
The Influence Of Information And Communication Technology In Early Childhood Classrooms In A Nigerian State

BY

¹OKPALA, O. P., ¹ONYENWE, C. Y., ¹NWAUBANI, U. H & *¹OBIJIOFOR, E. O.

1. Department of Early Childhood and Primary Education, Nnamdi Azikiwe University, Awka

* Corresponding Author: OBIJIOFOR, E. O. (Oluchukwuobi520@gmail.com)

ABSTRACT

The paper was designed to ascertain influence of information and communication technology in early childhood classrooms in a Nigerian state. Three research questions guided the study while three hypotheses were formulated and tested. Descriptive survey research design was utilized and it was carried out in Imo state. A total of 270 nursery school teachers were selected from the 27 local government areas in Imo State. A 23 item questionnaire was developed from literature and used to obtain data for the study. The questionnaire was validated by seven lecturers of Early Childhood Education. Cronbach alpha was used to determine internal consistency of the questionnaire which yielded a coefficient of 0.86. Data collected were analyzed using mean while t-test statistic was used to test null hypotheses. Mean cut off point of 2.50 was applied in decision making thus items with mean values of 2.50 or above was interpreted as agreed while items with mean less than 2.50 were interpreted as disagree. For the null hypotheses, they were upheld if the calculated level of significance was greater than 0.05 or otherwise rejected. The findings reveal ten roles of ICT in the learning environment of primary school pupils, seven challenges of utilizing ICT in nursery school classrooms and six roles of teachers in integrating ICT within the nursery school classroom. The findings also reveal that that gender, years of experience and age of teachers had no statistical significance on the opinions of the teachers. Based on the findings, the study recommended among others that the state government should provide the funds needed to purchase ICT resources needed by nursery school pupils which are expensive; and Local governments should organize training/retraining for teachers in schools within their jurisdiction on the use of ICT for teaching nursery school kids so as to achieve the aims of utilizing ICT for learning among the children.

Key Words: Information and Communication Technology, Early Childhood Classrooms

Introduction

The popularization of Information and Communication Technology (ICT) is promoting effectiveness in all areas of human activities. The revolution of ICT seems to be progressing at a very rapid pace and has caused significant alterations to personal, social and work lives. Despite

the utilization of ICT, there has been ongoing debate among authors about what it actually means. According to Ofurum and Ogbonna (2010), ICT is the combination of computing, telecommunication and video techniques for the purpose of acquiring, processing, storing, and disseminating vocal, pictorial, textual and numerical information. Nworgu (2008) stated that ICT refers to a whole range of facilities or technologies involved in information processing and electronic communication to be handled with skills and expertise, for effective achievement and realization of its potentials. ICT can be defined as anything that allows people to get information, to communicate with each other, or to have an effect on environment using electronic or digital equipment (Siraj-Blatchford & Siraj-Blatchford, 2003). ICT is utilized across many fields including early childhood classrooms.

Early childhood classrooms refer to the teaching environment of young children. According to Louv (2009), early childhood classroom refers to the environment where children between the ages of zero to five years learn. Information and Communication Technology according to Ikoh and Nwankwo (2013) plays an important role in the teaching and learning among children in early childhood classrooms. Due to its interactive nature, it has the potential to meet the needs of providing practical ways of constructively directing their own learning activities and complete tasks in a way to meet their own interests and need (Ukwueze & Ajala, 2014). ICT can facilitate differentiation and individualization in education making it possible to tailor both the content and the presentation of the subject matter to the individual background, experience and needs of students. In addition, Schiller and Tillett (2004) said ICT enhances what is possible in early childhood classrooms by; amplifying what teachers are able to do, providing an entry point to content and enquiries that were not possible without the use of ICT, extending what pupils are

able to produce as a result of their investigations, and finally by providing teachers with the opportunity to become learners again. Contextually, early childhood classrooms refer to the learning environment of nursery school pupils in Nigeria.

The need to ascertain the influence of ICT in early childhood classrooms arose from the sporadic observation of reactions of children in nursery schools when they were prevented access to electronic sources and devices to which they were accustomed. This is because the culture shift is different from what people were accustomed to before the popularization of ICT. According to Prensky (2010), those born in today's world where ICT has been popularized are called digital natives as against the digital immigrants who lived in the analogue age and immigrated to the digital world. According to UNESCO (2011), digital natives represent the first generation to grow up with this new technology. They are used to all kinds of digital toys and tools, which are an integral part of their life. Digital activity is like a mother tongue for them (Olga & Maider, 2017). The authors further posited that they are the generation of technological acceleration, of the internet and its networks. Growing up in such an environment, they think and process information in a totally different way than previous generations: their thinking patterns have changed, and Prensky (2010) says it is likely that their brains have physically changed, too. Furthermore, Prensky posited that as digital natives, they are 'native speakers' of the digital language leading to such a radical change that there is a big discontinuity between their generation and previous ones.

At a didactic level, it poses a serious problem in the classroom. The use of new technologies in the school context, even to perform a task, strengthens non-relevant behaviors in relation to

consumption, or provokes an alteration in the process of knowledge and interaction with reality (UNESCO, 2011). In addition, significant challenges that are considered stand in the way of ICT deployment in early childhood education include equity of access to equipment, and professional development provision for training teachers (Ukwueze & Ajala, 2014). Understanding gaps exist as Dale, Robertson, and Shortis (2002) predict that “the qualitative and quantitative gaps between the pupils' and the teacher's understanding of the affordances of ICT as a technology of teaching are much greater than has ever been the case with any other teaching technology.” Plowman, McPake and Stephen (2012).argued that the curriculum and assessment are less prescriptive for pre-school settings and the role of computers in driving up standards is not yet explicitly stated in pre-school policy documents. The authors further asserted that pre-school teachers have a diverse range of qualifications and experience in the use of ICT for teaching, schools sometimes have very few staff and many schools do not generally have a high level of ICT resources. Despite the potential benefit and challenge of utilizing ICT in childhood classrooms, there is a paucity of evidence about the current state of its usage in many Nigerian states such as Imo State.

Imo is one of the 36 states of Nigeria and is in the South East region. The capital of the state is Owerri which is one of the largest towns in the state. The initial interest on the influence of ICT in early childhood classrooms in stemmed from extensive teaching experiences in the early childhood sector in Imo state, where it was evident that ICT was becoming an increasing fixture in the teaching and learning environment. More recently, this interest shifted into a slightly different direction when working with early childhood teachers within the teacher education context. It became increasingly apparent that teachers displayed varying views of the part they

considered ICT played or should play within these settings, coupled with how they chose to use or not to employ ICT resources. Haugland (2000) opined that ICT if used in appropriate ways can enhance learning with very young children. ICT offers a multiplicity of uses and can be integrated into meaningful and learning opportunities for children.

However, the bulk of literature in relation to influence of ICT was centered predominantly on the higher education sector like secondary schools and tertiary institutions (Ajayi & Ekundayo, 2009; Adesoji, 2012; Aboderin & Kumuyi, 2013). ICT within the higher schooling sector has long been considered an integral component of the curriculum, the use of ICT within early childhood classrooms had been afforded less attention. This lack of attention did not necessarily mean however, that ICT was nonexistent or not implemented within early childhood contexts. In Imo state, observation and pre study visitation to several nursery schools indicate that small groups of nursery school teachers have been implementing and integrating ICT within their teaching and learning contexts over a number of years. Notwithstanding, there is a paucity of information on the influence of information and communication technology in early childhood classrooms in Imo state. It is this gap in literature that the current study sought to fill.

Purpose of the Study

The general purpose of the study was to ascertain influence of information and communication technology in early childhood classrooms in Imo state, Nigeria. Specifically, the study sought to ascertain the;

1. roles of ICT in the learning environment of nursery school pupils
2. challenges of utilizing ICT in nursery school classroom

3. roles of the teachers in integrating ICT within the nursery school classroom

Hypotheses

Ho 1: There is no significant difference between the mean responses of male and female teachers on the roles of ICT in the learning environment of nursery school pupils

Ho 2: There is no significant difference between the mean responses of inexperienced teachers (five years or less of experience) and experienced teachers (greater than five years of experience) on the challenges of utilizing ICT in nursery school classroom

Ho 3: There is no significant difference between the mean responses of young teachers (less than or equal 40 years of age) and old teachers (greater than 40 years of age) on the roles of the teachers in integrating ICT within the nursery school classroom

Methodology

Descriptive survey design was adopted for the study and was conducted in Imo State, Nigeria. The population for the study consisted of all nursery school teachers in Imo State. Simple random sampling technique was used to select ten nursery school teachers from each of the twenty seven local government areas in the state which amounted to 270 nursery school teachers being involved in the study. A 23 item questionnaire was developed from literature and use to obtain data for the study. The response for the questionnaire was Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

The questionnaire was face validated by three experts from the Department of Early Childhood Education, University of Nigeria, Nsukka and four experts from the Department of Early Childhood and Primary Education, Nnamdi Azikiwe University, Awka. Cronbach alpha was

used to determine internal consistency of the questionnaire which yielded a coefficient of 0.86. The questionnaire was administered on 270 respondents and there was 94% return rate which equates to 254 nursery school teachers. Mean and standard deviation was used to answer the research questions while t-test statistics was used to test the hypothesis at 0.05 level of probability. Mean cut off point of 2.50 was applied in decision making. Hence, any item with mean value of 2.50 or above was interpreted as agreed while items with mean less than 2.50 were interpreted as disagree. For the null hypotheses, they were upheld if the calculated level of significance was greater than 0.05 or otherwise rejected.

Results

Research Questions 1: What are the roles of ICT in the learning environment of nursery school pupils?

Hypothesis 1: There is no significant difference between the mean responses of male and female teachers on the roles of ICT in the learning environment of nursery school pupils

Table 1: Mean Ratings and T-test Analysis of the Respondents on Roles of ICT in the Learning Environment of Nursery School Pupils

S/N	ITEMS	GX	X1	SD 1	X2	SD 2	Sig	Dec
1	It increases interest of pupils because learning feels like games	3.68	3.51	0.66	3.84	0.37	0.06	*NS
2	It supports effective learning for children due to enhanced interaction	3.22	3.12	0.74	3.57	0.50	0.24	*NS
3	ICT enables nursery school pupils to actively work together	3.20	3.16	0.75	3.26	0.65	0.59	*NS
4	It is suitable for delivery of learning in all situations	3.32	3.41	0.78	3.26	0.65	0.74	*NS
5	It provides a range of tools to support and enhance learning	3.56	3.51	0.70	3.63	0.50	0.50	*NS
6	It provides practical ways of pupils constructively directing their own learning activities	3.34	3.29	0.73	3.42	0.61	0.49	*NS
7	It amplifies what teachers are able to do at the same time	3.25	3.13	0.60	3.36	0.45	0.38	*NS

8	It enhances documentation processes by allowing children document their own learning	3.26	3.19	0.81	3.43	0.51	0.09	*NS
9	Mastering the use of different ICT tools aids children’s belief in their own competency	3.28	3.26	0.97	3.30	0.88	0.02	*S
10	It allows children monitor and reflect on their own learning	3.63	3.57	0.58	3.84	0.37	0.61	*NS

Key: N = 270 (83 Males & 187 Females); GX = Grand Mean; X1 = Mean of male teachers; SD 1= Standard deviations of Male teachers; X2 = Mean of female teachers; SD 2 = Standard Deviations of female teachers; Sig = Significance; Dec = Decision; * =Agreed

Results from Table 1 revealed that all the items had their mean values ranged from 3.20 to 3.68.

All the items were above the cut off mean of 2.50 indicating that these were the roles of ICT in the teaching and learning environment of nursery school pupils. Furthermore, the result from the hypothesis showed that the significant level of nine out of the ten items ranged from 0.06 - 0.74 and these were all greater than 0.05 showing that no significant differences exist between the mean ratings of male and female teachers on the nine items. However, significant differences exist on the remaining item (item 9) because the significant level was 0.02 which was less than 0.05. Therefore, it can be concluded that there was no significant difference between the mean responses of male and female teachers on the roles of ICT in the learning environment of nursery school pupils. The null hypothesis was upheld for all items except item nine.

Research Questions 2: What are the challenges of utilizing ICT in nursery school classrooms?

Hypothesis 2: There is no significant difference between the mean responses of inexperienced teachers (5 years or less of experience) and experienced teachers (greater than 5 years of experience) on the challenges of utilizing ICT in nursery school classroom

Table 2: Mean Ratings and T-test Analysis of the Respondents on Challenges of Utilizing ICT in Nursery School Classrooms

S/N	ITEMS	GX	X1	SD 1	X2	SD 2	Sig	Dec
1	The pupils might get distracted playing non-educational games	3.59	3.59	0.60	3.58	0.61	0.95	*NS

2	Inadequate funds to procure the needed ICT materials	3.47	3.45	0.61	3.50	0.51	0.82	*NS
3	Implementation of ICT can be difficult to maintain	3.42	3.53	0.61	3.32	0.60	0.21	*NS
4	Low level of teacher competency in the use of ICT	3.27	3.26	0.77	3.28	0.56	0.99	*NS
5	Lack of infrastructure like power supply.	3.55	3.52	0.70	3.63	0.50	0.55	*NS
6	Teacher's resistance to the adoption of new technology	3.47	3.40	0.65	3.58	0.51	0.26	*NS
7	Lack of strong networks needed in schools to utilize the internet	3.33	3.35	0.62	3.27	0.45	0.67	*NS

Key: N = 270 (102 Inexperienced & 168 Experienced); GX = Grand Mean; X1 = Mean of Inexperienced teachers; SD 1 = Standard deviations of Inexperienced teachers; X2 = Mean of female Experienced teachers; SD 2 = Standard Deviations of Experienced teachers; Sig = Significance; Dec = Decision; * = Agreed

Results from Table 2 showed that all the items had their mean values ranged from 3.27 to 3.59.

All the items were above the cut off mean of 2.50 indicating that these were the challenges of utilizing ICT in nursery school classrooms. Furthermore, the result from the hypothesis showed that the significant level of all seven items ranged from 0.21 - 0.99 and these were all greater than 0.05 showing that no significant differences exist between the mean ratings of the responses of inexperienced and experienced teachers on the challenges of utilizing ICT in nursery school classrooms. Hence, the null hypothesis was upheld.

Research Questions 3: What are the roles of the teachers in integrating ICT within the nursery school classroom?

Hypothesis 3: There is no significant difference between the mean responses of young teachers (less than or equal 40 years of age) and old teachers (greater than 40 years of age) on the roles of the teachers in integrating ICT within the nursery school classroom

Table 3: Mean Ratings and T-test Analysis of the Respondents on Roles of Teachers in Integrating ICT within the Nursery School Classroom

S/N	ITEMS	GX	X1	SD 1	X2	SD 2	Sig	Dec
1	Teachers should guide the child on the use of ICT	3.44	3.40	0.65	3.58	0.51	0.26	*NS

2	Teachers should allow children to explore ICT materials and teach them to respect the materials.	3.33	3.35	0.62	3.27	0.45	0.56	*NS
3	Teachers should be able to use numerous ICT facilities so as to carry all kids along	3.55	3.56	0.66	3.52	0.51	0.84	*NS
4	Teachers should build expertise and learn alongside children using ICT	3.29	3.22	0.77	3.53	0.51	0.11	*NS
5	Teachers should research on new ways of using ICT	3.41	3.38	0.73	3.52	0.61	0.44	*NS
6	Teachers should be knowledgeable in computer and teaching skills	3.37	3.37	0.62	3.37	0.68	0.99	*NS

Key: N = 270 (110 Young Teachers & 160 Old Teachers); GX = Grand Mean; X1 = Mean of young teachers; SD 1= Standard deviations of young teachers; X2 = Mean of old teachers; SD 2 = Standard Deviations of old teachers; Sig = Significance; Dec = Decision; * = Agreed

Results from Table 3 showed that all the items had their mean values ranged from 3.29 to 3.44. All the items were above the cut off mean of 2.50 indicating that these were the roles of the teachers in integrating ICT within the nursery school classroom. Furthermore, the result from the hypothesis showed that the significance level of all six items ranged from 0.11 - 0.99 and these were all greater than 0.05 showing that no significant differences exist between the mean responses of young and old teachers on the roles of the teachers in integrating ICT within the nursery school classroom. Hence, the null hypothesis of was upheld.

Discussion of the Findings

The findings of the study revealed that the roles of ICT in the learning of environment of nursery pupils include; it increases interest of pupils because learning feels like games, it supports effective learning for children due to enhanced interaction, ICT enables nursery school pupils to actively work together, it is suitable for delivery of learning in all situations, it provides a range of tools to support and enhance learning, it provides practical ways of pupils constructively directing their own learning activities, it amplifies what teachers are able to do at the same time, it enhances documentation processes by allowing children document their own learning,

mastering the use of different ICT tools aids children's belief in their own competency and it allows children monitor and reflect on their own learning. The findings also revealed that there was no significant difference between the mean responses of male and female teachers on the roles of ICT in the learning environment of nursery school pupils. The findings are in line with Ikoh and Nwankwo (2013) who found out that ICT increases interest of pupils because learning feels like games as well as supports effective learning for children due to enhanced interaction. The findings are also in cognizance with that of Ukwueze and Ajala (2014) who found out that ICT is suitable for delivery of learning in all situations. The hypothesis of no significance that was upheld could be because the male and female teachers had relatively the same academic background.

The findings of the study revealed that the challenges of utilizing ICT in nursery school classrooms include; the pupils might get distracted playing non-educational games, inadequate funds to procure the needed ICT materials, implementation of ICT can be difficult to maintain, low level of teacher competency in the use of ICT, lack of infrastructure like power supply, teacher's resistance to the adoption of new technology and lack of strong networks needed in schools to utilize the internet. The findings also revealed that there was no significant difference between the mean responses of inexperienced and experienced teachers on the challenges of utilizing ICT in nursery school classrooms. The findings are in line with Ajayi and Ekundayo (2009) who found out that the challenge of adopting ICT in schools was the lack of infrastructure like power supply. The findings are also in line with Aboderin and Kumuyi (2013) who found out that a major challenge to the utilization of ICT is the use of teacher's resistance to the

adoption of new technology. The upheld hypothesis of no significance could be because both inexperienced and experienced teachers both work in the same environment.

The findings of the study revealed that the roles of teachers in integrating ICT within the nursery school classroom include; teachers should guide the child on the use of ICT, teachers should allow children to explore ICT materials and teach them to respect the materials, teachers should be able to use numerous ICT facilities so as to carry all kids along, teachers should build expertise and learn alongside children using ICT, teachers should research on new ways of using ICT and teachers should be knowledgeable in computer and teaching skills. The findings of the study also revealed that there was no significant difference between the mean responses of young and old teachers on the roles of teachers in integrating ICT within the nursery school classroom. The findings are in line with Adesoji (2012) who found out that teachers play a role in integrating ICT by being able to use numerous facilities so as to carry along all the kids in the class. The findings are also supported by Ukwueze and Ajala (2014) who found out that the roles of teachers include building expertise and learning alongside children using ICT. The upheld hypothesis of no significant difference could be because both young and old lecturers work in the same environment.

Conclusion

The study sought to ascertain the influence of information and communication technology in early childhood classrooms in Imo State. In ascertaining this, the findings revealed ten roles of ICT in the learning environment of nursery pupils, seven challenges of utilizing ICT in nursery school classrooms and six roles that the teachers play in integrating ICT within the nursery

school classroom. In ensuring that the roles of ICT are achieved, it is important to mitigate the identified challenges. As a result, some recommendations were made.

Recommendations

1. The state government should sensitize school teachers and parents on the immense roles that ICT plays in the learning process of the nursery school children. These will ensure that the benefits of utilizing ICT are attained.
2. The state government should provide the funds needed to purchase ICT resources needed by nursery school pupils which are expensive.
3. Local governments should organize training/retraining for teachers in schools within their jurisdiction on the use of ICT for teaching nursery school kids so as to achieve the aims of utilizing ICT for learning among the children.
4. Schools should ensure that ability to utilize ICT for teaching nursery school children is a prerequisite that teachers would have before employing them.

References

- Aboderin, O.S & Kumuyi, G.J (2013). The Problems and prospects of e-learning in curriculum implementation in secondary schools in Ondo State, Nigeria. *International Journal of Educational Research and Technology*, 4(1), 90 -96. Retrieved from www.soegra.com/ijert/ijert.htm
- Adesoji, F. F. (2012). Undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Ado-Ekiti, Nigeria. *International Journal of Library and Information Science* 4(7), 121-130.
- Ajayi, I. A., & Ekundayo H. T. (2009). The application of information and communication in Nigerian secondary schools. Retrieved from [http:// www.academicjournals.org/INGOJ](http://www.academicjournals.org/INGOJ)
- Dale, R., Robertson, S., & Shortis, T. (2002). You can't go with the technological flow, can you? Constructing ICT and 'teaching and learning. *Journal of computer Assisted Learning*, 20, 456-470
- Haugland, S. (2000). Early childhood classrooms in the 21st century: Using computers to maximize learning. *Young Children*, 55(1), 12-18.
- Ikoh, N.F. & Nwankwo, F.M. (2013). Teacher resourcefulness: A key to improving ICT learning in primary schools. *Journal of OMEP*, 10(1), 115-121.
- Louv, R. (2009). *Last child in the woods: Saving our children from nature-deficit disorder*. London: Atlantic Books.
- Nworgu, B.C. (2008). *Education in the information age: Global challenges and enhancement strategies*. Nsukka: University Trust Fund.
- Ofurum, C. O & Ogbonna, G. U. (2010). *Accounting information systems*. Owerri: Ban Publication.
- Olga, B. & Maider, P.V. (2017). Knowledge of the natural and social environment in ICT consumer children. *Procedia - Social and Behavioral Sciences*, 237, 164 – 168
- Plowman, L., McPake, J., & Stephen, C. (2012). Extending opportunities for learning: the role of digital media in early education. In S. Suggate & E. Reese (Eds.), *Contemporary debates in childhood education and development* (pp 95-104). New York: Routledge.
- Prensky, M (2010). *Teaching digital natives: Partnering for real learning*. Editorial Corwin (Sage Editions). ISBN-13: 978-1412975414

Schiller, J and Tillett, B. (2004). Using digital images with young children: Challenges of integration. *Early Child Development and Care*, 174(4) 401-414

Siraj-Blatchford, I., & Siraj-Blatchford, J. (2003). *More than computers: Information and communication technology in the early years*. London: The British Association for Early Childhood Education.

Ukwueze, F. N & Ajala E.O. The Role of information and communication technology in early childhood education. *Computer Education Research Journal*, 1(1), 127-133.
<http://www.researchgate.net/publication/269700449>

UNESCO (2011). *Digital natives: How do they learn? How to teach them?* Policy Brief: Author