Assessment of Ict-Based Tools in the Teaching and Learning of Fine and Applied Arts in Colleges of Education in North-Central Nigeria

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Abstract

The study assessed the ICT-based tools in the teaching and learning of fine and applied arts in colleges of education in North Central Nigeria. Three research questions and two hypotheses were formulated for the study. The population comprised 109 respondents. A sample size of 69 respondents was used for the study. A structured questionnaire of 0.77 reliability was used for data collection. Data collected were analyzed using Mean and t-tests. Results showed that the majority (71.0%) of the ICT tools itemized were available in colleges of education, and they are; computer sets, video cameras, digital cameras, camcorders, PowerPoint presentation packages, magic boards, overhead projectors, internet connections, open reed projector, among others. Of the ICT tools available, only 41.7% were used in the teaching of fine and applied arts in the various colleges. The study found that instructors' poor ICT proficiency affected the utilization of ICT-based tools in the teaching of fine and applied arts in colleges of education. t-test analysis on the responses of lecturers from state and federal colleges of education on the availability of ICT-based tools, their utilization and lecturers' proficiency of ICT-based tools in the teaching of fine and applied arts did not detect significant differences at p < 0.05. The paper recommends that education authorities should periodically, through workshops, conferences and seminars, retrain the trainers in fine and applied arts in colleges of education to update them on the recent developments in information and communication technology.

Keywords: ICT, ICT-based tools, Availability, Utilization, ICT proficiency.

1. Introduction

Information and Communication Technology (ICT) is the new communication inclination worldwide. The term "ICT" connotes the use of computer-based technology and the internet to make information and communication services widely available to users. ICT is used largely to cover a variety of technologies, including telephones, computers, the internet, electronic mail, CD-ROMS, telephone, online databases, library services, fax machines, etc. Critical to this technology is the internet, which provides the device for transporting data in different formats such as text, images, sound, and video. ICT as defined by, is a revolution that encompasses the use of computers, the internet and telecommunication technology in every aspect of human endeavour [1]. Concerning education, ICT has enormous potential of transforming the educational system of developing countries like Nigeria through any of the aforementioned technology [2].

For example, the distance learning system or open-air learning is easier through Information and Communication Technology. In case of a global lockdown, lecture materials are transmitted through e-mails, TV and radio. With ICT, even the deaf and blind can learn the art with less struggle. ICT removes every form of barriers such as age, distance, time and cost thereby, bringing educational opportunities to the doorstep of Nigerians. It also moderates the hardship students experience as a result of poor library services and the high cost of professional books. With ICT, library services can be shared globally [3].

Different countries of the world Nigeria inclusive, have made some effort to update their curricula by acquiring ICT-based instructional tools and also, ensuring that instructors/teachers are proficient in utilizing the ICT-based instructional tools in other to meet the demands of innovative instructional methods [4]. To find out if colleges of education in Nigeria, are making enough effort in this direction, the study set out to assess ICT-based instructional tools that are available, and whether they are being utilized in teaching and learning activities. Describes availability as something that can easily be found and used. In other words, they are those resources that are usable upon demand to perform their chosen or required function [5]. In the same vein, opined

that the availability of school facilities is a potent factor in the quantitative and qualitative educational programmes. This implies for quality and effective learning to take place in colleges of education, ICT-based instructional tools should be available. Although this is not always the case, because the availability of facilities does not mean utilization. As cited in reported that the availability of educational resources like ICT facilities has no value for achieving educational objectives if they are not utilized [6]. Instructors/teachers are crucial in the effective execution of any educational programme because they are the resources that utilize facilities in the implementation of the educational programme. In addition, emphasized that in a school, the available facility should be utilized in such a way that it enables the effective management of educational programmes [7].

Therefore, the teacher has to be proficient in the utilization of the available facility. Believe that ICT proficiencies are concerned with the capability to: (1) know when to apply or develop a particular skill in using an ICT resource; (2) be aware of the reasons for using ICT and its effect on both users and context, and (3) have a critical and confident attitude to learning with the technology [8, 9]. In a similar vein, the International Society for Technology in Education (ISTE) defined teachers' ICT skills as follows: (1) Facilitate and inspire student learning and creativity; (2) Design and develop digital age learning experiences and assessments; (3) Model digital age work and learning; (4) Promote and model digital citizenship and responsibility; and (5) Engage in professional growth and leadership [10]. Many aspects of Fine and Applied Arts are recently experiencing similar wind of the ICT revolution in methods, materials and processes [3]. It was further noted that with the availability of software like the Corel draws, Corel photo, instant artist, draw etc, the artist can draw, shade or paint objects using the appropriate menu and tools that can be used for design and illustration. Also, software like PageMaker, Microsoft Word, and Word Perfect that is specially adapted to meet the requirements for publishing a book can be used. Other advertising presentations in form of animation, cartoons and real-life photographs can be carried out easily using the computer and other multimedia devices to amuse people and as well sell products. However, the effective utilization of these ICT-based instructional tools in teaching and learning Fine and Applied Arts depends on the availability of these facilities and teachers' proficiency. Observation has shown that there may not be many functional ICT facilities in most colleges of education in North-Central Nigeria and this hampers the teacher's ability to use them for teaching and learning.

1.1 Purpose of the Study
The main purpose of this study is to determine ICT-based tools in the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria. In particular, the study will:
1. ascertain the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria;
2. find out the extent to which the ICT-based tools that are available are utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria; and
3. find out the extent to which lecturers of fine and applied arts are proficient in the use of ICT-based tools in teaching fine and

applied arts in colleges of education in North-Central Nigeria

1.2 Research Questions
1. What are the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria?
2. To what extent are the ICT-based tools that are available, and utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria?
3. To what extent are lecturers' of fine and applied arts proficient in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central Nigeria?

1.3 Hypotheses
1. There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria.
2. There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on the ICT-based tools that are available and utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria.
3. There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on their proficiency in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central Nigeria.

1.4 Description of the study location
We conducted the study in the North-Central Geopolitical Zone of Nigeria. North-Central Nigeria comprises six States which are: Benue, Niger, Kogi, Kwara, Nassarawa and Plateau States. There are eleven colleges of education in the North Central Zone of Nigeria. Four are Federal Colleges of Education which includes; FCE Okene, FCE Pankshine, FCE Zuba, and FCE Kontagora while seven are States Colleges of Education and they include; COE Katsina-Ala, COE Oju, COE Akwanga, COE Ankpa, COE Minna, COE Gindir and COE ILORIN. The area is considered appropriate for the study because the states within the geopolitical zone are made up of heterogeneous populations, making the region rich in arts and culture. The region is also educationally inclined which makes the teaching of fine and applied arts in colleges of education very relevant.

2. Methods
2.1 Study Design and Population: The study adopted a survey research design. Survey research design according to is concerned with making decisions based on the responses of a sample that are generalized to the population. Therefore, this design was considered appropriate for this study because it enabled the researcher to collect information on educational materials and methods from a sample of respondents to establish empirical data on the ICT-based tools used in the teaching and learning of fine and applied arts in colleges of education in North Central Nigeria.

The population for the study comprised 109 lecturers of fine and

applied arts. For the federal and state colleges, the population of lecturers were distributed as follows (FCE, Okene, Kogi State = 14; FCE, Kantagora, Niger State = 12; and FCE, Pankshin, Plateau, State = 10) and (Kwara State College of Education, Ilorin, Kwara State = 7; Kwara State College of Education Oro, Kwara State = 9; Federal Capital Territory College of Education, Zuba, Abuja = 16; Kogi State College of Education, Kabba, Kogi State = 8; College of Education, Katsina-Ala, Benue State = 13; Kogi State College of Education, Ankpa, Kogi State = 7; Niger State College of Education, Niger State = 8; and College of Education, Oju, Benue State = 5).

2.2 Participants
A sample size of 69 (36 lecturers from the federal college of education and 33 lecturers from the state college of education) respondents was used for the study. It was selected using cluster sampling. First of all, 5 states which include Kogi, Niger, Plateau, Kwara and Abuja were randomly selected out of the 6 States that make up the North-Central region. After which the colleges of education were stratified into federal and state colleges, and finally, one federal and one state college were purposively drawn.

2.3 Data collection and analysis
Our study took place between September and November 2021. The study utilized a modified version of the validated data collection questionnaire. The study instruments were pretested at a different college from the one we used for the study. The college is comparable to the colleges we used for our study. Errors and ambiguous questions sequencing were corrected before field data collection.

2.4 Materials
A structured questionnaire titled ICT-based tools in the teaching and learning of fine and applied arts in colleges of education questionnaire (ICTBTS) was the instrument used for data collection. The questionnaire was divided into two parts, I and II. Part I was structured to obtain the general personal information about the respondents such as status (Federal colleges and state colleges), while section II was on the ICT-based tools in the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria. Part II of the questionnaire was further divided into three clusters, clusters A-C concerning the three specific objectives of the study. Cluster A items (1-17) provided data on the availability of ICT-based tools, cluster B items (1-12) provided data on the extent of the utilization of ICT-based tools in cluster C, and items (1-12) provided information on lecturers' proficiency in the use of ICT-based tools in the teaching and learning of fine and applied arts in the colleges of education in North-Central, Nigeria. Items from clusters A to C were structured on a 4-point rating scale. Cluster A had the options Very Much Available (VMA) 4, Available (A) 3, Somewhat Available (SA); and Not at all (NA) cluster B had the options Always (A) 4, Sometimes (S) 3, Rare (R) 2 and Never (N) 1, cluster C has attached a response format of great extent (TGE) 4, Somewhat (S) 3, Very little (VL) 2 and Not at all (NTA) 1. The instrument was face validated by three experts, one from Measurements and Evaluation, and two from the Fine and Applied Arts Education, all from the University of Nigeria, Nsukka. To ensure the reliability of the instrument, it was trial-tested, and data obtained from the trial test were analyzed using Cronbach's Alpha method. Thus, a reliability coefficient of 0.77 was established signifying that the instrument is reliable.

2.5 Data Collection
We applied the direct method in the collection of the data. We and one research assistant distributed and collected the questionnaire from the respondents at the various locations used for the study. The research assistant was briefed on the modalities for distributing and collecting the questionnaire from the respondents on the spot. This ensured that the respondents appropriately completed the questionnaire. Thus, there was a 100% return on the questionnaire, and these were duly used for data analysis.

2.6 Data Analysis
We employed both descriptive and inferential statistics in data analysis. We used descriptive statistics (mean and standard deviation) to answer the research questions. We used a mean of 2.50 as the benchmark for decision-making on a four-point rating scale. Thus any item with a mean of 2.50 and above was considered acceptable by the respondents, while any item with a mean below 2.50 was considered unaccepted by the respondents for items rated on a four-point rating scale. Inferential statistics were used to test the differences in the mean responses of lectures from federal and state colleges at $P < 0.05$. We checked and cleaned the data collected for completeness and accuracy. The questionnaires were coded, entered, and analyzed using IBM-SPSS version 25. We tested the data in the questionnaires for internal consistency and had a very high Cronbach's α value of 0.92, which indicates a high level of internal consistency for our scale that comprised 41 study items.

3. Result
The responses of the respondents on each of the items in the questionnaire were computed and presented in Tables based on the three research questions and three hypotheses that were formulated for the study.

3.1 Research Question 1
What are the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria?

Table 1: Mean responses of respondents on the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria (n=69)

S/N	Items	$\overline{X}$	SD	Decision
1	Desktop/laptops computers	2.94	0.99	Accepted
2	LCD projector	2.41	0.83	Rejected
3	Video recorder/discs	2.78	0.95	Accepted
4	Film, slide, transparency or film projectors	2.67	0.95	Accepted
5	Tapes/flashcards	2.72	0.98	Accepted
6	Record players/discs	2.77	1.00	Accepted
7	TV sets	2.97	0.86	Accepted
8	Internet/modem	2.32	0.81	Rejected
9	Talking books	2.32	0.79	Rejected
10	Video/Audio sensors	2.36	0.85	Rejected
11	Digital camera	3.00	0.94	Accepted
12	Word processing package (MS-word)	2.70	0.91	Accepted
13	Spreadsheet package (MS-excel)	2.64	0.89	Accepted
14	Presentation package (MS-power point)	2.83	0.84	Accepted
15	Desktop publication package (MS-Corel draw)	2.90	0.87	Accepted
16	Architectural package (AutoCAD)	2.46	0.72	Rejected
17	Database package (MS access)	2.72	0.84	Accepted

$\overline{X}$= Mean, SD = Standard Deviation

From Table 1, it can be seen that items 1, 3-7, 11-15 & 17 had Mean scores greater than 2.50 indicating that desktop/laptops computers ($\overline{X}$=2.94, SD= 0.99), video recorder/discs ($\overline{X}$=2.78, SD= 0.95), film, slide, transparency or film projectors ($\overline{X}$=2.67, SD= 0.95), tapes/flash cards ($\overline{X}$=2.72, SD= 0.98), record players/discs ($\overline{X}$=2.77, SD= 1.00), TV sets ($\overline{X}$=2.97, SD= 0.86), digital cameras ($\overline{X}$=3.00, SD= 0.94), word processing package ($\overline{X}$=2.70, SD= 0.91), spreadsheet package ($\overline{X}$=2.64, SD= 0.89), presentation package ($\overline{X}$=2.83, SD= 0.84), desktop publishing package ($\overline{X}$=2.90, SD= 0.87) and database package ($\overline{X}$=2.72, SD= 0.84) were the ICT-based tools available. However, LCD projectors ($\overline{X}$=2.41, SD= 0.83), internet/modem ($\overline{X}$=2.32, SD= 0.81), talking books ($\overline{X}$=2.32, SD= 0.79), video/audio sensors ($\overline{X}$=2.36, SD= 0.85) and architectural package ($\overline{X}$=2.46, SD= 0.72) were not available in the colleges of education. That is, in a total of 17 items presented to the colleges, 12 items representing 71.0% were available.

3.2 Research Question 2

To what extent are the ICT-based tools that are utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria?

Table 2: Mean responses of respondents' on the ICT-based tools that are utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria (n=69)

S/N	Items	$\overline{X}$	SD	Decision
18	Desktop/laptops computers	2.35	0.87	Rejected
19	Video recorder/discs	2.36	0.86	Rejected
20	Film, slide, transparency or film projectors	2.55	0.92	Accepted
21	Tapes/flashcards	2.33	0.78	Rejected
22	Record players/discs	2.36	0.82	Rejected
23	TV sets	2.71	0.91	Accepted
24	Digital camera	2.84	0.83	Accepted
25	Word processing package (MS-word)	2.64	0.92	Accepted
26	Spreadsheet package (MS-excel)	2.47	0.84	Rejected
27	Presentation package (MS-power point)	2.71	0.97	Accepted
28	Desktop publication package (MS-Corel draw)	2.35	0.70	Rejected
29	Database package (MS access)	2.41	0.75	Rejected

$\overline{X}$ = Mean, SD = Standard Deviation

The result in Table 2 showed, that items 20, 23-25, & 27 had Mean scores greater than 2.50 indicating that film, slide, transparency or film projectors ($\bar{X}$=2.55, SD= 0.92), TV sets ($\bar{X}$=2.71, SD= 0.91), digital cameras ($\bar{X}$=2.84, SD= 0.83), word processing package ($\bar{X}$=2.64, SD= 0.92) and presentation package ($\bar{X}$=2.71, SD= 0.97) were utilized by lecturers during teaching and learning activities. However, desktop/laptop computers ($\bar{X}$=2.35, SD= 0.87), video recorder/discs ($\bar{X}$=2.36, SD= 0.86), tapes/flash cards ($\bar{X}$=2.33, SD= 0.78), record players/discs ($\bar{X}$=2.36, SD= 0.82), spreadsheet package ($\bar{X}$=2.47, SD= 0.84), desktop publishing package ($\bar{X}$=2.35, SD= 0.70) and database package ($\bar{X}$=2.41, SD= 0.75) were not utilized in the teaching and learning of fine and applied arts in the colleges.

3.3 Research Question 3

To what extent are lecturers' of fine and applied arts proficient in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central Nigeria?

Table 3: Mean responses of respondents' on the proficiency in the use of ICT-based tools in the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria (n=69)

S/N	Items	$\bar{X}$	SD	Decision
30	I can use presentations (PowerPoint) when delivering instruction in class	2.78	0.82	Accepted
31	I can find videos on the internet to support course content on fine and applied arts	2.58	0.88	Accepted
32	I can create online blogs for fine and applied arts posts and feedback	2.43	0.72	Rejected
33	I can inform my students about computer ethics	2.72	0.87	Accepted
34	I can effectively use search engines	2.52	0.79	Accepted
35	I can use social networking services (Facebook etc.)	2.43	0.72	Rejected
36	I can share instructional materials that I find online with my students	2.59	0.77	Accepted
37	I can select appropriate software to use in teaching	2.26	0.78	Rejected
38	I can design technology-enhanced learning activities for my students	2.30	0.75	Rejected
39	I can guide my students on the appropriate software to use in their projects	2.44	0.68	Rejected
40	I can use the internet during class activities to meet certain learning goals	2.20	0.77	Rejected
41	I can teach students how to use graphic software to create pictures	2.40	0.72	Rejected

$\bar{X}$ = Mean, SD = Standard Deviation

From Table 3, it can be seen that items 30-31, 33-34, & 36 had mean scores greater than 2.50 indicating that lecturers could use PowerPoint presentation slides in delivering instruction in class and also knew how to source videos from the internet to support course content of fine and applied arts. Lecturers were also aware of computer ethics which was why they could inform their students about it. Table 3 also showed that lecturers can effectively use search engines such as google chrome, firefox etc. Lastly, lecturers could share instructional materials that they found online with their students via email, drop box etc. However- er, items 3, 6 and 8-12 had a mean score below 2.50, indicating that lecturers were not proficient in the related ICT-based tools as indicated by the item statements.

Hypothesis One (H$_{01}$): There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria.

Table 4: t-test analysis of the mean responses of lecturers of federal and lecturers of state colleges of education on the ICT-based tools available

Groups	N	$\bar{X}$	SD	t-cal	df	Sig.	Decision
Lecturers of Federal College of Education	36	2.74	0.45	1.07	67	0.28	NS
Lecturers of State College of Education	33	2.61	0.59				

$\bar{X}$ = Mean; SD = Standard Deviation; t-critical = 1.96; t-cal = t- calculated value; df = Degrees of freedom; Sig = Significant level; NS = Not significant.

This hypothesis was tested using an independent sample t-test to establish a difference in response between lecturers of federal colleges and lecturers of state colleges on the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education (See Table 4). This resulted in t-cal = 1.07, *p* < 0.28. Following this result, the null hypothesis of no significant difference in the mean responses of lecturers of federal colleges and lecturers of state colleges on the ICT-based tools available for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria was not rejected. Hence, the level of availability of ICT-based tools in colleges was independent of ownership.

Hypothesis Two (H$_{02}$): There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on the ICT-based tools

that are available and utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria

Table 5: t-test analysis of the mean responses of lecturers of federal and state colleges of education on the ICT-based tools that are utilized

Groups	N	$\bar{X}$	SD	t-cal	df	Sig.	Decision
Lecturers of Federal College of Education	36	2.51	0.30	1.07	67	0.16	NS
Lecturers of State College of Education	33	2.50	0.32				

$\bar{X}$ = Mean; SD = Standard Deviation; t-critical = 1.96; t-cal = t- calculated value; df = Degrees of freedom; Sig = Significant level; NS = No significant.

This hypothesis was tested using an independent sample t-test to ascertain the difference in response between lecturers of federal colleges and lecturers of state colleges on the ICT-based tools that are utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria (See Table 5). This resulted in t-cal = 0.16, $p < 0.87$. Following this result, the null hypothesis of no significant difference in the mean responses of lecturers of federal colleges and lecturers of state colleges on ICT-based tools that are utilized for the teaching and learning of fine and applied arts in colleges of education in North-Central Nigeria was not rejected. Hence, the level of utilization of ICT-based tools in colleges was independent of ownership.

Hypothesis Two (H_{03}): There is no significant difference in the mean responses of lecturers of federal colleges of education and lecturers of state colleges of education on their proficiency in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central Nigeria.

Table 6: t-test analysis of the mean responses of lecturers of federal and state colleges of education on their proficiency in the use of ICT-based tools

Groups	N	$\bar{X}$	SD	t-cal	df	Sig.	Decision
Lecturers of Federal College of Education	36	2.46	0.17	0.23	67	0.82	NS
Lecturers of State College of Education	33	2.47	0.24				

$\bar{X}$ = Mean; SD = Standard Deviation; t-critical = 1.96; t-cal = t- calculated value; df = Degrees of freedom; Sig = Significant level; NS = Not significant.= Not significant.

This hypothesis was tested using an independent sample t-test to ascertain the difference in response between lecturers of federal colleges and lecturers of state colleges on their proficiency in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central Nigeria (See Table 6). This led to t-cal = 0.23, p < 0.82. Following this result, the null hypothesis of no significant difference in the mean responses of lecturers of federal and state colleges on their proficiency in the use of ICT-based tools in teaching fine and applied arts in colleges of education in North-Central was not rejected. Hence, the level of their proficiency in the use of ICT-based tools in colleges was independent of ownership.

4. Discussion

The results of this study revealed that a majority (71 percent) of ICT-based tools were available for the teaching and learning of Fine and Applied Arts in colleges. These range from desktop/laptop computers, video recorders/discs, film, slide, transparency or film projectors, tapes/flashcards, record players/discs, TV sets, digital cameras, word processing packages, spreadsheet packages, presentation packages, desktop publishing packages and database packages.

The study found that among the ICT-based tools available, film, slide, transparency or film projectors, TV sets, digital cameras, word processing packages and presentation packages were utilized by lecturers during teaching and learning activities. This implies that in totality, only 41.7 % of the ICT-based tools were used in the teaching of fine and applied arts in the various colleges. This finding corroborates the finding of that the adequacy and use of instructional materials for the teaching of fine and applied arts in colleges of education was below average [11]. This finding implies that the teaching of fine and applied arts in these colleges would not have been effective due to the ineffective use of teaching facilities. Noted that when learners are not properly taught they tend to have a poor foundation and this will, in turn, affect their future performances in learning and passing on facts and knowledge to others.

The study found that lecturers were proficient in a few ICT-based tools. The available ICT-based tools were under-utilized as a result of the lecturers' poor ICT proficiency. Availability, utilization and lecturer's proficiency in the use of ICT-based tools were independent of the ownership of the colleges of education. These results indicated that the situation on availability, utilization and lecturers' proficiency was the same in the federal and state colleges of education.

5. Conclusions

There were a good number of ICT-based tools for the teaching of fine and applied arts in the colleges, but many were not utilized in the teaching and learning of fine and applied arts as a result of lectures' poor ICT proficiency.

Recommendations

1. Colleges of education in collaboration with the ministry of education should regularly conduct needs assessments using data from staff surveys to identify areas in which workshops would be organized for lecturers of fine and applied arts.

2. Education authorities should periodically, through workshops, conferences and seminars retrain the trainers of fine and applied arts in colleges of education to update them on the recent developments in information and communication technology

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Author Contributions

All the authors contributed to the study's formation and design. Chris Ibenegbu performed material preparation, data collection, and analysis. Juliet Angu wrote the first draft of the manuscript and Chris Ibenegbu commented on the former versions of the manuscript. All the authors read and approved the final manuscript.

Consent

We obtained consent from all individual participants included in the study.

Data Availability

The data set we generated during and/or analyzed during the current study is not publicly available due to confidentiality issues but is available from the corresponding author on request.

Competing interests

The authors declare that they have no competing interests.

Ethical approval

We obtained both oral and written consent from the participants. Participation was voluntary. The Local Institutional Review Board (Postgraduate Studies Review Board), University of Nigeria, Nsukka approved the study procedure.

Before the participants' verbal consent, we informed them about the purpose of the study and we made them understand that participation was voluntary and refusal to participate in the study attracts no penalty. We assured the study respondents of confidentiality and we removed personal identifiers in the summary data to ensure confidentiality.

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