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Research Article

Availability and Utilization of ICT Resources in Teaching Computer Education In Secondary Schools in Anambra State, Nigeria

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Abstract

The study investigated the availability and utilization of ICT resources in the teaching of Computer Education among Secondary School Teachers in Anambra State. Two research questions guided the study. The population consisted of 450 computer teachers teaching computer education in the schools. From the population, 300 computer teachers were sampled and used for the study. The instrument for data collection was a self-developed 40 – item questionnaire. It was validated by experts and the reliability co-efficient stood at 0.79. The data collected were analysed using frequencies and percentages. The findings revealed that many of the ICT resources needed for the teaching of computer education are not available. It was also revealed that majority of the resources needed for the teaching of computer education are not being used by the teachers. In view of the findings, recommendations were made.

1. Introduction

Information and Communications Technology (ICT) is a technology trend that has brought the world into a global village. It is a buzzword in media and telecommunications which has revolutionalised the economy, business, industry, politics and education. The ICT uses various information superhighway namely: the internet, intranet and extranet to function. The ICT is a science of information which uses the computer and multi-electronic resources to collect, process, store, retrieve and transmit or disseminate information to any part of the world. ICT has permeated virtually all aspects of human endeavour. It has creeped into the educational system and has had obvious impact in the curriculum.

ICT has been considered a priority in global education and Nigeria is not left out. The Federal government of Nigeria in the National Policy on Education (FRN, Revised 2014) recognizes ICT as a product of technological change and as an innovation in education. It is in this view that Computer Education was introduced as an integral part of ICT in the Nigerian educational system. The main purpose was for acquisition of computer literacy and computer skills that are needed in all facets of human life in the 21st century. For instance, the media houses viz: radio, television and newspapers

are connected to the internet for reading the news online. In the same way it was viewed that the curriculum contents should be read online. This led to curriculum innovations which saw to the gradual changing from the old 6-3-3-4 to the new system which has the child's first 9 years in school as developed by the Nigerian Educational Research and Development Council (NERDC). The curriculum as developed by NERDC includes the introduction of basic technology, ICT, computer education and emphasis on creative thinking among others. Obioma (2007) aptly pointed out that, the new curriculum is ICT – driven with emphasis on practical, concrete and hands – on experiences. Also Ololube (2006) and Nwana (2009) remarked that both the teachers and the students should achieve better curriculum outcomes with the use of ICT resources.

As earlier pointed out, the main purpose of computer education was for computer literacy and skills needed in the 21st century classrooms and outside the classroom. It goes beyond reading computer books and pamphlets. It really requires skills, abilities and competencies in the use of computer. For instance it requires digital literacy ands skills, hardware literacy and skills, software literary and skills; and computer packages integration and usage skills. Others are networking skills and multimedia systems literacy and skills. For instance the use of multimedia projector (mm projector) requires good computer literacy and skills. This is because it accepts many electronic devices such as the computer, digital television, radio, radio-cassette, magnetic sound recorder and electronic board technology among others. Nwana (2008a) pointed out that the mm projector uses multimedia planning sheet which requires computer literacy for production and use.

The need for availability and utilization of ICT resources in teaching –learning situations is on the increase. The government has made effort towards the building of ICT facilities and procurement of ICT resources for various schools and colleges. For instance, during Governor Peter Obi's administration in Anambra State, computer and its accessories were procured in large quantities and presented to schools. Also, teachers were sent on short-term computer courses. Still, they are being challenged in the use of computer in teaching computer education as a subject of study. It is against this background that the present study seeks to find out the range of ICT resources available for the teaching of computer education in secondary schools. Also, to determine the utilization of ICT resources by teachers in the teaching of computer education.

2. Purpose

This study determines:
1. The availability of ICT resources for the teaching of computer education in secondary schools in Anambra State.
2. The ICT resources being utilized or not utilized by teachers in the teaching of computer education in secondary schools in Anambra State.

3. Research Questions

1. What are the ICT resources available for the teaching of computer education in secondary schools in Anambra State?
2. What are the ICT resources being utilized by teachers in the teaching of computer education in secondary schools in Anambra State?

4. Method

The descriptive survey research design was adopted in this study. The survey research design according to Nworgu (2015) is one in which a group of people or items are being studied by collecting and analyzing data from only a few people or items considered to be representative of the entire population. It is therefore deemed appropriate in this study. The study was carried out in secondary schools in Anambra State of Nigeria. The population consisted of all the 450 computer teachers teaching computer education in secondary schools. Simple random sampling technique was used to select 300 computer teachers which formed the sample for the study. The instrument

for data collection was a self-developed 40 – item questionnaire titled "Availability and Utilization of ICT Resources in Teaching Computer Education" (AUIRTCE). It has sections A and B which sought information on the two research questions.

The instrument was subjected to both face and content validations by experts. The reliability of the instrument was determined using Cronbach Alpha. A reliability co-efficient of 0.77 was obtained, an indication that the instrument was reliable for data collection. In distributing the copies of the questionnaire, the researcher with two trained research assistants adopted the technique of on-the-spot distribution and collection. This ensured a 100% return rate. The data collected were analysed using frequency distribution and percentages. The acceptable level of percentage was 50% and above for items indicating positive that is, Available (AV) and Utilized (U). Invariably, any item that scored below 50% was regarded as negative that is, Not Available (NA) and Not Utilized (NU).

5. Findings

5.1 Research Questions I:

What are the ICT resources available for the teaching of computer education in secondary schools in Anambra State?

Table I: Frequencies and Percentages of Teachers' Responses on Availability of ICT Resources for Teaching Computer Education.

N = 300

S/N	Availability of Materials Items	Freq Yes	%	Freq No	%	Decision
1	Computer	279	93%	21	7%	AV
2	Scanner	250	83.3%	50	16.7%	AV
3	Printer	261	87%	39	13%	AV
4	Multimedia (MM) Projector	16	5.3%	284	94.7%	NA
5	Electronic Whiteboard (e-whiteboard)	12	4%	288	96%	NA
6	Card readers (e-readers)	29	9.7%	271	90.3%	NA
7	E-graphics board	10	3.0%	290	97.0%	NA
8	Power bank devices e.g UPS	24	8%	276	92%	NA
9	Computer pen/pen recorder	27	9%	273	91%	NA
10	MoDems (External/Internal)	255	85%	45	15%	AV
11	CD-ROM	285	95%	15	5%	AV
12	Audio and video discs	250	83.3%	50	16.7%	AV
13	Flash memories	245	82%	55	18%	AV
14	Slides for power-point presentations	11	3.7%	289	96.3%	NA
15	Courseware templates	215	72%	85	28%	AV
16	E-books as high-tech materials	20	6.7%	280	93.3%	NA
17	Magnetic cards for recording and recall of instructional information.	15	5%	285	95%	NA
18	Computer worksheets	22	7.3%	278	92.7%	NA
19	Graphics software	30	10%	270	90%	NA
20	Programmed Instruction materials	18	6%	282	94%	NA
	Cluster Total					
	Cluster %		37.9%		62.1%	

From table I, few ICT resources are available for the teaching of computer education as indicated by the respondents in items 1,2,3,10,11,12,13 and 15. The respondents also indicated that majority of the ICT resources needed are not available as shown in items 4,5,6,7,8,9,14,16,17,18,19 and 20. These items scored below 50% (yes) which is the acceptable level for availability. The cluster percentage for Availability (A) is 37.9% while that of Not – available (NA) is 62.1% .

5.2 Research Question 2:

What are the ICT resources being utilized by teachers in the teaching of computer education in secondary schools in Anambra State?

Table 2: Frequencies and Percentages of Teachers' Responses on ICT resources being Utilized in teaching Computer Education.

N = 300

S/N	Availability of Materials Items	Freq Yes	%	Freq No	%	Decision
1	Computer	261	87%	39	13%	U
2	Scanner	57	19%	243	81%	NU
3	Printer	253	84.3%	47	15.7%	U
4	Multimedia (MM) Projector	14	4.7%	286	95.3%	NU
5	Electronic Whiteboard (e-whiteboard)	11	3.7%	289	96.3%	NU
6	Card readers (e-readers)	26	8.7%	274	91.3%	NU
7	E-graphics board	9	3%	291	97%	NU
8	Power bank devices e.g UPS	27	9%	273	91%	NU
9	Computer pen/pen recorder	23	7.7.%	277	92.3%	NU
10	MoDems (External/Internal)	249	83%	51	17%	U
11	CD-ROM	283	94.3%	17	5.7%	U
12	Audio and video discs	245	81.7%	55	18.3%	U
13	Flash memories	241	80.3%	59	19.7%	U
14	Slides for power-point presentations	11	3.7%	289	96.3%	NU
15	Courseware templates	211	70.3%	89	29.7%	U
16	E-books as high-tech materials	19	6.3%	281	93.7%	NU
17	Magnetic cards for recording and recall of instructional information	13	4.3%	287	95.7%	NU
18	Computer worksheets	20	6.7%	280	93.3%	NU
19	Graphics software	27	9%	273	91%	NU
20	Programmed Instruction materials	15	5%	285	95%	NU
	Cluster Total					
	Cluster %		33.6%		66.4%	

Table 2 revealed that, few ICT resources such as the computer, printer, Modems, CD-ROM, audio/video discs, flash memories and courseware templates are being utilized in the teaching of computer education as shown in items 1, 3, 10, 11, 12, 13, and 15. On the other hand, majority of the resources as shown in items 2,4,5,6,7,8,9,14,16,17,18,19 and 20 are not being utilized. They scored below 50% (yes) which is the acceptable level for utilization. The cluster percentage for utilization (U) is 33.6% while that of Not Utilized (NU) is 66.4%.

6. Discussion

The findings of the study as shown in table I revealed that the respondents affirmed that few of the items that is, eight out of twenty were the available ICT resources for the teaching of computer education. The materials that are available are items 1 (93%) 2 (83.3%), 3 (87%), 10(85%), 11(95%), 12 (83.3%), 13(82%) and 15(72%). These items are computer, scanner, printer, MODEMS, CD-ROM, audio/video discs, flash memories and courseware templates. All the other items: 4,5,6,7,8,9,14,16,17,18,19 and 20 scored below 50% yes which is the acceptable level for availability. The cluster percentage for availability is 37.9%. This indicates that majority of the ICT resources are not available. This finding is consistent with the findings of Hartley (2007) that majority of the new technologies needed by teachers in teaching – learning situations are not available.

The findings of this study is also in tandem with Leach (2008) that the new information and communication technologies (ICTs) needed for achieving the goals of education for all are not available.

The finding tallies with Nwana (2007; 2008b and 2012) that the new technologies needed for

effective ICT implementation in schools are not available. Again, the findings aligns with Jegede and Owolabi (2008) that there is dearth of infrastructural facilities for the teaching of computer Education. The finding agrees with the Global ICT Report (2012) that Nigeria ranked 112 out of 142 countries surveyed for network readiness to participate and benefit from ICT development.

Research question 2, table 2 which addressed the utilization of ICT resources in the teaching of computer education indicated that few materials are utilized in the teaching of computer education. That is seven out of twenty are the materials being utilized. These are computer (87%), printer (84.3%), Modems (83%), CD-ROM (94.3%), Audio/video discs (81.7%), flash memories (80.3%) and courseware templates (70.3%). All the other items: 2, 4, 5, 6, 7, 8, 9, 14, 17, 18, 19 and 20 scored below 50% yes which is the acceptable level or utilization. The cluster percentage for utilization is 33.6%. This shows that majority of the ICT resources are not being utilized in the teaching of computer education. This finding agrees with the findings of Ololube (2006) and Pelgrum (2012) that there is poor ICT resources integration and usage in the school system.

Again, the finding is congruent with Pumer (2011) and Nwana (2008b) that the teachers lack the necessary skills and competencies in the use of ICT resources. The finding is also in conformity with Amedu (2014) that secondary school teachers lack the skills to fully utilize e-learning technology in curriculum implementation hence, the traditional chalk and duster approach still dominate in secondary school pedagogy.

7. Conclusion

Computer education is a subject of study in schools and colleges. As a school subject which has ICT inclination, it requires a lot of ICT resources for effective teaching and learning. Some of the resources are computer, scanner, printer and e-books. The result of the findings showed that many of the ICT resources are not available for effective teaching of computer education. It was also revealed that few ICT resources were being utilized by teachers in the teaching of computer education.

8. Recommendations

The following recommendations are made based on findings:
1. The government should provide adequate ICT resources for effective teaching and learning of computer education.
2. The government should embark on training and retraining of teachers for effective teaching of computer education through short-term courses, seminars, workshops and conferences.
3. The government should ensure regular supply of electricity for effective use of ICT resources for computer education.
4. Infrastructural facilities such as the computer laboratory and computerized library should be provided in the schools for effective teaching of computer education.
5. The government should employ technicians for repair and maintenance of ICT resources being used in computer education.

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