TEACHERS' PERCEPTION OF THE AVAILABILITY AND UTILIZATION OF ICT TOOLS FOR TEACHING OF MATHEMATICS IN BASIC SCHOOLS IN ATIBA LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

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Abstract

This study examines the availability and utilization, the benefits and challenges of ICT tools in the teaching of Mathematics in basic schools using Atiba Local Government Area of Oyo State as a case study. The population for the study comprises sixty-eight (68) Mathematics teachers in the thirty-one (31) public basic schools in the Local Government Area under study. A sample of ten (10) public basic schools was used where three (3) Mathematics teachers were selected as samples. The instrument for data collection is a self-designed questionnaire tagged "ICT in Basic Schools (ICTBS). A descriptive survey design was used for the study. With a 2.5 standard mean, the study revealed that ICT tools for mathematics teaching were lacking in public basic schools. Based on the calculated grand mean of 2.54 obtained, it was also shown that the respondents agreed that ICT tools are to some extent available and which showed the grand mean of 3.72 to indicate that the respondents agreed with the listed items as the major challenges facing ICT tools. The study revealed further that some of the benefits of using ICT in basic schools include but are not limited to making mathematics teaching and learning interesting. Some of the challenges facing ICT as revealed by the study are irregular power supply, inadequate computer literate teachers, and inadequate ICT tools. It was, therefore, recommended that Oyo state government should increase the funding of the education sector to cater for ICT programmes in public basic schools and there should be periodic training for mathematics teachers on ICT skills acquisition.

Keywords: Teaching, Tools, Availability, Utilization and ICT.

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 the advancement of any country. However, the adoption of ICT requires an environment that encourages open competition and normalization; increases access to the

Internet and telecommunications infrastructure and increase ICT literacy and financial resources (Bello & Aderibigbe, 2014). In developing countries, most especially in Nigeria, the level of accessibility and utilization of ICT tools is still very low, especially its effective usage in teaching and learning within the four walls of the classroom and beyond. The use of ICT tools in teaching is an indispensable part of educational administration as their applications enhance and facilitates teachers' pedagogical activities (Yusuf, 2015).

The influence of ICTs on human activity cannot be underestimated; it is highly needed to solve some problems which human beings cannot solve easily, especially in the felid of education. Many institutions and organizations have adopted policies favouring the implementation of modern technology. Generally, the world has become a global village through the advent of ICT which has 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 the 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 have been showing that Nigeria as a country is still lagging in the area of the ICTs sector. Specifically, one of the policy which stated that; 'to integrate ICT into the mainstream of education and training (NITDA, 2003; Alayi, 2013) is yet to be fully achieved especially in the area of operational teaching and learning processes in basic 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; a 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 the

educational sector from the budgetary allocation may have contributed to the limitation of the full implementation of ICT policy in Nigeria which in turn affects basic school education.

The introduction of Computer studies in basic schools in Nigeria necessitated the need to equip schools with ICT tools to better promote practical teaching and learning activities, especially computer studies. It will help to broaden the horizon of the pupils and make them receive adequate ICT training through the effective utilization of these ICT tools. Since teaching and learning have gone beyond the teacher standing in front of a group of pupils and disseminating information to them without the pupils' adequate involvement (Ajayi 2018). Ajayi (2018) stressed further that teachers can take pupils beyond traditional limits to ensure their adequate participation in the teaching and learning process and create vital environments to experiment and explore with the aid of ICT tools. Consequently, this will bring about effective teaching and learning of the subject.

The lack of active participation of pupils is one of the factors responsible for pupils' poor performances in common entrance results of basic schools where pupils' performances are generally poor in basic science and other science-related subjects. With the introduction of Computer studies in the basic school curriculum, the use of ICT tools for practical teaching will ensure adequate pupils participation and consequently improve pupils' performance. Even in other science subjects like mathematics and basic science; research has shown that pupils taught with ICT tools performed well than when they are taught using the traditional method (Onasanya, Fakomogbon, Shehu & Soetan, 2010). Hence, the practical applicability and utilization of ICT tools in the 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 results since its introduction as a subject in the school curriculum. This may be because most mathematics teachers in Nigeria use the traditional method (chalkboard and textbook) in teaching mathematics in the classroom without giving much attention to using the ICT tools (Alebiosu, 2010). Most schools may not have adequate tools to allow for access to and usage of ICT tools in their teaching. Moreover, various studies have shown the many-sided problems militating against the effective use of ICT tools in the teaching-learning process in schools. Some of these problems are irregular power supply (Yusuf, 2015; Ofodu, 2017); inadequate computer literate teachers (Oyebanji, 2013; Dabesaki, 2015; Kwache, 2017); inadequate funds (Ogunmilade, 2010; Nwite, 2017) among others. All

these problems pose a challenge to the achievement of an appropriate level of integration of ICT tools in teaching and learning mathematics, especially in Nigeria.

For this study, ICT tools to be considered are television sets, film strips, internet, projector and computer. Hence, this study tends to assess the teachers' perception of the availability and utilization of ICT tools for teaching and learning mathematics in basic schools in Atiba Local Government Area of Oyo State, Nigeria as a case study.

Statement of the Problem

Mathematics, which is one of the core science subjects, is perceived as one of the most difficult subjects in schools, despite its role in providing the basic concepts and principles needed for the development of science and technology. Poor academic achievement in mathematics among basic school pupils in Nigeria has been widely reported to have caused low performance in mathematics and other science-related subjects when they get to secondary schools. This has aroused great concern among learners, teachers, school managers and administrators, parents and sponsors of academic processes, including researchers. The questions of how best to improve the achievement of students in Nigerian schools appear to have gained increasing prominence.

While expenditures on education have risen in recent times, particularly between the 2011 and 2021 budget as published by the Budget Office of the Federal Republic of Nigeria, it has not been apparent that academic achievement has risen at all, much less commensurate. This potential paradox has engendered a series of research aimed at actually finding out what could be responsible for the problem. Although factors such as pupils' attitude and interest, pupils' and teachers' perception of the subject, the socio-cultural background of pupils and the learning environment have been studied and identified as major causes of underachievement of some pupils in mathematics.

However, very little, or no such work on the assessment of availability and utilization of ICT tools for the teaching of mathematics has been undertaken particularly in Atiba Local Government of Oyo State and most of the research conducted is based on learners but this study is teachers based. This study is designed to investigate the perception of teachers on the availability as well as utilization of ICT tools for the teaching of mathematics in Basic Schools in Atiba Local Government Area of Oyo State, Nigeria

Purpose of the Study

The general purpose of this study is to investigate the assessment of the availability and utilization of ICT tools for the teaching of mathematics in basic schools in Atiba Local Government of Oyo State, Nigeria. Specifically, the study sought to determine;

1. the level at which ICT tools are available for the teaching of mathematics in basic schools?
2. the level at which teachers in basic schools use ICT tools in the teaching of mathematics?
3. the perceived benefits of using ICT tools in the teaching of mathematics in basic schools?
4. What are the challenges facing the use of ICT tools in the teaching of mathematics in basic schools?

Research Questions

The study sought to answer the following questions:

RQ1: To what level are the ICT tools available for the teaching of mathematics in basic schools?

RQ2: To what level are the teachers and pupils in basic schools use ICT tools in the teaching of mathematics?

RQ3: What are the perceived benefits of using ICT tools in the teaching of mathematics in basic schools?

RQ4: What are the challenges facing the use of ICT tools in the teaching of mathematics in basic schools?

Methodology

The study employed a descriptive survey design. The population for the study comprises sixty-eight (68) Mathematics teachers in the thirty-one (31) public basic schools in the Local Government Area under study. A sample of ten (10) public basic schools was used where three (3) Mathematics teachers are selected making a total number of thirty (30) mathematics teachers. The ten (10) schools are;

i. Federal Government Girls College Staff School, Oyo
ii. Oroki Commercial Primary School, Oroki
iii. Baale Mogaji Abogunrin Alaafin Community Primary School
iv. Aatan Baptist Church Primary School

v. Nomadic Basic School
vi. Oderinde Community Primary School
vii. Yaaye Community Basic School, Elegbo, Saabo, Oyo
viii. Ajade-Kokumo Community Primary School
ix. Otia Community Primary School
x. Ansarudeen Special School III Agunpopo, Oyo

The instrument for data collection was a self-designed questionnaire tagged "ICT in Basic Schools "(ICTBS*)*". The instrument was validated by research experts in the field of Measurement and Evaluation in the Educational Psychology Department of Federal College of Education (Special) Oyo and It has four items rated scale i.e. Strongly Agreed = (SA), Agreed = (A), Strongly Disagreed (SD), Disagreed (D). The questionnaire was administered to the ten (10) mathematics teachers in some public basic schools which are not under consideration to ascertain its reliability. The split-half method was used and a reliability coefficient of 0.89 was gotten. This implies that the instrument is reliable. The permission of the school head teachers where the respondents were sampled was sought. The purpose of the research was explained to them and the questionnaires were given to the teachers and collected back after completion. Data collected was analyzed using descriptive statistics.

Results

The results were arranged according to the stated research questions as follows;

Research Question 1: To what level are ICT tools available for the teaching of Mathematics in basic schools?

Table 1: Mean response of Mathematics teachers on availability of ICT tools.

S/N	Items	Mean	Remarks
1	There are enough computers to teach pupils.	2.15	Disagreed
2	Television sets are available for teaching pupils.	2.26	Disagreed
3	There are projectors for teaching pupils.	2.97	Agreed
4.	The school is connected to the internet.	2.92	Agreed
5.	Disc player is available for teaching pupils.	2.98	Agreed
6.	There are film strips for teaching pupils.	2.24	Disagreed
7.	CCTV are available for teaching pupils.	2.24	Disagreed
	Weighted Mean	**2.54**	

Table 1 showed the response obtained from teachers on the availability of ICT tools in basic schools. The respondents agreed that tools like projectors, disc players and internet connectivity were made available. While tools like computers, film strips, and CCTV are not adequately available because their mean response is less than 2.50 which is the cutoff point. Based on the calculated weighted mean of 2.54 obtained, it showed that the respondents agreed that ICT tools are to some extent available.

Research Question 2: To what level are teachers in basic schools exposed to the use of ICT tools in the teaching of mathematics?

Table 2: Mean responses of teachers on their exposure to ICT

S/N	Items	Mean	Remarks
1.	There are functional ICT tools owned by the school Cafe.	3.13	Agreed
2.	Teachers are exposed to the use of ICT tools for mathematics teaching to the pupils.	2.41	Disagreed
3.	Teachers use a computer to teach mathematics education to pupils.	2.41	Disagreed
4.	Pupils are given opportunities to use ICT tools in the class during mathematics class.	1.96	Disagreed
5.	Training is organized for mathematics teachers on the use of ICT tools.	2.21	Disagreed
6.	Training is organized for a student on the use of ICT tools in learning mathematics.	2.09	Disagreed
	Weighted Mean	**2.30**	

Table 2 showed the mean response obtained from the teacher on exposure to ICT tools in basic schools in Oyo state. The respondents agreed with item 1 because the mean response was 3.13 which signifies that there are functional ICT tools but disagreed with items 2- 6 because the mean responses are less than 2.5. The weighted mean signifies that teachers were not exposed to ICT tools.

Research Question 3: What are the perceived benefits of using ICT tools in the teaching of mathematics in basic schools?

Table 3: Mean response of students on benefits of ICT tools in basic schools.

S/N	Items	Mean	Remarks
1.	ICT helps in making mathematics teaching-learning more effective.	2.84	Agreed
2.	ICT enhances the quality of work of both mathematics teachers/pupils	2.88	Agreed
3.	ICT makes mathematics teachers up to date in their various disciplines.	2.81	Agreed
4.	ICT enhances the efficiency of mathematics teachers.	2.91	Agreed
5.	ICT helps mathematics teachers to share information with colleagues in other parts of the country.	2.86	Agreed
6.	ICT helps the student to share mathematics knowledge with colleagues in other parts of the country.	2.68	Agreed
	Weighted Mean	**2.83**	

Table 3 showed the mean responses of pupils on the perceived benefits of ICT tools in basic schools of Atiba local government. The respondents agreed with all the items because none of the mean responses is below the cutoff point of 2.50 and the weighted mean is 2.83.

Research Question 4: What are the challenges facing the use of ICT tools in the teaching of mathematics in basic schools?

Table 4: Mean response of pupils on the challenges facing ICT tools in basic schools.

S/N	Items	Mean	Remarks
1.	Most basic schools lack computer literate teachers.	3.84	Agreed
2.	There is a lack of ICT / Mathematics laboratories in the schools.	3.99	Agreed
3.	Irregular power supply hinders the use of ICT tools were they available.	3.53	Agreed
4.	The cost of purchasing computers is high for schools.	3.85	Agreed
5.	There are inadequate tools like a computer to support the full application of ICT.	3.43	Agreed
6.	Lack of adequate funds hinders schools from embracing ICT.	3.65	Agreed
	Weighted Mean	**3.72**	

Table 4 showed the mean response of pupils/teachers to the challenges facing ICT tools in basic schools of Atiba local government. The respondents agreed with all items 1-6 of table 4 because the mean responses of each item are great than the cutoff point of 2.50, which showed the grand

mean of 3.72 to indicate that the respondents agreed with the listed items as the major challenges facing ICT tools.

Discussion of Findings

From the results obtained, respondents agreed that; ICT tools such as computers, television sets, CCTV, etc. are not adequately available in basic schools. This is in line with the work of Yusuf (2015) who opined that the aforementioned tools are not adequate in the basic schools in Nigeria especially public basic schools. Teachers' level of exposure to the use of ICT in basic schools is inadequate. Most of the teachers are computer illiterate. Some that possess computer certificates have them for promotional purposes only. This result corroborates the view of Onasanya, Fakomogbon, Shehu & Soetan (2010). Otunla, Adekunle, Amuuda & Caleb (2015) are of the same view with the result that the perceived benefits of using ICT in schools include making teaching and learning more effective, and enhancing the quality of work of both teacher and pupils; helping teachers to be up-to-date, etc. The irregular power supply is a challenge facing the application of ICT in basic schools, all the schools in the sampled area lack an adequate number of computer-literate teachers.

Conclusion

The education sector of Oyo state and the country at large has no smooth running of the education system. All levels of education are plagued with a catalogue of problems ranging from underfunding to mismanagement. If the educational sector of our schools throughout the state is to maintain maximum standards, it should be provided with adequate funds, infrastructural tools in terms of modern classrooms equipped with an electronic computer systems which are connected to the internet and highly qualified personnel that can effectively, utilize these resources. Our basic school pupils should be given the best in education with modern tools which will in turn draw out the best in every student and ensure the utility of these pupils to the development of Atiba, Oyo state, and the country at large.

Recommendation

Based on the investigations carried out on the topic, the following recommendations are made:

- ICT equipment and tools for mathematics teaching should be made available to all basic schools.

- Government should encourage and put in place policies to attract international codes and nongovernmental organizations (NGOs) to invest in ICT-related projects in basic schools.
- Mathematics Teachers that are not ICT compliance should be encouraged by the basic school administrators to study further to meet up with the new demands of ICT literate teachers.
- Attention should be paid to the deforming state of tools in our basic school. Also, ICT systems and tools like laboratories should be provided in basic schools in Oyo state.

References

Ajayi, I. A. (2018).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. (2013). NITDA and ICT in Nigeria. Retrieved from http://ejds.org/meeting/2022/ictp/papers/Ajayi.pdf.

Alebiosu, K.A., (2010). Effects of two instructional methods on senior BASIC school pupils' perception of the difficulty in learning some chemical concepts and their Achievement gains. *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.

Dabesaki, M. (2015). *E-Education in Nigeria: challenge and projects*. Being a paper presented at the 8th UNICT TASK force meeting, Dubin, Ireland.

Kwache, P. Z. (2017). The imperatives of information and communication technology for teachers in Nigeria's higher education. *MERLOT Journal of Online learning and teaching. 3*(4), 359 – 399.

NITDA (2003). *Use IT: National Information Technology Development Agency*. Abuja. Nigeria.

Nwite, O. (2017). *Utilization of information and communication technology in schools: problem and suggestions.* Enugu. John Jacobs Classics Publishers Ltd.

Ofodu, G. O. (2017). Nigeria Literary educators and their technological needs in a digital age. *Education Focus 1*(1), 22 – 30.

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.*

Otunla, T. O., Adekunle, O.O., Amuuda, T.U & Caleb, F.O. (2015).Information Communication and Technology (ICT) for the Effective Management of BASIC Schools for Sustainable Development in Ekiti State, Nigeria. *American-Eurasian Journal of Scientific Research, 5*(2), 106-113

Oyebanji, P. K. (2013). Teacher training: Key to the 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.'

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

Sanbo, P.A. (2005). Impact of ICT-based distance learning: The African story. *The Electronic Library, 21* (5), 476-486.

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

Yusuf, M.O. (2015). Information and communication education: Analyzing the Nigerian national policy for information technology. *International Education Journal 6* (3), 316-321