ASSESSMENT OF AVAILABILITY AND UTILIZATION OF ICT FACILITIES FOR EFFECTIVE TEACHING OF COMPUTER STUDIES IN SECONDARY SCHOOLS IN OSUN STATE, NIGERIA

By

AjeigbeTaiwo O. (Ph.D) (taiaje@oauife.edu.ng, taiaje215@yahoo.com)
Ogunsakin, I. B. (sakinbamikole@yahoo.com) **and**
Shogbesan Y. O. (yusufolayinka813@yahoo.com)
Department of Educational Foundations and Counseling,
Faculty of Education, Obafemi Awolowo University, Ile-Ife

Abstract

The study determined the level of availability of ICT facilities in secondary schools in Osun State. It also assessed the extent of utilization of ICT facilities in the teaching and constraints to its effective usage. A descriptive survey research was adopted for the study. The population consisted of secondary schools in Ife Central LGA of Osun State. The sample comprised sixty computer teachers selected from twenty schools (public and private) selected randomly for the study. An instrument developed by the researcher titled Questionnaire on availability and Utilization of ICT Facilities in schools (QUAIF) was used to collect data. The QUAIF was used to collect information on the availability and utilization of ICT facilities in the teaching of computer studies from the 52 selected teachers was reviewed by experts in Tests and measurement to ensure face and content validity of the instrument. The internal consistency reliability of the instrument was ascertained using Cronbach Alpha with a 0.87 coefficient. The data collected were analyzed using frequency counts, percentage while the independent t-test was further used to explore and confirm the research hypothesis. The result indicated that the level of availability of ICT facilities used for teaching Computer studies in schools is mostly above average (>50%). It also showed that usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is "High" as 22 (42.3%) and 9 (17.3%) of the Computer studies teachers have "High" and "Very High" extent of usage respectively. The result further showed that "Reluctant to adapt to the use of ICT facilities in Teaching-learning of computer studies" and "lack of adequate funding to purchase ICT facilities for teaching of Computer studies" are major constraint. Finally, the result showed that there is a significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in public and private secondary schools (t_{50} =2.736; p > 0.05). The study concluded that the availability and utilization is on the average and therefore recommended among others that there was the need to provide ICT facilities in schools for effective teaching of computer studies in secondary schools.

Keywords: Teaching Facilities; Availability and Utilization of teaching facilities; Information Communication and Technology; Computer studies.

Introduction

Information and communication technology (ICT) is a pivot for the existence of a global world in terms of social; economic; political, and educational development of any nation and allows for advancement of any country. However, the adoption of ICT requires an environment that encourages open competition and normalization; increase access to the Internet and telecommunications infrastructure, increase ICT literacy and financial resources (Bello & Aderbigbe, 2014). In developing countries, most especially in Nigeria, the level of accessibility and utilization of ICT facilities is still very low, especially its effective usage in teaching and learning within the four walls of classroom and beyond. The use of ICT facilities in teaching is an indispensable part of educational administration as their applications enhances and facilitates teachers' pedagogical activities (Yusuf, 2005).

The influence of ICTs on human activity cannot be underestimated, it is highly needed to solve some problems which human being cannot solve easily most especially in the felid of education. Many institutions and organization have adopted policies favoring the implementation of modern technology. Generally, the world has become a global village through the advent of ICT and have influenced all facets of education as well as rapid advancement in teaching and learning deliveries (Otunla, Adekunle, Amuuda & Caleb 2015).

The quest for viable technological advancement and innovation in information technology, necessitated the establishment of National Information Technology Development Agency (NITDA) by the Federal Government of Nigeria. The federal government of Nigeria started the implementation of its ICT policy in April 2001 till date which makes it to be 16 years. Constantly, observation and research has been showing that Nigeria as a country is still lagging behind in the area of ICTs sector. Specifically, one of the policy which stated that; 'to integrate ICT into the mainstream of education and training (NITDA, 2003; Alayi, 2003) is yet to be fully achieved especially in the area of operational teaching and learning processes in secondary schools. This is an indication that much attention is needed for its proper integration in all sectors especially in the education sector of the country.

Consequently, a lot of compounded factors have been concealed to affect the effective integration of ICT into the mainstream of education. These may include; low percentage of teachers who have ICT skills that will match up to the population of the student's in the area of teaching and learning processes; Inaccessibility to ICT infrastructure capable of transporting multimedia messaging; absence of electric power grids in most parts of the country even in cases where there is adequate telecommunication coverage; lack of accessibility to computer equipment and other accessories and lack of motivation from the government to school administrators for proper implementation of ICT policy. Also, inadequate funding of educational sector from the budgetary allocation may have contributed to the limitation of the full implementation of ICT policy in Nigeria which in turn affect secondary school education.

The introduction of Computer studies in Secondary schools in Nigeria necessitated the need to equip schools with ICT facilities to better promote practical teaching and learning activities especially of computer studies. It will help to broaden the horizon of the students and

make them receive adequate ICT training through effective utilization of these ICT facilities. Since teaching and learning has gone beyond the teacher standing in front of a group of pupils and disseminating information to them without students' adequate involvement (Ajayi 2008). Ajayi (2008). Stressed further that teachers can take students beyond traditional limits to ensure their adequate participation in teaching and learning process and create vital environments to experiment and explore with the aid of ICT facilities. Consequently, this will bring about effective teaching and learning of the subject.

The lack of active participation of students is one of the factors responsible for students' poor performances in West African Examination Council (WAEC) results of secondary schools where students' performances are generally poor in introductory technology, physics, chemistry, biology and other sciences-related subjects (WAEC, 2000). With the introduction of Computer studies in the secondary school curriculum, the use of ICT facilities for practical teaching will ensure adequate student participation and consequently improve student performance. Even in other science subjects like mathematics and physics; research has shown that students taught with ICT facilities performed better than when they are taught using traditional method (Udousoro & Abimbade, 1997; Adeniyi, 1997; Onasanya, Fakomogbon, Shehu & Soetan, 2010). Hence, the practical applicability and utilization of ICT facilities in teaching of Computer studies will be of great benefit as it will enhance their performance in the subject.

Although, the teaching and learning of computer studies in schools still may not have yielded positive result since its introduction as a subject in the school curriculum. This may be because most computer studies teachers in Nigeria use the traditional method (chalkboard and textbook) in teaching in the classroom without giving much attention to practical classes using the ICT facilities. Actually, most schools may not have adequate facilities to allow for access to and usage of ICT facilities in their teaching. Moreover, various studies have shown the many-sided problems militating against the effective use of ICT facilities in the teaching learning process in schools. These problems include: irregular power supply (Yusuf, 2005; Ofodu, 2007); inadequate computer literate teachers (Oyebanji, 2003; Dabesaki, 2005; Kwache, 2007); inadequate funds (Ogunmilade, 1988;Nwite, 2007) among others. All these problems pose a challenge to the achievement of an appropriate level of integration of ICT facilities in teaching and learning.

Despite the fact that Nigeria government sees the need for computer education by including it into secondary school educational curriculum, most secondary schools may still find it very difficult to access and utilized ICTs gargets in their various schools for its proper teaching. However, observations by the researchers through interactions with various school administrators in Osun state showed that low percentage of the students enroll for computer studies in West African Examination Council and National Examination Council compare to other subjects. These may be due to lack of ICTs gadgets, power supply, and lack of competent teachers among others. As a result of the aforementioned situation regarding computer studies, it is imperative to determine the level of availability and utilization of ICT facilities in teaching computer studies in secondary schools. Hence, this study.

To achieve the above objectives, the following research questions were answered and one hypothesis was   tested;

Research questions
1.   What is the level of availability of ICT facilities in secondary schools in Ife central LGA of Osun state?
2.   To what extent are teachers using ICT facilities in the teaching of computer studies in the study area?
3.   What are the constraints to the effective usage of ICT facilities in the teaching of computer studies in Ife central LGA of Osun state?

Research hypothesis
1.   There is no significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in public and private secondary schools in Ife central LGA of Osun state.

Method
        The study adopted the descriptive survey research design. The study population comprised computer studies teachers in secondary schools in Ife central LGA of Osun State. The study sample comprised of 52 computer studies teachers. The computer studies teachers were purposively selected from the 20 secondary schools (10 public and 10 private) randomly selected and used for the study. An instrument developed by the researcher titled Questionnaire on Availability and Utilization of ICT Facilities in schools (QUAIF) was used to collect data from the respondents. The QUAIF was reviewed by research experts and a pilot study was conducted with a Cronbach Alpha of 0.87obtained. The QUAIF consisted of a checklist of relevant ICT facilities, various classroom activities involving the use of ICT facilities and possible constraints to the effective usage if ICT facilities in schools. The data gathered was analysed using frequency counts and percentage to explore the research questions while the independent t-test were further used to test the research hypothesis.

Results

Research Question 1: What is the level of availability of ICT facilities in secondary schools in Ife central LGA of Osun state?

Table 1: Level of Availability of ICT facilities in secondary schools in Ife central LGA of Osun state

S/N	ICT Facilities		Available		Not Available	
		N	F	%	F	%
1	Computer	52	50	96.2	2	3.8
2	Printer	52	39	75.6	13	24.4
3	Internet Services	52	9	17.3	43	82.7
4	Projector	52	32	61.5	20	38.5
5	Projector Screen	52	31	59.6	21	40.4
6	Photocopying machine	52	31	59.6	21	40.4
7	Scanning Machine	52	28	53.8	24	46.2
8	Web cam	52	27	51.9	25	48.2
9	Uninterrupted power supply (ups)	52	32	61.5	20	38.5
10	Software e.g Microsoft word	52	30	57.7	22	42.3
12	Laptop	52	34	65.4	18	34.6
13	Disc Player	52	30	57.7	22	42.2

NB: N= Number of respondent F= Frequency.

Table 1 above shows that the level of availability of ICT facilities used for teaching Computer studies in schools are mostly available for teaching (i.e. >50%) especially "computer" and "printers" and "laptop" as indicated by the Computer studies teachers in the checklist provided except "internet services" which is the least available for teaching computer studies in schools as indicated by the respondents (9, 17.3%). However, observation technique was carried out to ascertain the availability of all the ICT facilities used for teaching Computer studies in their respective computer laboratories or center. It was observed by the researchers that most of the available ICT facilities used for teaching Computer studies in schools identified above are available in the selected schools.

Research Question 2: To what extent are teachers using ICT facilities in the teaching of Computer studies in secondary schools in Ife central LGA of Osun state?

Table 2: Extent teachers are using ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA of Osun state

Extent of usage	Frequency	%
Very low	8	15.4
Low	13	25.0
High	22	42.3
Very high	9	17.3

Total	52			100				

Table 2 shows that the extent of usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is "High" as 22 (42.3%) and 9 (17.3%) of the Computer studies teachers have "High" and "Very High" extent of usage respectively. However, only 8 (15.4%) of the Computer studies teacher have "Very low" extent of usage.

Research Question 3: What are the constraints to the effective usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA of Osun state.

Table 3: Constraints to the effective usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA of Osun state

S/N	ITEMS	SA	F	A	F	D	F	SD	F
1	Lack of computer literate teachers	24	46.2	21	40.4	0	0.0	7	13.5
2	Irregular power supply	29	55.8	13	25.0	4	7.7	6	11.5
3	High cost of purchasing ICT facilities.	13	25.0	24	50.0	9	17.3	4	7.7
4	Inadequate facilities to support teaching of computer studies in schools.	13	25.0	26	50.0	9	17.3	4	7.7
5	Inadequate time for computer practical in schools	11	21.2	30	57.7	4	7.7	7	13.5
6	Reluctant to adapt to the use of ICT facilities in Teaching-learning of computer studies.	34	65.4	6	11.5	5	9.6	7	13.5
7	Lack of adequate funding to purchase ICT facilities for teaching of Computer studies	32	61.5	6	11.5	5	9.6	9	17.3
8	Poor perception of the use of ICTs facilities for teaching.	18	34.6	19	36.5	8	15.4	7	13.5
9	Lack of proper emphasis on computer practical class in schools.	32	61.5	6	11.5	5	9.6	9	15.4
10	Lack of motivation on the part of the school management to encourage the use of ICT in teaching and learning processes.	25	48.1	5	9.6	21	40.4	1	1.9

NB: SA= Strongly Agree, A= Agree, D= Disagree, SD= Strongly Disagree, N= Number of Respondent

Table 3 shows the constraints to the effective usage of ICT facilities in the teaching of computer studies in secondary schools. It can be observed that the "Reluctant to adapt to the use of ICT

facilities in Teaching-learning process" is the most significant constraint indicated by the Computer studies teachers. This is followed by "Lack of adequate funding to purchase ICT facilities for teaching of Computer studies" as well as the "Lack of proper emphasis on computer practical class in schools". Also, "irregular power supply" and "Inadequate time for computer practical in schools" and "Inadequate facilities to support teaching of Computer studies in schools" also are prominent constraints.

Research Hypothesis 1: There is no significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in Osun state public and private secondary schools in Ife Central LGA.

Table 4: Mean difference in the extent to which teachers use ICT facilities in the teaching of computer studies in Osun state public and private secondary schools in Ife Central LGA.

School type	N	Mean	t	Df	p- value
Public	24	27.1667	2.736	50	0.009
Private	28	33.4286			

Table 4 above, given that t_{50} =2.736 and a p-value < 0.05, it can be concluded that there exists a significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in public and private secondary schools in Ife Central LGA. Also, given the mean value of the extent of usage for each school type, it can be observed that teachers in private secondary schools make use of ICT facilities in the teaching of Computer studies than teachers in public secondary schools.

Discussion

The first findings of the study shows that the level of availability of ICT facilities used for teaching Computer studies in schools is mostly above average but all the ICT facilities used for teaching Computer studies are not adequate. The finding is in accordance with the finding of Adeyemi and Olaleye (2010), which indicated that many schools in Ekiti State are deficient in the availability of ICT facilities. The finding also agreed with those of other researchers (Alebiosu, 2000 & Adeosun, 2002) which also revealed that equipment and facilities for effective teaching and learning of Computer studies are deficient in Nigeria.

The findings further shows that the extent of usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is relatively high among Computer studies teachers used for the study. The findings suggest that, the usage of ICT facilities was at a high level which was contrary to the findings made by Seiden, (2000) and Uhaegbu, (2001) which revealed a low level usage of ICT facilities in secondary schools.

Furthermore, the findings indicated that the "Reluctant to adapt to the use of ICT facilities in Teaching-learning process" is the most significant constraint indicated by the Computer studies teachers. Also, "irregular power supply" and "Inadequate time for computer practical in schools" are also prominent constraints. This finding is similar to the findings of Adeyemi and Olaleye (2010) which claimed that the intermittent disruption of electricity supply most notable constraints to the usage of ICT facilities in secondary school in Ekiti State, Nigeria.

Other researchers have confirmed that electricity failure has been a persistent problem militating against ICT application and use in Nigeria (Adomi, 2005a; Adomi, Omodeko, &Otole, 2004; Adomi, Okiy, & Ruteyan, 2003). This makes the few schools with ICT facilities unable to use them regularly and effectively for the teaching of Computer studies. Similarly, given that there are inadequate facilities to support teaching of Computer studies in schools, Ndiku (2003) discovered that insufficient numbers of computers and peripheral devices inhibit deployment of ICT facilities by teachers. All the constraint identified is similar to those identified by Yusuf (2005), Ofodu, (2007), Oyebanji (2003) and Nwite (2007).

Finally, there exists a significant difference in the extent to which teachers use ICT facilities in the teaching of computer studies in public and private secondary schools with teachers in private secondary schools using ICT facilities more than teachers in public secondary schools.

Conclusion

From the above findings, it was concluded that the ICT facilities in teaching computer studies in secondary schools in Ife Central LGAs of Osun state are available on the average with a relatively high utilization of such ICT facilities in teaching computer studies.

Recommendations

Based on the findings, it was recommended that;

1. Adequate ICT facilities should be provided in schools by relevant school authorities or government agencies.
2. Relevant school authorities or government agencies should provision electricity supply and adequate time for practical computer studies to enable it proper utilization.
3. Also, well trained and motivated Computer studies teachers should be employed to ensure effective teaching of Computer studies as a subject in the secondary schools
4. Computer/ICT studies should be made compulsory for all secondary school students.
5. Relevant authorities in schools should motivate their teacher towards the use of ICT facilities for the teaching of Computer studies.

References

Adeniyi, A.(1997). Computer aided instruction and achievement in physics. Proceedings of theConference on Ajumogobia Memorial, Innovation in Science, Technology and Mathematics, (AMISTM '97), STAN, Lagos, Nigeria, 257-260.

Adeosun, O.V. (2002). Relative Effects of Three Multi-Media Packages on Students' Achievement and Retention in Social Studies, Unpublished PhD Thesis University of Ado-Ekiti.

Adeyemi, T. O. & Olaleye, F.O. (2010).Information Communication and Technology (ICT) for the Effective Management of Secondary Schools for Sustainable Development in Ekiti State, Nigeria. American-Eurasian Journal of Scientific Research 5 (2): 106-113, 2010

Adomi, E.E. (2005a). Internet development and connectivity in Nigeria. Program 39 (3): 257-68.

Adomi, E.E., Okiy, R.B., &Ruteyan, J.O. (2003).A Survey of cybercafés in Delta State, Nigeria. The Electronic Library 21 (5): 487-95.

Adomi, E.E., Omodeko, F.S., &Otdo, P.U. (2004).The use of cybercafé at Delta State University, Abraka, Nigeria. Library Hi Tech, 22 (4), 383-88.

Ajayi, I. A. &Ekundayo, H. T. (2009).The application of information and communication technology in Nigerian secondary schools.Department of Educational Foundations and Management, Faculty of Education University of Ado – Ekiti, Ekiti State, Nigeria.

Ajayi, I. A. (2008).Towards effective use of information and communication technology for teaching in Nigerian colleges of education. Asian Journal of Information Technology 7(5), 210 – 214

Alayi, G. O. (2003). NITDA and ICT in Nigeria.Available online at http://ejds.org/meeting/2003/ictp/papers/Ajayi.pdf.

Alebiosu, K.A., 2000. Effects of two instructional methods on senior secondary school students' perception of the difficult in learning some chemical concepts and their achievementgains. Journal of Education Foundations and Management, 1(1): 55-68.

Bello, O. A. & Aderbigbe, F. M. (2014).The role of ICT in national development and poverty alleviation. International journal of research in engineering & technology.2 (5), 2347-4599.

Brakel, P.A., &Chisenga, J. (2003). Impact of ICT based distance learning: The African story. The Electronic Library 21 (5), 476-486.

Dabesaki, M. (2005).e-Education in Nigeria: challenge and projects. Being a paper presented at the 8th UNICT TASK force meeting, Dubin, Ireland.

Goshit, T. (2006). Nigeria's need for ICT: SP. 259 technology and policy in Africa. Available: http://ocw.mit.edu/NR/rdonlyres/Special-Programs/SP-259Spring-2006/891209EE-E63B-4617-BA9D-7635A63C754B/0/goshit.pdf

Kwache, P. Z. (2007). The imperatives of information and communication technology for teachers in Nigeria higher education.MERLOT Journal of Online learning and teaching. 3(4): 359 – 399.

Ndiku, L. (2003). The problem encountered by school personnel in the implementation of computer use in secondary schools in UasinGishu District. Unpublishes thesis: Moi University, Eidoret.

NITDA (2003). Use IT: National Information Technology Development Agency, Abuja Nigeria. Available: http://www.nitda.gov.ng/use_it.htm.

Nwagwu, W. E. (2006). Integrating ICTs into the globalization of the poor developing countries. **Information Development 22** (3): 167-179.

Nwite, O. (2007). Utilization of information and communication technology in schools: problem and suggestions.

Ofodu, G. O. (2007). Nigeria Literary educators and their technological needs in a digital age.Education Focus 1(1): 22 – 30.

Ogunmilade, C. A. (1998). Television for Instruction.Television Quarterly, 1, 7-11.

Onasanya, S. A., Fakomogbon, M. A., Shehu, R. A. &Soetan, A. K. (2010).Learning Information and Communications Technology Skills and the Subject Context of Introductory Technology Learning in Nigeria. Journal of Artificial Intelligence, 3, 59-66.**doi:** 10.3923/jai.2010.59.66

Oyebanji, P. K. (2003). Teacher training: Key to implementation of information and communication technology in science technology and mathematics teaching. In M. A. G. Akale (ed.) Proceeding of the 44thAnnual Conference of Science Teachers' Association of Nigeria, 265-267.'

Seiden, P. A. 2000. Where Have All The Patrons Gone, Reference and User Services Quarterly, 39(3): 2-10.

WAEC, (2000).West African Examination Council Examinations Report in Science Subjects.WAEC., Lagos, Nigeria.

Uhaegbu, A., 2001. The Information User Issues and Themes. Enugu, John Jacobs Classics Publishers Ltd,152.

Yusuf, M.O. (2005). Information and communication education: Analyzing the Nigerian national policy for information technology. International Education Journal 6 (3), 316-321