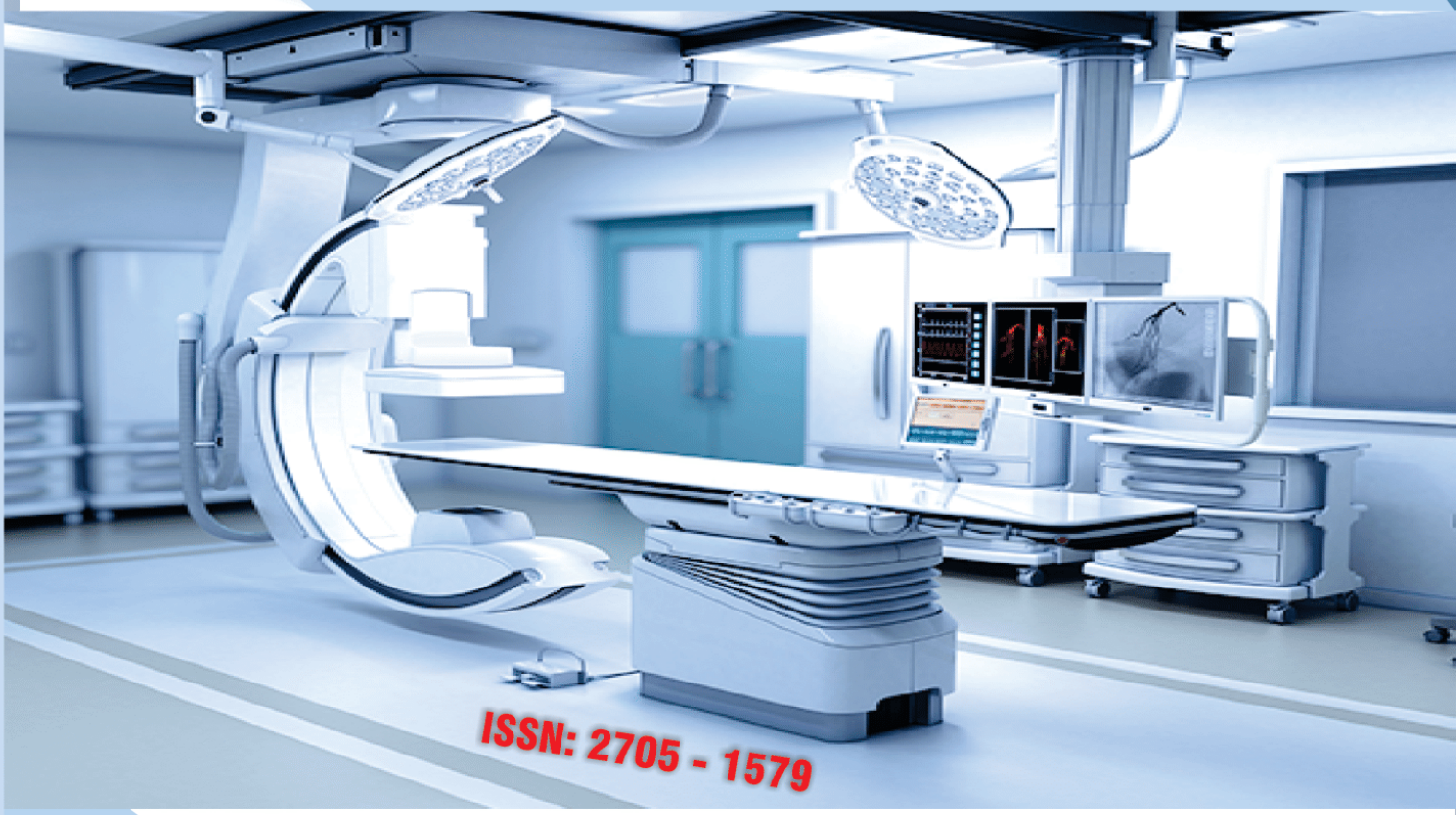
STEM JOURNAL OF ANAMBRA STAN (STEMJAS) VOLUME 3(2); 2022

EDITOR-IN- CHIEF: PROF. RITA N. NNOROM

STEM JOURNAL

OF ANAMBRA STAN (STEMJAS)

Volume 3(2); 2022



ISSN: 2705 - 1579

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STEM JOURNAL

OF ANAMBRA STATE

(STEMJAS), 3(2); 2022

ISSN: 2705-1579
Published & Printed by:
FAB ANIEH NIGERIA LIMITED
Fab Anieh House
Opposite COFI Premium Lounge
Okpuno, Awka
Tel: 08035619395
gmail: fabprezz82@gmail.com

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EDITORIAL

The task of effectively applying Science, Technology, Engineering and Mathematics (STEM) education research of utmost importance to STEM educators and other stakeholders, even the survival of any nation depends on the sustainability of its STEM education programme.

Currently, we are facing the challenges of COVID-19 pandemic. Our country Nigeria did not anticipate such disease and as such caught up with the pandemic. Hence the un-preparedness of our nation led to the closure of public places including schools.

Therefore, Science Teachers' Association of Nigeria (STAN) Anambra State Chapter dedicated this 2nd Biennial State conference hold on decencies 8th-9th, 2021 at Federal Science and Technical College, Awka, Anambra State, Nigeria to COVID-19 and Emerging issues in STEM Education.

The editorial board had welcomed our members whose papers - articles were extracted from conference.

Happy Reading.

Prof. Rita N. Nnorom
Editor-In-Chief

KNOWLEDGE AND UTILIZATION OF ICT AMONG TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) LECTURERS IN FEDERAL COLLEGE OF EDUCATION (TECHNICAL) ASABA.

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Abstract

The study was carried out to determine the knowledge and utilization of ICT by lecturers in the pandemic era. Descriptive survey research design was used in the study, four research questions and one null hypothesis were used for the study. The population of the study consists of 370 lecturers in Federal College of Education (Technical) Asaba. Proportionate sampling technique was used to select 167 respondents representing 45% of the population. Structured questionnaire made up of 5 parts were used to collect data. Descriptive method of data analysis was used to describe what the data shows. Responses from questionnaire were analyzed using mean and standard deviation while t-test was used to test the hypothesis. Mean weight of 2.50 was accepted. Findings revealed that majority of the Technical Vocational Education and Training (TVET) lecturers in FCET Asaba do not have sufficient ICT knowledge in statistical analysis, excel and power point, this makes them not to effectively utilize ICT in delivering lectures during the pandemic era. It was recommended that lecturers should be given opportunities for in service training in ICT.

Keyword: Knowledge, Utilization, ICT, Lecturers,

Introduction

The 2020 academic calender at all levels, as well as the world educational systems, suffered great set back as a result of the outbreak of COVID19.Students and teachers were forced to learn new ways of accessing, transmitting knowledge and interacting in computer network. Even the most stultified voices and positions with respect to new technologies had to subject to the new-networked environments De Vincenzi, in Jose, Yrene, Roberto, Jacinto, Vertiz & Sandy (2020).

The use of this powerful tool (ICT) has become increasingly essential in achieving quality education in science and technology as this is a modern-day, efficient and cost-effective operation and has created a way to modify instructional methods in science education. Williams, Yitwa, Sambo & Williams, (2020). The adoption and utilization of Information Communication Technologies ICTs became very essential to teach and access knowledge and to keep up with modern-day developments.

The new normal way of life and social distance introduced by various governments of the world made knowledge and utilization of ICT a necessity for teaching, learning and interacting in a world that is fast becoming a global village. There is availability of global publication such as digital libraries where academician, students, and professionals can access and share educational resources, research and course materials anytime and anywhere 24 hours a day, seven days a week (Almerich, Orellana Suárez-Rodríguez & Díaz, 2018). New educational approaches are achievable in the process of teaching and learning through the adoption, integration and utilization of ICTs, which supply higher order skills such as solving complex real world problems, improving the perception and understanding of the learning activities (Knezek and Christensen, 2016).The integration and utilization of ICTs into the teaching and learning environment provides more opportunities for teachers and students to work better in a globalized digital age (Lawrence and Tar, 2018). Despite the enormous challenges occasioned by the pandemic era and the way forward through the adoption, integration and utilization of ICT in teaching and learning it is worth noting that majority of lecturers in our schools may still not be knowledgeable enough to effectively utilize ICT in teaching. The 21st century has witnessed a lot of digital revolutions and it is expected that everyone in the teaching professions should not be left out,Van-Laar, Van-Deursen, Van-Dijk and De-Haan, in Jose *et al* (2020),examined the relationship between 21st century skills and digital skills, in addition to providing a digital skills framework for the present century, with conceptual dimensions and

operational components aimed at knowledge. Technical Vocational Education and Training TVET is a major focus in the world education today, therefore it is paramount that lecturers and students of TVET acquire and utilize ICT knowledge for effective teaching and learning.

Statement of Problem

Over time, a lot of research efforts have been made on the application of Information and Communication Technology in every sector of Nigeria's economy. Virtually every sector of the world economy is ICT driven, TVET sector inclusive with the recent outbreak of COVID19 Pandemic the use of ICT in teaching is very paramount to help reduce the level of physical contact between students and lectures while maintaining the academic calender. However, it is pertinent to note that there is a current shift from the old system of teaching and learning which is characterized by physical classroom to ICT driven teaching and learning which emphasizes the use of online collaborative tools for learning example the use of google classroom, e-library etc

Despite the numerous benefit of the ICT in teaching and learning being advocated today, there are lots of challenges to its actualization in schools. These challenges range from lack of ICT gadgets and equipment in TVET institutions to insufficient knowledge and utilization of ICT by lecturers. This is the reason why the researcher wants to investigate the knowledge and utilization of ICT by lectures Federal College of Education (Technical), Asaba.

Purpose of the Study

The main objective of this study is to determine the knowledge and utilization of ICT by Lecturers in the pandemic era: case study of TVET lecturers in Federal College of Education (Technical) Asaba Delta State. Specifically, the study will determine the:

1. Level of knowledge of ICT among TVET lecturers in FCET Asaba.
2. Utilization of ICT in delivery lecture during the pandemic era by TVET lecturers in FCET Asaba
3. Level of availability of ICT for teaching in FCET Asaba.
4. Factors influencing the utilization of ICT among TVET lecturers in FCET Asaba.

Research Questions

1. What is the level of knowledge of ICT among TVET lecturers in FCET Asaba?
2. Do lecturers in FCET utilize ICT in teaching students during the pandemic era?
3. What is the level of availability of ICT for teaching in FCET Asaba?
4. What are the factors influencing the utilization of ICT among lecturers in Asaba?

Hypothesis

HO_1: There is no significant difference between ICT knowledge of lectures and its utilization in teaching

Method

The descriptive survey design was used for the study. Descriptive survey according to Nworgu (2016), involves a systematic and comprehensive collection of information about the opinions, attitudes, feeling, beliefs and behaviour of people. This method was adopted because the research is set to get the opinions of the respondents in terms of ICT knowledge and utilization among lecturers in FCET Asaba. The population of the study consist 370 lectures in FCET Asaba. Proportionate sampling technique was adopted to sample 45% of population which is 167. In this decision, the researchers were guided by Nwanna's proposition in (Attaoma 2014) that if a population is in few hundreds, 40% or more could serve as a sample for a better representation of the population.

The instrument that was used to collect data is questionnaire captioned "Knowledge and Utilization of ICT in by Lectures in the Pandemic Era Questionnaire" (KUICTLPEQ). The questionnaire was made up of four (4) parts:1, level of ICT knowledge among lecturers with 10 items, and part 2 was the use of ICT to teaching during the pandemic era care which contained 10 items. Part 3 was made up of 4 items on ICT availability for teaching in the school. While part 4 was the factors influencing the use of ICT, the questionnaire was developed using a four (4) & 2-point like scale. The draft of the questionnaire was subjected to face validation to make sure it measures what it is supposed to measure and to yield accurate results. The draft with the research questions were vetted by to 3 ICT experts 2 from ICT department of Federal College of Education Asaba and 1 from Department of Vocational Education FCET Asaba.

The questionnaire for the study was administered and per-tested on lectures outside the selected area of this study. Thirty (30) lectures in Ogwashi-ukwu Polytechnic were used for the reliability test. The reliability of the instrument was determined using the split-half method, in which the odd-numbered and even-numbered items in the administered instrument were correlated against each other. The Pearson Product Moment Correlation Coefficient (r) was used for the reliability analysis. A reliability coefficient of 0.70 and above was considered appropriate to establish the reliability of the instrument for this study. The researchers administered questionnaire to the sampled TVET lecturers in FCET Asaba.

Descriptive method of data analysis was adopted for the study. Descriptive statistics was used to describe what the data show (William, 2020). Responses from the questionnaire and research questions were analyzed using mean and standard deviation. Mean weight of 2.50 and above was regarded as positive and accepted, while below 2.50 was regarded as negative and rejected.

Results

Research question 1: What is the level of knowledge of ICT among TVET lecturers in FCET Asaba?

Table 1: Level of ICT knowledge among lecturers

S/N	ITEMS	ADK	AVK	BK	NK	Mean	SD	DECISION
1	Microsoft word	27	72	60	6	2.73	0.78	Accepted
2	Microsoft excel	9	45	86	25	2.23	0.77	Not Accepted
3	Power point presentation	15	48	65	37	2.25	0.91	Not Accepted
4	Internet search	62	88	15	0	3.28	0.62	Accepted
5	Computer files management (download, save, edit, copy, cut, paste etc)	42	79	31	13	2.91	0.87	Accepted
6	Access through different websites	42	53	61	9	2.78	0.89	Accepted
7	Operating electronic mails	39	39	79	8	2.66	0.89	Accepted
8	Use of online collaboration tools and social media	33	42	72	18	2.55	0.93	Accepted
9	Save and assign file names to document.	42	32	75	16	2.61	0.97	Accepted
10	Statistical analysis	3	42	64	56	1.95	0.82	Not Accepted
	CLUSTER MEAN					**2.60**		**Accepted**

Key: ADK -Advanced Knowledge, AVK-Average Knowledge, BK-Basic Knowledge, NK-No Knowledge.

Table 1 shows the mean rating of respondent's level of ICT knowledge as follows, internet search 3.28, computer file management 2.91, access through different websites 2.78, Microsoft word 2.73, operating electronic mail 2.66, save and assign file name to document 2.61, use of online collaborating tool and social media 2.55. While Microsoft excel, power point and statistical analysis have mean rating below 2.50. Also the standard deviation ranges between 0.97 - 0.62 and cluster mean of 2.60 which is accepted

Research Question 2: Do lecturers in FCET utilize ICT in teaching students during the pandemic era?

Table 2: Respondents level of ICT utilization in delivering lectures

S/NO	ITEMS	YES	NO	YES %	NO %
1	Uses a word processor for writing lecture notes	111	54	32.7	67.3
2	Uses of power point to lecture	96	69	58.2	41.8
3	Use of search engines to source for information	111	54	67.3	32.7
4	Use of Microsoft excel to compute result	96	69	58.2	41.8
5	Download, save, edit, copy and paste information.	99	66	60.0	40.0
6	Access information from different websites	116	49	70.3	29.7
7	Send electronic mails	123	42	74.5	25.5
8	Uses internet for different purposes.	116	49	70.3	29.7
9	Analyze data	72	93	43.6	56.4

Table 2 shows respondents' level of ICT utilization in delivering lectures. The table indicates that items 2-8 had over 50 percent positive responses (Yes) from the respondents ranging from 74.5% -58.2%. While item 1 and 9 are the only ones with the highest percentage of negative (No) response of 56.4%.

Research Question 3: What is the level of availability of ICT for teaching in FCET Asaba?

Table 3: Mean rating and standard deviation of ICT tools available in the school for lectures.

S/NO	ITEMS	A&F	A&NF	NA	DK	Mean	SD	DECISION
1	Computer (laptop/desktop)	90	21	51	3	3.20	0.94	Accepted
2	Internet	93	21	51	0	3.25	0.90	Accepted
3	Smart board/ tablets	33	9	105	18	2.35	0.92	Not Accepted
4	Telephone (fixed/mobile)	74	16	72	3	2.98	0.98	Accepted
5	**Cluster mean**					**2.95**		**Accepted**

Key word; A&F: Available & Functioning, A&N Available & Not Functioning, NA: Not Available and DK: Don't know

Table 3 revealed the mean rating and standard deviation of ICT tools available in the school for lectures use as follows: computer (laptop/desktop) 3.20, internet 3.25, telephone (fixed/mobile) 2.98 while smart board/tablet had the lowest mean rating of 2.35 and a cluster mean of 2.95. The standard deviation is between 0.98 - 0.90 an indication the respondents were not too far from their responses.

Research Question 4: What are the factors influencing the utilization of ICT among lecturers in Asaba?

Table 4: Mean rating and standard deviation of factors influencing acquisition of ICT knowledge by lectures.

S/No	Items	SA	A	D	SD	Mean	SD	Decision
1	Lack of access to personal ICT facilities	63	45	31	26	2.87	1.09	Accepted
2	Inadequate seminars/ workshops	62	42	31	30	2.82	1.13	Accepted
3	High cost of acquiring ICT knowledge	30	28	76	31	2.35	0.99	Not Accepted
4	Too much workloads in the working place	24	62	33	46	2.39	1.05	Not Accepted
5	Insufficient computers and its accessories	54	67	44	0	2.79	1.17	Accepted
6	Lack of technical and management support	42	69	24	30	2.75	1.17	Accepted
7	Failure of ICT equipment	33	41	51	40	2.41	1.06	Not Accepted
8	Poor of Internet services	31	35	45	54	2.27	1.10	Not Accepted
9	Non-integration of TVET lectures into the school ICT center	69	18	37	41	2.70	1.25	Accepted
10	Irregular power supply	33	44	37	51	2.35	1.12	Not Accepted
11	Cost benefit ratio justifies the non-use of ICT to deliver TVET lectures	30	60	28	47	2.44	1.09	Not Accepted
12	**Cluster mean**					**2.56**		**Accepted**

Key: SA-Strongly Agreed, A-Agreed, D-disagreed, SD-Strongly disagreed

Table 4 shows the mean rating and standard deviation of factors influencing acquisition of ICT knowledge by lectures as follows; items 1,2,5,6.9 had mean rating above 2.50 (2.87,2.82,2.79,2.75,2.70) and standard deviation (1.09,1.13,1.17.1.17,1.25). While items 3,4,7,8,10 and 11 had mean rating below 2.50 (2.35, 2.39, 2.41, 2.27, 2.35, 2.44) and standard deviation of (0.99, 1.05, 1.06, 1.10,1.12 and 1.09) respectively. The cluster means of 2.56 also the closeness of the standard deviation is an indication that the respondents are not too far from their responses

Hypothesis

Table 5: t- test analysis of responses of lectures on knowledge and utilization of ICT by TVET lectures in FCE(T)Asaba.

Respondents	N	Mean	SD	T-Value	t-Tab
	93	1.63	0.48	0.89	0.83
Nurses					
	72	2.47	0.50		
Total	165				

Table 6 shows a t- value of 0.89 and t-tab of 0.83 testing at 0.05 level of significant. The t- value is greater than the t- tab, so the null hypothesis which states that there is no significant difference between ICT knowledge of lectures and it's utilization in delivering TVET lectures in FCE(T), Asaba is retained.

Discussion

Based on the analysis of this study it was observed that majority of TVET lectures in FCE(T) Asaba have knowledge in Microsoft word, internet search, computer file management among others. This agrees with Cyril, Saidu & Ibrahim (2019), who stated that ICT competencies are needed by technical college teachers in Kano State. Also inadequate knowledge of lectures on the use of statistical analysis, Microsoft power point and Microsoft excel may be as a result of inadequate ICT facilities, Lack of access to personal ICT facilities and poor internet facilities

The study also revealed that lectures do not use Microsoft word in writing lecture note for students and may could not analyze statistical data in. Cyril, *et al*, (2019),

recommended that teachers in technical colleges should be exposed to new contents in ICT through training and retraining.

Findings from the study also revealed that among the ICT tools available for lectures use in the school smart board and tablets are lacking, this may be as a result of poor funding which is a major hindrance to the use of ICT in lecture delivery. This agrees with Chukwukelu & Diabuah (2019), who states that limited access to technology and ICT tools is a major hindrance to use of e-learning in secondary schools in Asaba. Also Ifeanyi & Chukwudike, (2018), observed that projectors, smart/electronic board and virtual classroom are not available for the study of General Study course in University of Nigeria Finally, the study revealed that high cost of acquiring ICT knowledge, equipment failure, poor internet are factors that influence the acquisition and use of ICT by TVET lecturers in the pandemic ear. This agrees with Chukwukelu & Debauch (2019) who observed that TVET teachers in public secondary schools in Asaba have negative perception over the use of e-learning in teaching because of cost of acquiring ICT knowledge, lack of equipment and poor internet facilities. Also the null hypothesis which states that there is no significant difference between ICT knowledge of lectures and its utilization in lecture delivery in the pandemic era in FCET Asaba is retained.

Conclusion

The general purpose of this study was to investigate the knowledge and utilization of ICT by lecturers in FCET Asaba in the pandemic era. The study was guided by 4 objectives. The instrument for data collection was questionnaire. The research design was descriptive survey design. The population of the study was 370 in FCET Asaba Delta State with sample of 167 TVET lecturers. Data was analyzed using frequency, mean, standard deviation and percentage. The findings of the study revealed that lectures need ICT Knowledge in statistical analysis, Microsoft excel and power point. Lecturers utilize ICT in teaching, but do not utilize it in analyzing data and use of Microsoft word in writing lecture notes for students. This may be as a result of lack of knowledge in this area of ICT. Smart board and tablets are major ICT tools that are not available for lectures use in the institution during the pandemic era. High cost of acquiring ICT knowledge, failure of ICT equipment and poor internet are factors that influence the utilization of ICT by TVET lecturers in FCET Asaba in the pandemic era.

Recommendations

It is very clear that the level of ICT utilization by lectures affects their effectiveness hence these recommendation:

1. In view of this, more opportunities should be given to lectures for on the job training to make up on the areas of their deficiencies examples, statistical analysis, Microsoft excel and power point.
2. Lectures should be encouraged to embark on self-development through the use of various online free ICT training like digital Nigeria to improve their ICT knowledge.
3. Government through the ministry of education, Tertiary Education Trust Fund and non-governmental organizations should assist in providing more ICT tools like smart board and tablets to the school.
4. Management of the school should create opportunities for acquisition of ICT knowledge through seminar, conferences and workshops.
5. Policy makers in ministry of education should include certificate in ICT as one of the employment requirement for lectures.

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