

Application of ICT Towards Minimizing Traditional Classroom Challenges of Teaching and Learning During Covid-19 Pandemic in Rivers State Tertiary Institutions

Ukata, Philip Festus (FIPMD, MABSEN, MISMN, MABEN, MTRCN, MECRTD)

Department of Office Technology and Management,
School of Business and Administrative Studies,
Captain Elechi Amadi Polytechnic,
Rumuola, Port - Harcourt.

E-mail: ukata4mephilip@yahoo.com

Tel: No: +2348038877937

Onuekwa, Faith Adanne

Department of Office Technology and Management,
School of Business and Administrative Studies,
Captain Elechi Amadi Polytechnic,
Rumuola, Port - Harcourt.

Abstract

The study adopted correlation research design on application of ICT towards minimizing traditional classrooms challenges of teaching and learning during covid-19 pandemic in Rivers state tertiary institutions. The study covered Rivers State University, Ignatius Ajuru University of Education, Captain Elechi Amadi Polytechnic and Kenule Beeson Saro-Wiwa Polytechnic. The population of the study was numbered 224 lecturers. The sampling technique adopted was census-sampling technique with a sample size of 224. The instrument used was called “Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom During COVID-19 Pandemic In Rivers State Higher Institutions” with a four point scale. Three experts validated the instrument, a field trial of test retest was done on 20 lecturers via telephone calls, and email because of the COVID-19 pandemic to know the internal consistency using Scale Score Reliability Estimates of Test-Retest Sample was which yielded 0.87 reliability coefficients. 224 questionnaires items were administered through phone calls and email to the respondents and 220 successfully retrieved. The study find out that teaching and learning in traditional classrooms during COVID-19 pandemic can pose a lot of danger to students, teachers, non-academic staff, and management, and that proper application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during this pandemic. Among other things, it was recommended that Rivers state tertiary institutions should adopt application of ICT towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic.

Keywords: *ICT, challenges of teaching and learning, application of ICT, traditional classrooms, minimizing challenges of teaching and learning, COVID-19 pandemic, in Rivers state, and higher institutions*

Introduction

Baş, Kubiato, & Sünbül, (2016) defines ICT as technologies that help us record, store, process, retrieve, transfer, and receive information. Technology has changed the way people live, work and learn. The use of technology in education is one of the main challenges for education policy makers (Aflalo, Zana, & Huri, 2018). The traditional methods of education are no longer able to

meet the needs of today's learners. New technologies provide opportunities, including the ability to tailor teaching and learning to the individual (Baker, Goodboy, Bowman, & Wright, 2018). This is also called electronic learning or isual learning. Teaching involves the process of assisting the learner to gain useful skills, attitudes, knowledge, ideas; values in an arranged or unarranged environment that will assist the learner become an acceptable person to the society as well as be independent in life, while learning is the relatively permanent change in a person's knowledge or behaviour due to experience (Theelearningcoach.com, 2018). The over dependence on the traditional methods of teaching and learning are not adequate, especially this period of COVID-19 pandemic that discourages sitting close which is the basic element of traditional methods of teaching and learning. Traditional method of teaching and learning is the normal face to face classroom activities between teachers and the students.

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. World Health Organisation has declared coronavirus as a global pandemic without cure or vaccine. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness (World Health Organisation, n.d). The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, it causes and how it spreads. Protect oneself and others from the infection by washing one's hands or using an alcohol based sanitizer frequently and not touching your face, nose and mouth. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it is important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow or handkerchief) (World Health Organisation, n.d).

Most infected people will develop mild to moderate illness and recover without hospitalization. Most common symptoms are: fever, dry cough, and tiredness. Others are aches and pains, sore throat, diarrhoea, conjunctivitis, headache, loss of taste or smell and a rash on skin, or discolouration of fingers or toes. This pandemic has halted all global human economic activities and threatened with trembled the existence of man engrossed with fear because of the inexplicable high rate of transmissions and deaths recorded across the globe, Nigeria with her poor health system included. Across the nations, educators are responding valiantly to the unprecedented health crisis and its ramifications for students, educators, and communities. Leaders and staff are charting new course for this unique time. Educators' efforts to navigate through this challenging situation and commitment to their students as an inspiration for success of their dreams, Nigeria cannot be exceptional.

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it is absolutely impossible to carry on with the traditional classrooms management of teaching and learning of face-to-face interactions between teachers (lecturers and students, students and students), as well as the non-academic staff and management.

As such, the urgent need for the application of ICT towards minimizing traditional classrooms challenges of teaching and learning during covid-19 pandemic in Rivers state tertiary institutions. The three approaches of ICT in education are the (1): form of lesson units or workshops for students and teachers, (2) : ICT as a means of information storage and retrieval and a method of doing research, and (3) ICT as the channel for delivering and receiving instruction (Baydas & Goktas, 2016; Ebrahimi & Ira, 2009). Although so many scholars have written about challenges of ICT in Nigeria educational system, the justification for this study is its application towards minimizing challenges of teaching and learning during this global covid-19 pandemic in Rivers state tertiary institutions, such that academic calendar may not be disrupted.

Review of Related Literature

Characteristics of Traditional Classroom Vs Online learning

Sahayogablog.wordpress.com (2020), the following are some of the online and traditional classroom learning characteristics that may be applied during COVID-19 pandemic:

- The double A's: At Anytime from Anywhere.
- Flexible.
- Low pressure. E.g. Students participate in their own pace.
- Democratization of education.
- Student strategy, motivation and self-regulation.
- Easy collaboration geographically.
- Technical maintenance.
- Students are more independent
- Combination with LMS/LRS, let's the teacher track student activities.

Some Traditional Classroom Activities That Need To Be Avoided During COVID-19:

- ❖ Face to face mentoring in class and in teachers' office time
- ❖ Exercises and lab teaching
- ❖ Scheduled lectures, activities and fixed locations
- ❖ Student strategy, motivation, and self-regulation
- ❖ High pressure. E.g. Questions/Presentations
- ❖ Social stimulation
- ❖ Technology can be used but is not required
- ❖ Exam period in order to prepare for final exam
- ❖ Face-to-face exchanges between teachers(lecturers and students, students and students)
- ❖ Bodies contacts/interactions with and outside classrooms
- ❖ Moving round the class to assist students in correcting wrong behavior and activity
- ❖ Showing students good sitting positions and holding to place their fingers properly during task
- ❖ Moving from one office to another for enquiry
- ❖ Social distance not maintained

Guidelines for Preventing COVID-19 Pandemic

Federal Ministry of Health through Nigeria Centre for Disease Control set out the following guidelines as preventive measures (Federal Ministry of Health Nigeria, n.d):

1. Regularly and thoroughly wash hands with soap under running water and alcohol-based sanitizer if water is not available
2. Cover your mouth and nose with your bent elbow or tissue when you cough or sneeze. Dispose of the used tissue immediately
3. Avoid touching your eyes, nose, and mouth with unwashed hands
4. Maintain at least 1 and half metres (5 feet) distance between yourself and anyone who is coughing or sneezing
5. If you have travelled recently to a country with COVID-19 outbreak in the last 14 days and you have a fever, cough, or breathing difficulty call NCDC toll free line before going to the hospital
6. Avoid contact with people if you have travelled recently to a country with COVID-19 outbreak in the last 14 days

Maintaining social distance is a major part of preventive measures for COVID-19 pandemic, while the process of looking for end and cure are on, ICT will assist in minimize the challenges associated with the pandemic.

Challenges of Teaching and Learning in Tertiary Institutions

According to Blikstad-Bala and Davies (2017), Virkus (2012), challenges like dynamics of globalisation (population with crowded planet), evolving social challenges (change structure and patterns of life), changing world of work (changing life cycle patterns, more flexibility in the labour market), ICT (the next generation towards universal access, extensive use of computers. The evolving World Wide Web rapidly growing participation online, so the world is in your pocket). Other issues are independent learning, convenient of studies, pace learning, new courses, trends and organizational changes in the global market, technological driven systems globally, pedagogy, gap between theory and practice, social distancing, uniqueness of information which is challenges in educational system that could be minimized with the application of ICT approach (Díaz & Cano, 2019).

Schools, Teaching, Learning, and Computers during COVID-19 Pandemic

Schools management, stakeholders and educational systems must provide the infrastructure and support for students and teachers, and the maintenance of constructive learning environment in which ICT is used. At the same time ICT tools will assist schools and educational systems in carrying this out during this pandemic. Research has consistently shown that few schools and teachers implement ICT support to a degree where the potential benefits are likely to be realized (Ditzler, Hong, & Strudler, 2016.). There are a number of significant problems which impede and prevent teachers from achieving the full advantage offered by ICT applications. Gil-Flores, Rodríguez-Santero, & Torres-Gordillo, (2017) gave seven requirements for effective use of ICT in education:

1. Suiting technology to education goals and standards.
2. Having a vision for the use of technology to support curriculum.
3. Providing for both in-service and pre-service training.
4. Ensure access to appropriate technology
5. Provide for administrative support for technology use
6. Providing time for teachers to plan and learn how to integrate technology
7. Providing for on-going technique support for technology use in general, these requirements fall into three areas of impact:
 - Providing the infrastructure of hardware and software,
 - Providing curriculum and technical support for teachers and students,
 - School organization, design, policies and practices, schooling, and management support to minimize challenges of teaching and learning.

ICT Approach towards Minimizing Challenges of Teaching and Learning during COVID-19 Pandemic

ICT can be used as an approach to minimize teaching and learning in the following ways (Nwigbo & Madhu, 2016)

1. Investigating Reality and Building Knowledge

ICT allows students to investigate more thoroughly the real world. They can access information sources outside the classroom and can use tools to analyse and interpret such information. Information may be accessed through online or through data logging systems. It also makes it easier for individuals to interact and gain expert knowledge with a very short time, thus making the acquisition of knowledge to take place easily within a very short period of time (Amalnik, Moayedi, & Mirzaei, 2015)

2. Active Learning and Authentic Assessment

ICT potentially offer increased possibilities for codification of knowledge about teaching and learning for innovation through deliver learning and cognitive activities anywhere at any time (Instefjord & Munthe, 2016). In many classroom situations, it is difficult to allow students to be sufficiently active as participants. Typically, students are often passive, spending a lot of time listening or reading. It is well known that, students are more likely to be interested and attentive and will achieve a wider range of learning outcomes if they can be active by participating and doing it themselves. Their engagements with the curriculum will increase tremendously as they are afforded opportunities to create their own information and represent their own ideas.

Expert system can be used to provide students with learning experiences where they are interacting directly with the computer system, and are not just passive but active participants in the learning process, thus increasing the quality of education (Salekhova, Nurgaliev, Zaripova & Khakimullina, 2013). Technology makes the students take an active role in learning instead of taking a passive role of receiving information from the teacher.

3. Engage Students by Motivation and Challenge

The interactive and multimedia nature of modern computer system has provided the opportunity for software developers to create more stimulating features. Computer system does provide the opportunity to create a wide range of interesting learning experiences as it makes learning, participatory and a social process supporting personal life goals and needs (Klette, Blikstad-Balas, & Roe, 2017). This is likely to help to maintain student interest increase, the interactive and multimedia features within software can be used to help students grapple with concepts and ideas contained in the curriculum (Instefjord & Munthe, 2017).

4. Provide Tools to Increase Students' Productivity

In the past students have spent a lot of times doing repetitive, low-level tasks particularly involving writing, drawing and computation. While it may be necessary for students to developing these skills at some times but in most occasions they are pre-requisite to some higher-level task. Unnecessary repetition of low-level tasks is inefficient, non-motivational and obscure in real purpose of the learning. Many computer applications provide the tools to support students quickly in completing these lower-level tasks so that they can focus on the main purpose of the activity. Word processors, graphics packages, database packages, spreadsheets, and other software that support the performance of the students. ICT has transformed teaching and learning processes from being highly teacher-dominated to student-centred, and this transformation will result in increased learning gains for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills, communication skills, and other higher-order thinking skills (Bhaurao, 2015).

5. Provide Scaffolding to Support Higher Level Thinking

There is an increasing range of software tools which can be used to support the development of higher thinking skills such as application, analysis and tools can be used to analyse data, present data, link data or information, present information in different formats, simulate environments and conditions and support interactive communications. This allows teachers to consider providing a range of activities to assist students to become critical thinkers, designers and problem solvers.

6. Increasing Learner Independence

Computer systems are increasingly being used to provide learning experiences when and where they are needed. This provides students with greater independence in terms of not only when and where they learn but also what they teach.

7. Collaborative and Co-Operative Learning

The use of ICT leads to more co-operation among learners within and beyond school and a more interactive relationship between students and teachers. Collaboration is a philosophy of interaction and personal lifestyle where individuals are responsible for their actions, including learning and respect the abilities and contributions of their peers while co-operation is a structure of interaction designed to facilitate the accomplishment of a specific end product or goal through people working together in groups (Juvonen, Tanner, Olin-Scheller, Tainio, & Slotte, 2019).

8. Tailoring Learning to the Learner

In most traditional learning situations, it is not possible to provide each student with an instructor and for that instructor to specially design learning experiences for that student. The closest to this is the apprenticeship system. The programmability and interactivity possible with computer systems provides the opportunity to develop software which stimulates the role of an instructor. Intelligent tutoring software may use information about the student to recommend appropriate sequences or sections of a tutorial for the student (Lawrence, & Tar, 2018).

9. Overcome Physical Disabilities

The variety of input and output devices available provides the opportunity for students who are physically handicapped to be involved in the same learning activities as other students. For some students, computers provide the only environment which they can manipulate and the only tools that reduce their level of disability. Modified keyboards and mouse-drivers may be used to allow extremely handicapped students to use regular software packages. For students who are not able to take notes during the course of the class, the system stores in a database lessons already taken for further studies and provides a more user friendly environment for blind students through audio interpretation of the course, thus enhancing their learning (Rusk, 2019).

10. Educational Productivity

Productivity is a concept happily found in economics textbooks where the productivity of a worker or economic unit is defined by dividing the output (revenue) by the input (cost). This is more difficult to define for the education industry since the output is not easily measured, particularly not in monetary terms to compare with the costs. The output is largely the quantity and quality of learning demonstrated by students, or learning outcomes. Educational technology should influence educational outcomes and costs. If the most appropriate educational technology is selected by a teacher then student learning should be optimized, which means an increase in the value of the outcomes.

11. Student Learning

There are many potential users of computers in the learning process. In some situations, changes in relevant industries make computer use in schools imperative. For example, to provide courses in music, technical drawing, statistics, and business which do not incorporate computer use, reduces the relevancy of the courses to the real world. Here the rationale cries out from the work place but needs to be responded to with careful impact of ICT on learning and teaching.

12. Management of Learning Experiences

The management of high quality educational programmes requires and generates large quantities and types of data. Teachers face many management problems which when analysed could be suitable for a computer solution. There are many such tasks which may be both time consuming and tedious for which teachers should consider a computer solution. Such tasks may include the organization of assessments, the maintenance of library functions, the preparation of reports and the organization of events. There are many school management packages which will complete tasks such as these and thereby free substantial amount of time for other more important tasks. Schools should make use of the opportunity to continually provide more appropriate solutions to the dynamic problems associated with the provision of schooling. According to Sahlström, Tanner, and Valasmo, (2019), Balanskat, Blamire and Kefala (2006) ICT is said to enable teachers to save time and increase productivity in activities such as:

- Access to a variety of information sources, forms and types
- Preparing and updating daily lessons;
- Plans, making hard copy visualisations and handouts for classes, as well as individualised educational plans for slower students and students with disabilities or with special problems;
- Presenting visual/oral content materials, tasks, and questions to the audience;
- Maintaining grade books;
- Compiling a data bank of exam questions;
- Online inspection and correction of students' work on their computers; and
- Keeping records, chronicles, and archives of all the above-mentioned events and proceedings with fast retrieval and easy access to any entry.

Statement of the Problem

Economic activities have been grinded globally with so much negative effect on all the sectors. The fear of the unknown of whom is a carrier of COVID-19 pandemic to be transmitted which may lead to death is what every reasonable human being is avoiding. The educational system in Nigeria is faced with the challenges of teaching and learning as well as transforming from the traditional ways with enhanced technological methods of imparting knowledge to diversified learners in the 21st-century. Application of ICT towards minimizing traditional classrooms challenges of teaching and learning during covid-19 pandemic in Rivers tertiary higher institutions seems to be the major approach of meeting the academic needs.

Purpose of the Study

The purpose of this study is to find out the application of ICT towards minimizing traditional classrooms challenges of teaching and learning during covid-19 pandemic in Rivers state tertiary institutions. The study specifically sought to:

1. Determine the challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions
2. Determine how application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions

Research Questions

The under stated research questions were posed to guide this study

1. What are the challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions?

2. What are the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions?

Hypotheses

Two null hypotheses were formulated and tested at 0.05 level of significance

1. There is no significant correlation between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions
2. There is no significant correlation on the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions

Method

The study adopted a correlation research design in the application of ICT towards minimizing challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions. The study covered Rivers State University (RSU), Ignatius Ajuru University of Education (IAUE), Captain Elechi Amadi Polytechnic (CEAPOLY) and Kenule Beeson Saro-Wiwa Polytechnic (KENPOLY). The population of the study was numbered 224 lecturers carefully and randomly selected from the four (4) tertiary institutions of twenty (20) departments with the percentages stated as follow: 1. Rivers state university had 66 representing 30% of the population with the following split (Library and Information (LIS.) – 10 (5%), Marketing (MKG.) – 11(5%), Crop/Soil Science (CSS) – 10 (5%), Mechanical (MECH) – 14 (6%) and Business Education(BUS. EDU.) – 21(9%)), 2. Ignatius Ajuru University of Education, Port-Harcourt had 56 representing 25% of the population with the following split (Management (MGT.) – 14(6%), Accounting (ACCT.) – 16 (7%), Marketing (MKG) – 11(%5), Secretarial Administration (SEC. ADMIN.) – 15 (7%)), 3. Captain Elechi Amadi Polytechnic had 52, representing 23% (Computer Engineering (ENGR.) – 8(2%), Computer Science (COM. SC.) – 11(5%), Public Administration (PUB. ADMIN.)– 11(5%), Mass Communication (MASS. COM.) – 9 (3%), Office Technology and Management (OTM) – 9 (3%), Accountancy (ACCT.) – 12 (5%)) and 4. Kenule Beeson Saro-Wiwa Polytechnic had 50 representing 22% of the population (Office Technology and Management (OTM) – 9 (4%), Computer Science (COM. SC) – 10 (4%), Business Administration and Management (BUS. ADMIN. MGT.)– 11(6%), Science Laboratory Technology (SLT) - 10 (4%) and Insurance (INSUR.) – 10 (4%)). The split is as stated below using Exploded Pie Chart in 3-D for the presentation of the population:

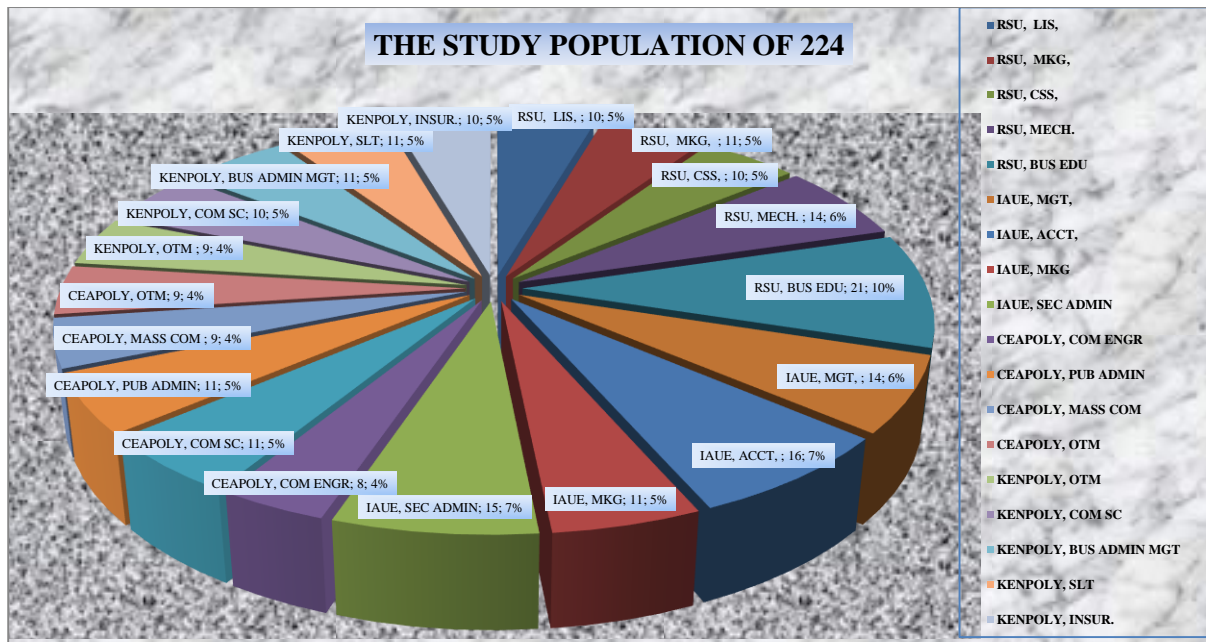


Figure 1: Exploded Pie Chart in 3-D. Presentation of the Population

The sampling technique adopted was census-sampling technique with a sample size of 224 of lecturers from the 20 departments of four Rivers state tertiary institutions that was the entire population. The reason for using the entire population was because the 224 size was controllable and convenient for the study. The Sample Size is as presented including their percentages in Exploded Pie Chart in 3-D below:

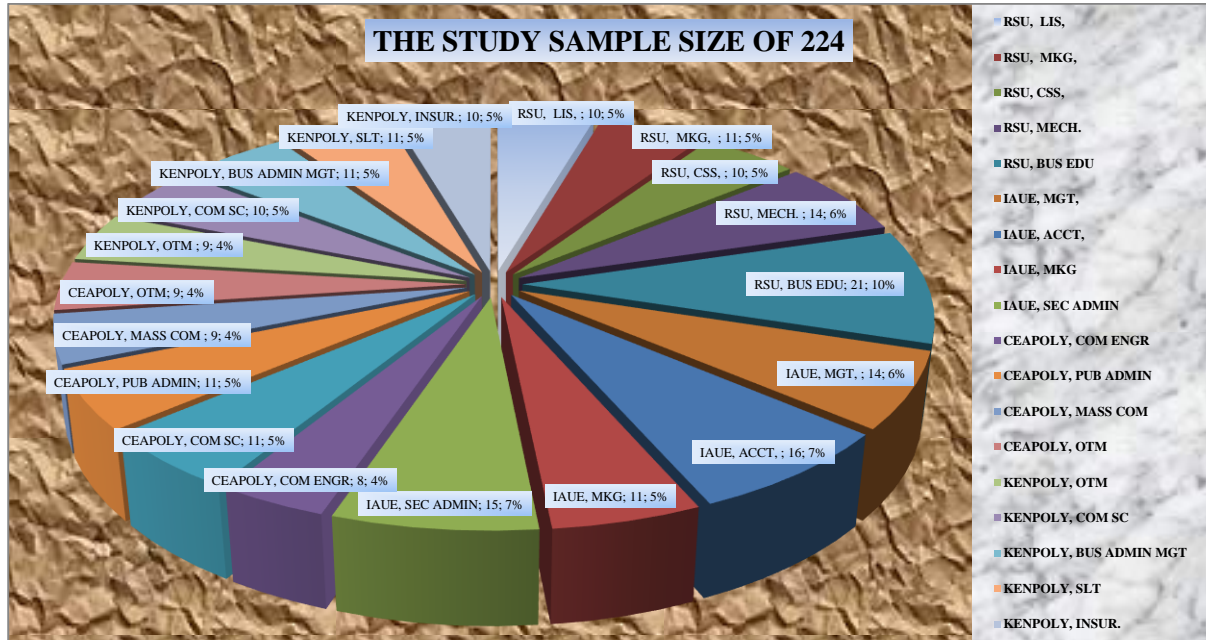


Figure 2: Exploded Pie Chart in 3-D. Presentation of the Sample

The instrument used was called “Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom And During COVID-19 Pandemic In Rivers State Tertiary Institutions. (AICTCOTALITCAD)” with a four point scale of Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (4 points), High Level of Application Of ICT Towards Minimizing

Challenges Of Teaching And Learning In Traditional Classroom (3 points), Low Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (2 points) and Very Low Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (1 point). Three experts from Rivers state university validated the instrument and a field trial of test retest was done on 20 lecturers of department of Business Education from university of Uyo via telephone calls and email because of the COVID-19 to know the internal consistency using Scale Score Reliability Estimates of Test-Retest Sample which yielded 0.87 reliability coefficients. 224 questionnaires items were administered through phone calls and email to the respondents and successfully retrieved 220.

Arithmetic mean was used to analyse the two research questions, and Standard Deviation used to find out the extent in which scores in the distribution clustered around the means. Pearson Product Moment Correlation Coefficient (r) was adopted as statistical tool to test the two hypotheses to determine the extent of significant relationship between the variables under investigation. Mean scores from 3.50 to 4.49 was seen as Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (4 points), 2.50 to 3.49 High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (3 points), 1.50 to 2.49 Low Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (2 points) and 0.50 to 1.49 Very Low Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom (1 point). The decision point was that, any calculated grand mean from 2.50 to 3.49 representing High Level of Application of ICT towards Minimizing Challenges of Teaching and Learning in Traditional Classroom (3 points) and above will be accepted and any grand mean below will be rejected. Also, any calculated value of (r) Pearson Product Moment Correlation Coefficient that is greater than > the critical table value of 0.113 at 0.05 significant levels such null hypothesis (H₀) will be rejected, but if the critical table value is greater than > the computed value such null hypothesis will be accepted. The decision points for (r) are as stated below:

From -0.1 to -0.5 = Very High Negative Significant Relationship (VHNSR)

-0.6 to -0.8= High Negative Significant Relationship (HNSR)

-0.9 to -1.0 = Negative Significant Relationship (NSR)

+0.1 to + 0.5 = Positive Significant Relationship (PSR)

+0.6 to +0.8 = High Positive Significant Relationship (HPSR)

+0.9 to +1.0 =Very High Positive Significant Relationship (VHPSR)

Research Question1: What are the challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions?

Table 1: Computation of Mean and Standard Deviation of Challenges of Teaching and Learning in Traditional Classroom during Covid-19 Pandemic in Rivers State Tertiary Institutions

N = 220, TRN = Total Number of Response				
SN	Item statements	\bar{x}	SD	Remark
1	Moving from one office to another for enquiry	3.6	0.90	VHLAICTTMCTLTC
2	No social distancing usually maintained	3.8	0.95	VHLAICTTMCTLTC
3	Face to face mentoring in class and in teachers' office time	3.8	0.95	VHLAICTTMCTLTC
4	Exercises and lab teaching	3.7	0.92	VHLAICTTMCTLTC

5	Scheduled lectures, activities and fixed locations	3.9	0.97	VHLAICTTMCTLTC
6	High pressure. E.g. Questions/Presentations	3.6	0.90	VHLAICTTMCTLTC
7	Face-to-face exchanges between teachers (lecturers and students)	3.8	0.95	VHLAICTTMCTLTC
8	Bodies contacts/interactions with and outside classrooms	3.8	0.95	VHLAICTTMCTLTC
9	Moving round the class to correcting wrong behaviours	3.7	0.92	VHLAICTTMCTLTC
10	Physical interaction within the classrooms	3.6	0.90	VHLAICTTMCTLTC
GRAND MEAN AND STANDARD DEVIATION		3.7	0.93	VHLAICTTMCTLTC

Field Study, (2020)

The grand mean of table 1 showed 3.7, representing Very High Level of Application of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state higher institutions. The grand standard deviation was 0.93, representing closeness in the views of the respondents on a Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions.

Research Question2: What are the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions?

Table 2: Computation Of Mean And Standard Deviation On The Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom During COVID-19 Pandemic In Rivers State Tertiary Institutions

N = 220, TRN = Total Number of Response

SN	Item statements	\bar{x}	SD	Remark
1	The double A's: At Anytime from Anywhere	3.6	0.90	VHLAICTTMCTLTCDCP
2	Flexible	3.8	0.95	VHLAICTTMCTLTCDCP
3	Low pressure. E.g. Students participate in their own pace	3.8	0.95	VHLAICTTMCTLTCDCP
4	Democratization of education	3.7	0.92	VHLAICTTMCTLTCDCP
5	Student strategy, motivation, and self-regulation	3.6	0.90	VHLAICTTMCTLTCDCP
6	Easy collaboration geographically	3.7	0.93	VHLAICTTMCTLTCDCP
7	Students are more independent	3.8	0.95	VHLAICTTMCTLTCDCP
8	Social distancing is maintaining	3.8	0.95	VHLAICTTMCTLTCDCP
9	Combination with, let's the teacher track student activities	3.7	0.92	VHLAICTTMCTLTCDCP
10	Elimination of physical interaction within the classrooms	3.9	0.97	VHLAICTTMCTLTCDCP
GRAND MEAN AND STANDARD DEVIATION		3.7	0.93	VHLAICTTMCTLTCDCP

Field Study, (2020)

The grand mean of table 2, showed 3.7, representing Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions.

The grand standard deviation was 0.93, representing closeness in the views of the respondents on a Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions.

Hypothesis 1: There is no significant correlation between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions

Table 3: Summary Table of Calculated (r) on the significant correlation between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions

SN	Variables	N	\bar{x}	SD	Df	Alpha Level	R-cal.	R-tab.	Decision	Remark
1	Challenges of Teaching and Learning in Traditional Classrooms	220	3.6	0.95						
2	During COVID-19 pandemic	220	3.7	0.97						
					218	0.05	0.911	0.113	Rejected	VHPSR

Field Study, (2020)

The calculated Pearson Product Moment Correlation Coefficient (r) 0.911 is greater than (>) the critical table value of 0.113 at 0.05 significant levels. Since the calculated value of (r) 0.911 is greater than (>) the critical table value of 0.113, the null hypothesis which stated that there is no significant correlation between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions is not accepted (rejected). The computed value of (r) 0.911 signifies a very high positive significant relationship between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions. This means that teaching and learning in traditional classrooms during COVID-19 pandemic in Rivers state tertiary institutions can pose a lot of danger to students, teachers, non-academic staff, and management.

Hypothesis 2: There is no significant correlation on the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions

Table 4: Summary Table Of Calculated (R) On The Significant Correlation Of The Application Of ICT Will Assist Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom During COVID-19 Pandemic In Rivers State Tertiary Institutions

SN	Variables	N	\bar{x}	SD	Df	Alpha Level	R-cal.	R-tab.	Decision	Remark	
1	Application of ICT towards minimizing challenges of teaching and learning in traditional classroom	220	3.7	0.94							
2	During COVID-19 pandemic	220	3.7	0.95							
						218	0.05	0.922	0.113	Rejected	VHPSR

Field Study, (2020)

The calculated Pearson Product Moment Correlation Coefficient (r) 0.922 is greater than (>) the critical table value of 0.113 at 0.05 significant levels. Since the calculated value of (r) 0.911 is greater than (>) the critical table value of 0.113, the null hypothesis which stated that there is no significant correlation on the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions is not accepted (rejected). The computed value of (r) 0.922 signifies a very high positive significant relationship on the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions. This means that application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions.

Discussion of Findings

From the results of research question 1 raised and answered by respondents on table 1, the grand mean of table 1 showed 3.7, representing Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state higher institutions. The grand standard deviation was 0.93, representing closeness in the views of the respondents on a Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions.

The computed value of (r) 0.911 signifies a very high positive significant relationship between challenges of teaching and learning in traditional classroom and during COVID-19 pandemic in Rivers state tertiary institutions. This means that teaching and learning in traditional classrooms during COVID-19 pandemic in Rivers state tertiary institutions can pose a lot of danger to students, teachers, non-academic staff, and management. The opinions of the respondents are not different from experts such as (World Health Organisation), (Federal Ministry Of Health, Nigeria), (Sahayogablog.wordpress.com, 2020) and (Virkus, 2012) identified, face to face mentoring in class and in teachers' office time, exercises and lab teaching, scheduled lectures, activities in fixed locations, face-to-face exchanges between

teachers(lecturers and students, students and students, bodies contacts/interactions within and outside the classrooms, moving round the class to assist students in correcting wrong behaviours and activity, showing students good sitting positions and holding to place their fingers properly during task, moving from one office to another for enquiry and social distance not maintained as some of the characteristics and challenges associated with traditional class which can pose enormous danger during COVID-19 pandemic.

Also from the result of research question 2 raised and answered, using respondents opinions on table 2, the grand mean of table 2, showed 3.7, representing Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions.

The grand standard deviation was 0.93, representing closeness in the views of the respondents on a Very High Level of Application Of ICT Towards Minimizing Challenges Of Teaching And Learning In Traditional Classroom during COVID-19 pandemic in Rivers state tertiary institutions. The computed value of (r) 0.922 signifies a very high positive significant relationship on the ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions. This means that application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions if properly adopted.

The opinions of the respondents are not different from the views of (Aflalo, Zana, & Huri, 2018), (Baker, Goodboy, Bowman, & Wright, 2018), (Baş, Kubiato, & Sünbül, 2016), (World Health Organisation, n.d), (Ebrahimi & Ira, 2009), (Sahayogablog.wordpress.com, 2020), (Blikstad-Balas, & Davies, 2017). and (Nwigbo & Madhu, 2016) who identified double A's: that is At Anytime from Anywhere, flexible, low pressure e.g., students participate in their own pace, democratization of education, student strategy, motivation and self-regulation, easy collaboration geographically, technical maintenance, students are more independent and combination with the teacher track student activities maintenance of social distance as some of the characteristics and ways application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions.

Conclusion

From the findings of the study, it is concluded that teaching and learning in traditional classrooms during COVID-19 pandemic can pose a lot of danger to students, teachers, non-academic staff, and management, and that application of ICT will assist towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions.

Recommendations

1. Rivers state tertiary institutions should adopt application of ICT towards minimizing challenges of teaching and learning in traditional classroom during COVID-19 pandemic in Rivers state tertiary institutions.
2. There should be adequate funding from government and other concerned agencies for regular training and retraining of teachers on ICT approach towards minimizing teaching and learning challenges.
3. Government and other concerned agencies should ensures technologies are made available in there right quantities and qualities for the teaching and learning in all tertiary institutions

4. There is need for regular training and retraining of lecturers to abreast with the trends of technology and meeting the global economic realities. Natural occurrences are inevitable and man must see how to adopt technologies to continue in life despite the time, place and distance

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