with native speakers while learning a second language, and/or create a multimedia presentation on their own or with a team that is connected remotely (Barrera-Osorio & Linden, 2009). ICT tools combine previously dispersed educational resources (books, writing, audio, video, databases, games, etc.), hence expanding or integrating the range of times and locations where learning can occur (Livingstone, 2011). The full benefits of a technologically advanced world will only be realized by individuals who can control their own learning process and solve new difficulties as they occur (Hattie & Yates, 2013).

According to Moses, Ezugu, Amos, and Usman (2019), a student's education should include a curriculum that would prepare them for certification exams and entry into the workforce. As a result, curriculums represent the entirety of all learning opportunities offered to a learner while they are under the supervision of the school. The program includes lessons in a variety of disciplines. The term "contents" refers to what is taught in schools; it is the subject matter or subjects made up of information, ideas, and facts about a certain field and how they will affect both the individual and society (Lkama, 2013). The 1984 pre-vocational curricula created by the Federal Ministry of Education in collaboration with the former Comparative Education Study and Adaptation Center (CESAC) were the basis for the development of the Nigerian Certificate in Education (NCE) and the Nigeria Business and Technical Education Curricula (NBTE). The argument for curriculum development comes from research on comparative education systems and the pioneering curriculum integration project of CESAC (Falck, Mang & Woessmann, 2015).

The National Certificate of Education (NCE) curriculum for Electrical/Electronic includes Introduction to Electrical/Electronics, Auto Electrical System, Digital Electronics, and Telecommunication, according to the National Commission for Colleges of Education (NCCE,

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2012). The purpose of the Student Industrial Work Experience Scheme (SIWES), which is designed to give students industrial experience, understanding of how to operate and use machinery, and the management structures of industrial organizations, is to help them form positive work habits. Maintaining lecturers and graduates within the workforce updated requires having the necessary abilities in new and modern electrical and electronic systems (Ezugu, Moses, Amos & Usman, 2019).

The COVID-19 pandemic has made it more challenging to achieve the goals of the Electrical/Electronics curriculum in colleges of education because it has disrupted the academic calendar and as a result, requires new competencies on the part of the lecturers to achieve the program's aims and objectives.

Statement of the Problem

It is clear that neither Nigeria nor the rest of the globe can go back to how things were before the devastating outbreak. Inequalities within and across nations are already getting worse as a result of the pandemic's disruptions. Investments and structural reforms are urgently needed to prevent short-term setbacks from becoming more serious, long-lasting issues. There is a significant chance that COVID-19 would reverse decades of progress, most notably the advancements made in tackling the issue of teaching and learning in Nigerian colleges of education. Lecturers at the Federal Colleges of Education (Technical) in North-East Nigeria are working to navigate the COVID-19 pandemic and stay on top of the difficulties it poses for the teaching and learning process. Lecturers in the Federal Colleges of Education (Technical) in North-East Nigeria must exhibit competencies that will allow them to carry on with the teaching and learning of Electrical/Electronics in the face of the pandemic in order to navigate the COVID-19 pandemic and keep up with the challenges that come with it on the process of teaching and learning. This setting served as the context for the study.

Purpose of the Study

The main purpose of this study was to determine the lecturer's competency needs in teaching Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical), North-East Nigeria. Specifically, the study sought to determine:

1. The e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria
2. The lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria

Research Question

The following research questions were formulated to guide the study

1. What are the e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria?

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2. What are the lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria?

Hypothesis

The following hypotheses were formulated and testes at 0.05 level of significance.

H_{O1}: There is no significant difference in the mean response of lecturers and ICT experts on the e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria.

H_{O2}: There is no significant difference in the mean response of lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria

2. METHODOLOGY

The study adopted a descriptive survey research design and was conducted in North East geopolitical zone of Nigeria. North East, Nigeria is located within latitude 6.26^0 East and longitude 4.92^0 North East of the equator. The zone comprises of Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe States. The population of the study was 164 which comprised of 42 lecturers of electrical/electronic from Federal Colleges of Education (Technical) and 122 ICT experts in the 27 ICT establishments North East, Nigeria. Due to the manageable size of the population, there was no sampling, hence, the whole population was used for the study. The instrument used for data collection was a structured questionnaire developed by the researchers titled: "COVID-19 Pandemic Lecturers' Competency Needs Questionnaire". The responses on the questionnaire were structured on a 5-point Rating scale of Highly Needed (HN) = 5, Needed (N) = 4, Moderately Needed (MN) = 3, Slightly Needed (SN) = 2, and Not Needed (NN) = 1. The questionnaire was validated by three experts from the Department of Electrical Technology Education, Modibbo Adama University, Yola, Adamawa State. A reliability co-efficient of 0.78 was obtained for the instrument using Cronbach Alpha reliability method after conducting a trial test of the instrument in Jos, Plateau State. Data for the study was collected by the researchers with help of two research assistants. Mean statistic was used to answer the research questions while t-test was used to test the null hypotheses of the study.

3. RESULTS

Research Question One: What are the e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria?

Table 1: Mean and Standard Deviation of Lecturers and ICT experts on the e-teaching strategies needed for effective teaching

		Respondents	

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		N_l =42		N_{ICT} = 122		N_T = 164		
S/NO	**ITEMS**	$\bar{x}_l$	σ_l	$\bar{x}_{ICT}$	σ_{ICT}	$\bar{x}_G$	σ	**RMK**
1.	Ability to use Learning Management System (LMS)	3.98	0.78	4.08	0.64	4.05	0.68	Needed
2.	Ability to use Computer Managed Learning (CML)	3.98	0.87	3.94	0.50	3.95	0.61	Needed
3.	Ability to use Computer Assisted Instruction (CAI)	4.40	0.50	4.32	0.75	4.34	0.70	Needed
4.	Ability to utilize synchronous learning platforms	4.07	0.71	4.07	0.62	4.07	0.64	Needed
5.	Ability to utilize asynchronous learning platforms	4.00	0.80	3.87	1.14	3.90	1.06	Needed
6.	Ability to use adaptive teaching strategies	4.52	0.51	4.42	0.64	4.45	0.61	Needed
7.	Ability to use linear teaching strategies	4.38	0.49	3.98	0.61	4.08	0.61	Needed
8.	Ability to use interactive teaching strategies	4.07	0.71	3.95	0.76	3.98	0.75	Needed
9.	Ability to use individualized teaching strategies	4.29	0.64	3.99	0.55	4.07	0.59	Needed
10.	Ability to use online collaborative teaching strategies	4.26	0.91	3.75	0.61	3.88	0.73	Needed
	Group Mean	**4.20**		**4.04**		**4.08**		**Needed**

$\bar{x}_l$= Mean of Lecturers $\bar{x}_{ICT}$ = Mean of ICT Experts, σ_l = Standard deviation of Lecturers, σ_{ICT} = Standard deviation of ICT Experts, $\bar{x}_G$= Grand Mean, σ = Standard deviation N_l = Number of Lecturers, N_{ICT} = Number of ICT Experts, N_T= Total Number of Respondents, RMK = Remark

The data presented in Table 1 shows that all item had their means above the cutoff point of 3.50 with the group mean weight of 4.20 and 4.04 for both lectures and ICT experts. The overall group mean of 4.08 implies that the e-teaching strategies listed in item 1 - 10 are needed by lecturers for effective teaching. of Electrical/Electronics curriculum content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria

Research Question Two: What are the lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria?

Table 2: Mean and Standard Deviation of Lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching

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		Respondents						
		N_l =42		N_{ICT} = 122		N_T = 164		
S/NO	**ITEMS**	$\bar{x}$	σ_l	$\bar{x}_{ICT}$	σ_{ICT}	$\bar{x}$	σ	**RMK**
11.	Ability to create online group	4.38	0.49	4.35	1.08	4.36	0.96	Needed
12.	Ability to upload learning materials online to students	4.52	0.51	4.14	1.03	4.24	0.94	Needed
13.	Ability to share learning materials online	4.48	0.51	4.40	0.84	4.42	0.77	Needed
14.	Ability to use video chat in lesson delivery	4.36	0.62	4.25	0.84	4.27	0.79	Needed
15.	Ability to use Web-application to live-stream audio lessons	4.55	0.55	4.57	0.95	4.56	0.87	Needed
16.	Ability to use Web-application to live-stream video lesson	4.29	0.71	4.39	0.54	4.36	0.58	Needed
17.	Ability to use Web-application to live-stream presentations within the lesson	4.38	0.54	3.76	0.80	3.92	0.79	Needed
18.	Ability to use Bongo Virtual Classroom to hold live classes	4.29	0.60	3.98	0.57	4.05	0.59	Needed
19.	Ability to use LEARN's chat feature to engage in live conversations with Students	4.29	0.51	4.07	0.49	4.12	0.50	Needed
20.	Ability to use Google Docs to simultaneously edit documents	4.52	0.51	4.34	1.10	4.38	0.98	Needed
	Group Mean	**4.41**		**4.23**		**4.27**		**Needed**

$\bar{x}_l$= Mean of Lecturers $\bar{x}_{ICT}$ = Mean of ICT Experts, σ_l = Standard deviation of Lecturers, σ_{ICT} = Standard deviation of ICT Experts, $\bar{x}_G$= Grand Mean, σ = Standard deviation N_l = Number of Lecturers, N_{ICT} = Number of ICT Experts, N_T = Total Number of Respondents, RMK = Remark

The data presented in Table 2 shows that all item had their means above the cutoff point of 3.50 with the group mean weight of 4.41 and 4.23 for both lectures and ICT experts respectively. The overall group mean of 4.27 implies that the information and communication technology (ICT) skills listed in item 11 - 20 are needed by lecturers for effective teaching. of Electrical/Electronics curriculum content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria.

Hypothesis One

There is no significant difference in the mean response of lecturers and ICT experts on the e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum

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Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria.

Table 3: t-test Statistical Analysis of Difference between the Mean Responses of the Lecturers and ICT Experts Lecturers' e-teaching Strategies Needed

S/N	Items	Respondent	N	$\bar{x}$	σ	df	t	p	Rmk
1.	Ability to use Learning Management System (LMS)	Lecturers	42	3.98	0.78	162	-0.874	0.383	NS
		ICT Experts	122	4.08	0.64				
2.	Ability to use Computer Managed Learning (CML)	Lecturers	42	3.98	0.87	162	0.304	0.761	NS
		ICT Experts	122	3.94	0.50				
3.	Ability to use Computer Assisted Instruction (CAI)	Lecturers	42	4.40	0.50	162	0.683	0.496	NS
		ICT Experts	122	4.32	0.75				
4.	Ability to utilize synchronous learning platforms	Lecturers	42	4.07	0.71	162	-0.020	0.984	NS
		ICT Experts	122	4.07	0.62				
5.	Ability to utilize asynchronous learning platforms	Lecturers	42	4.00	0.80	162	0.692	0.490	NS
		ICT Experts	122	3.87	1.14				
6.	Ability to use adaptive teaching strategies	Lecturers	42	4.52	0.51	162	0.970	0.333	NS
		ICT Experts	122	4.42	0.64				
7.	Ability to use linear teaching strategies	Lecturers	42	4.38	0.49	162	3.896	0.000	S
		ICT Experts	122	3.98	0.61				
8.	Ability to use interactive teaching strategies	Lecturers	42	4.07	0.71	162	0.902	0.368	NS
		ICT Experts	122	3.95	0.76				
9.	Ability to use individualized teaching strategies	Lecturers	42	4.29	0.64	162	2.857	0.055	NS
		ICT Experts	122	3.99	0.55				
10.	Ability to use online collaborative teaching strategies	Lecturers	42	4.26	0.91	162	4.124	0.073	NS
		ICT Experts	122	3.75	0.61				

P >0.05 N= Number of respondents, S = Significant, NS = Not Significant, σ= Standard Deviation

The result presented in Table 3 sowed that nine out of 10 e-teaching strategies had their p-values which ranges between 0.073 and 0.984 which is greater than the α-value of 0.05 which indicated no significant difference in the mean responses of lecturers and ICT experts. Meanwhile, item 7 shows significant difference in the opinion of lecturers and ICT experts

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with p-value of 0.00 which is less than the α-value of 0.05. Therefore, the null hypothesis of no significant was upheld.

Hypothesis Two

There is no significant difference in the mean response of lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria

Table 4: t-test Statistical Analysis of Difference between the Mean Responses of the Lecturers and ICT Experts Lecturers' ICT Skills Needs

S/N	Items	Respondent	N	$\bar{x}$	σ	df	t	p	Rmk
11.	Ability to create online group	Lecturers	42	4.38	0.49	162	0.165	0.869	NS
		ICT Experts	122	4.35	1.08				
12.	Ability to upload learning materials online to students	Lecturers	42	4.52	0.51	162	2.319	0.022	S
		ICT Experts	122	4.14	1.03				
13.	Ability to share learning materials online	Lecturers	42	4.48	0.51	162	0.542	0.589	NS
		ICT Experts	122	4.40	0.84				
14.	Ability to use video chat in lesson delivery	Lecturers	42	4.36	0.62	162	0.790	0.430	NS
		ICT Experts	122	4.25	0.84				
15.	Ability to use Web-application to live-stream audio lessons	Lecturers	42	4.55	0.55	162	-0.115	0.908	NS
		ICT Experts	122	4.57	0.95				
16.	Ability to use Web-application to live-stream video lesson	Lecturers	42	4.29	0.71	162	-0.951	0.343	NS
		ICT Experts	122	4.39	0.54				
17.	Ability to use Web-application to live-stream presentations within the lesson	Lecturers	42	4.38	0.54	162	4.639	0.000	S
		ICT Experts	122	3.76	0.80				
18.	Ability to use Bongo Virtual Classroom to hold live classes	Lecturers	42	4.29	0.60	162	3.018	0.003	S
		ICT Experts	122	3.98	0.57				
19.	Ability to use LEARN's chat feature to engage in live conversations WITH Students	Lecturers	42	4.29	0.51	162	2.475	0.014	S
		ICT Experts	122	4.07	0.49				
20.	Ability to use Google Docs to simultaneously edit documents	Lecturers	42	4.52	0.51	162	1.070	0.286	NS
		ICT Experts	122	4.34	1.10				

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P >0.05 N= Number of respondents, S = Significant, NS = Not Significant, σ= Standard Deviation

The result presented in Table 4 sowed that six (11, 13, 14, 15, 16 and 20) out of 10 ICT skills had their p-values which ranges between 0.286 and 0.908 which is greater than the α-value of 0.05 which indicated no significant difference in the mean responses of lecturers and ICT experts. However, item 12, 17, 18 and 19 showed significant difference in the opinion of lecturers and ICT experts with p-value range of 0.000 and 0.022 which is less than the α-value of 0.05. Therefore, the null hypothesis of no significant difference was upheld.

Findings of the Study

1. In the area of COVID-19, lecturers need improvement in the following e-teaching strategies: Learning Management System (LMS), Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous and Asynchronous Online teaching; Adaptive, Linear, Interactive, Individual and online collaborative teaching strategies
2. In the area of COVID-19, lecturers need improvement in the following ICT skills: Ability to create online group upload learning materials online to students, share learning materials online, use video chat in lesson delivery, use web-application to live-stream audio lessons, use Bongo Virtual Classroom to hold live classes
3. There is no significant difference in the mean response of lecturers and ICT experts on the e-teaching strategies needed for effective teaching of Electrical/Electronics curriculum Content in the era of Covid-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria.
4. There is no significant difference in the mean response of lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching of Electrical/Electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria

4. DISCUSSION OF FINDINGS

Findings of the study on research question 1 revealed that in the area of COVID-19, lecturers need improvement in the following e-teaching strategies: Learning Management System (LMS), Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous and Asynchronous Online teaching; Adaptive, Linear, Interactive, Individual and online collaborative teaching strategies. The supporting hypothesis tested revealed that there is no significant difference in the mean response of lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching of electrical/electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria. The finding is in agreement with Avvisati, Hennessy, Kozma and vincent-Lancrin (2013) who in their submission asserted that schools are rapidly moving from analogue to digital. Avvisati, Hennessy, Kozma and vincent-Lancrin, and Sintema (2020) proposes that in order for schools to be fully integrated into the digitation, teacher must acquire certain skills that will enable them to fit into the digital world. With the continued presence of the pandemic, school will

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from time to time remain close and as such Muftahu (2020) retorted that in order to sustain educational goals, teaching and learning processes must migrate rapidly to ICT arena.

Findings of the study on research question 2 revealed that in the area of COVID-19, lecturers need improvement in the following ICT skills: Ability to create online group upload learning materials online to students, share learning materials online, use video chat in lesson delivery, use web-application to live-stream audio lessons, use Bongo Virtual Classroom to hold live classes. The complementing hypothesis revealed that there is no significant difference in the mean response of lecturers and ICT experts on the lecturers' ICT skills needed for effective teaching of electrical/electronics curriculum content in the era of COVID-19 Pandemic in Federal Colleges of Education (Technical) in North-East Nigeria. The findings is in agreement with Owusu-Fordjour, Koomson and Hanson (2020) and Hattie and Yates (2013) who reported that learning must be visible to the learner and as such the teacher must in all matters ensure that he brings the learning materials in a virtual environment to the understanding of the students by integrating ICT materials, gadgets and applications into the teaching process. Mbiydzenyuy (2020) and Falck, Mang and Woessmann (2015) reported that in a virtual environment, teachers must understand and acquire

5. CONCLUSION

e-learning was underutilized in the past, especially in developing countries. However, the current crisis of the COVID-19 pandemic enforced the entire world to rely on it for education. It is on this ground that improving lecturers' competency needs in teaching Electrical/Electronics curriculum content in the era of covid-19 pandemic in Federal Colleges of Education (Technical) in North-East Nigeria becomes as a positive step towards evolution and change in teaching and learning.

Recommendations

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

1. The College management should ensure that the ICT unit domicile in the school organize training workshop for lecturers on the various e-teaching applications.
2. National Commission for Colleges of Education (NCCE) should ensure that lecturers are given refresher courses regularly to update their skills in ICT facility utilization.

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