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Effects of Information and Communication Technology on Early Childhood Education in Anambra East Local Government Area of Anambra State

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Abstract

The objective of this study was to examine the effect of Information and Communication Technology on Early Childhood Education in the Anambra East Local Government Area of Anambra State. Three research questions were developed to direct the investigation. The target population was 420 teachers in the 42 public pre-primary schools in Anambra East Local Government Area, Anambra State. A casual sampling method was used to select 20 pre-primary schools from 56 pre-primary schools in the area. From the 20 schools, 10 teachers were also randomly selected in each. This was to ensure that equal opportunities were given to all the population to participate in the study. There were 200 pre-primary school teachers who took part in the study. The study used an informative survey model, and the data was presented in the order of the research questions. The results showed that Information and Communication Technology helps kids express their ideas, communicate with them, read, write, and learn. The problems with using ICT in early childhood education are that there aren't enough skilled workers and the right software isn't available. The opportunities for using ICT in early childhood education include giving Nigerian teachers better research techniques and changing the way they teach, among other things.

Keywords: Information Communication Technology, Early Childhood Care and Education, Anambra State, early childhood education.

Introduction

Education is the outstanding pillar for every nation. It is the process of acquiring knowledge, talent, abilities and capabilities that facilitates a person to be effective in society and nationwide. It encompasses all round development of an individual physically, socially, morally, intellectually, and mentally (Osakwe, 2016). The fundamental education for subsequent ones in life is early childhood education which plays a significant role in the

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enhancement of the persona of children. Hence, early childhood education is described as the education given in an educational institution to children from birth to 5 years plus prior to their entering primary school (National Policy on Education, 2014). It is a distinct kind of education offered at an institution for children before they begin elementary school. Early childhood education, in the context of formal education can be said to be a formalized educational process to which children between the ages of birth through five plus are subjected to designated early childhood care and education institutions (Mezieobi, 2016). Early childhood education has been a preschool, semi-formal education outside the home (Oyewumi, Alhassan and Ofoha, 2010). It includes the Creche, the Nursery and Kindergarten (Olaleye, Florence and Omotayo, 2009). Section two of the National Policy on Education (2014) delineates early childhood education as the instruction provided at an educational institution to children before their enrollment in primary school. It encompasses the crèche, nursery, and kindergarten. The government's obligations for early childhood education include promoting the training of a sufficient number of trained instructors in appropriate curricula, supervising and regulating the quality of such institutions, and establishing pre-primary sections within existing public schools. The purpose of the early childhood education shall be to effect a smooth transition from the home to the school, prepare the child for the primary level of education, provide adequate care and supervision for the children while their parents are at work, inculcate social norms, inculcate in the child the spirit of inquiry and creativity through the exploration of nature, the environment, art, music and playing with toys, etc., develop a sense of co-operation and team spirit, learn good habit, especially good health habits and teach the rudiments of numbers, letters, colours, shapes forms, etc. through play (UNICEF, 2012).

On the other hand, Information and Communication Technology is any gadget which allows us to get information, to communicate with each other, or to influence the environment using electronic or digital equipment (Siraj-Blatchford & Siraj-Blatchford, 2013). Information Communication Technology can be defined as anything that can allow anyone to retrieve information and communicate with others with the help of electronic and digital devices (Bolstad, 2014). Information and Communication Technology (ICT) in early childhood education could include computers (desktop, laptop, and handheld), digital cameras and digital video cameras, the Internet, phones, fax machines, cell phones, tape recorders, dynamic stories, simulated environments, computer games, programmable toys and "control" technologies, data projectors, electronic whiteboards, and even more. With these gadgets, people can use information and communication technology to change their surroundings. Currently, technology is positively contributing to the growth and learning of children. Without the

existence of Information Communication and Technology, encountering an educational institution at any level would become unfeasible. Today's learners are growing up in such a world that not only contains, but also currently shaped by information communication and technology (UNESCO, 2012). Children who attend school often encounter several types of challenges. One significant issue youngsters encounter is the lack of familiarity with computers and technological devices prior to entering formal school. Consequently, they are susceptible to the effect of information and communication technologies. Although this impact is not detrimental, the circumstances are very different for them. However, as they get used to such situations, they consistently endeavor to extract the optimal outcomes.

Since it affects the environment in which the children grow up, the importance of information and communication technology in early childhood education cannot be understated. It has a direct impact on the individuals who are around the young children in addition to the surroundings. Additionally, information and communication technology offer several chances to improve the methods used in early childhood education. Information and communication technology is said to be incorporated into education by the stakeholders to improve and enhance curriculum, teaching-learning methods, and pedagogy. Information and communication technology may help in a variety of ways, such as changing the roles, relationships, and activities that kids engage in in their learning environments. In early childhood education, practitioners and adults play a crucial role. To fully use information and communication technology to enhance several facets and practices of early childhood development, practitioners have access to enough training and opportunity to grow their skills and abilities. The researchers made the decision to investigate the impact of information and communication technology on early childhood education in Anambra State's Anambra East Local Government Area after considering the previous talks.

Statement of the Problem

The use of information and communication technology has been fraught with difficulties, despite its enormous significance in education. The following are the main obstacles to the effective use of ICT at the preschool level: inadequate infrastructure that has resulted in a lack of computer proficiency; insufficient human knowledge and skills to incorporate ICT into preschool instruction; a lack of appropriate software; the high cost of computers in developing nations; and restricted internet access among many Nigerian teachers, particularly those who instruct preschool-aged children.

Some parents, educators, and children's advocates have questioned the value of information and communication technology in meeting the cognitive, emotional, social, and developmental requirements of young children, even when it is utilized for instructional purposes. The use of computers and computer games by young children is the main topic of discussion most of the time, and these two topics are questioned. Healey (2018) warned that young children's learning and development are negatively impacted by computer usage. She stated that young children require verbal interaction and human support, and she concluded that computers are not a suitable educational tool for children under the age of seven because they do not provide intersensory experiences that would improve learning. Additionally, using computers before the age of seven takes away from critical developmental tasks. Considering this, the research aims to investigate how information and communication technology affects early childhood education in Anambra State's Anambra East Local Government Area.

Objectives of the Study

Examining how information and communication technology affects early childhood education in Anambra State's Anambra East Local Government Area is the study's main goal. The research specifically aims to:

1. To determine how early childhood education in Anambra State's Anambra East Local Government Area is impacted by information and communication technology.

2. To look at the difficulties with information and communication technology usage in early childhood education in Anambra State's Anambra East Local Government Area.

3. To assess the potential for information and communication technology application in early childhood education in Anambra State's Anambra East Local Government Area.

Research Questions

The researchers developed the following research questions to direct the investigation:

1. How does information and communication technology affect early childhood education in Anambra State's Anambra East Local Government Area?

2. What obstacles exist in Anambra State's Anambra East Local Government Area regarding the utilization of ICT in early childhood education?

3. How will information and communication technology be used in early childhood education in Anambra State's Anambra East Local Government Area?

Literature Review

Although computers and computer networks are often referred to as information and communication technology, this term also includes other technologies used for information delivery, such as telephones and televisions. Several industries are associated with information technology, such as computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services (Wikipedia, 2014). According to Association for Computing Machinery (ACM) (2018), In its widest definition, information and communication technology includes every facet of computer technology. Through the selection, development, implementation, integration, and management of computer technologies, information and communication technology as an academic field addresses challenges pertaining to user advocacy and addressing their requirements within an organizational and social context. Information and communication technology, according to Merriam Webster (2011), is the field of technology that deals with the creation, upkeep, and use of computer networks, software, and systems for data processing and delivery. Data methodologies like coding/programming, conversion, storage, and extraction, analysis and design of systems, systems control, and related equipment used to gather, process, and display data are all included in information and communication technology. Broadly speaking, telephony, multimedia, and office automation are all included in information and communication technology. Ozoji (2016) defined Information and Communication Technology as the handling and processing of information like texts, images, graphs, and instruction for use, by means of electronic and communication devices such as computers, cameras, and telephone. Ofodu (2017) also refer to Information and Communication Technology as electronic or computerized devices, assisted by human and interactive materials that can be used for a wide range of teaching and learning as well as for personal use.

The most vital contribution of Information and Communication Technology in the field of education is easy access to learning (Sharma, et al., 2014). Technology for information and communication is the first instrument that will benefit both educators and students. Lifelong learning will be simpler with the help of information and communication technology. There are several ways to assess the function of information and communication technology. According to Becta (2013), five factors that influences the likelihood that good Information

and Communication Technology assisted learning opportunities will be able to develop in the schools are: Information and Communication Technology resourcing, Information and Communication Technology leadership, Information and Communication Technology teaching, school leadership, and general teaching. Becta (2013) also indicates that the success of the integration of new technology and information into early education varies from curriculum to curriculum, place to place, and class to class, depending on the way which it is applied in a particular area. When it comes to integrating ICT in early childhood education, early childhood practitioners worry that they do not have the expertise or the necessary equipment or the time to put it into their practice (Kennington & Meaton, 2019). Early childhood practitioners may find it difficult to stay up to date with the continuously evolving ICT tools and resources in society. This is only one problem, which is very unfortunate because the standard of what is taught and learned is further enhanced and the learning process is more effective when creatively woven throughout the early learning objectives in curricula like the early years foundation stage (UK) and the early childhood education framework (Australia).

Early Childhood Education

The National Policy on Education (2013) defines early childhood education as the instruction provided to children ages 0–5 before they start primary school. The kindergarten, nursery, and crèche are all included. Building a strong and comprehensive foundation for lifetime learning and welfare is the goal of early childhood education, which strives to address a child's social, emotional, cognitive, and physical needs holistically. Mitchell (2011) described early childhood education as the foundation for a life-long education for children which provides for the physical, motor, healthy, nutritional, intellectual, aesthetic, emotional, and social development of the pre-school child. In order for children from birth to preschool age to flourish, early childhood education includes a variety of official and informal efforts. The goal of these activities is to influence children's developmental changes before they start primary school. According to Mezieobi (2016), if a child’s education can provide these vital fundamental necessities, it is likely to have an important and perhaps at secondary and tertiary levels. Early childhood education, in this context, is the cornerstone upon which children's good foundational and solid education is constructed via active activities that develop their mental capacities at this age. Maduewesi (2012) refers to early childhood education as the education offered to children who have not yet reached the statutory age of beginning primary school. Additionally, he insisted that it is a semi-formal educational arrangement that typically takes place outside of the home and exposes young children from around the age of three to play-

based activities in a group setting that promote mental, social, and physical learning appropriate to their developmental stage until they reach the mandatory age of officially sanctioned formal schooling.

There are significant personal, societal, and financial advantages to early childhood education. The contributions that parents and other caregivers play in raising young children are complemented by early childhood programs. By ensuring that children have positive experiences, that their needs for excitement, support, and health are met, and that they learn how to interact with their surroundings, the early years lay the foundation for later life. Since early childhood education gives kids the chance to connect with both adults and their peers, it also helps them become more confident (Organisation for Economic Cooperation and Development, 2016). Children who get early childhood education become more independent and are less likely to behave aggressively in social situations. Children's interactions with adults and their classmates help them master the world around them and broaden their knowledge. Because it facilitates a seamless transition from home to school and gives the kid the confidence to engage with others outside of his immediate family, pre-primary education is essential for the child, parents, and society. Through studying rhymes and songs, early childhood education increases children's cognitive skills; on the other hand, playing on swings and slides promotes physical development and muscle building. Structured play with building blocks and puzzles, baby dolls, and teddy bears helps in emotional development of the children (Awosika, 2010).
A child's first organized experience learning the value of sharing and acquiring new skills that promote personal development is early childhood education. In addition to growing, preschoolers acquire a variety of abilities via constant contact and exposure with instructors and other kids their own age. Children participate in preschool, an early childhood program supervised by adults with professional training, where they learn and play. Preschool is most often attended by children between the ages of three and five. Play may help children develop their brains in a variety of ways, such as giving them a deeper comprehension of the environment and laying the foundation for future brain development. Babies' brains have too many links between brain cells (synapses) when they are fully developed. Overproduction of synapses lets the brain build on knowledge learned in early life. For eighty percent of brain growth, these years are significant.

Methodology

This research used a descriptive survey approach to investigate the impact of Information and Communication Technology on Early Childhood Education in the Anambra East Local Government Area of Anambra State, Southeastern Nigeria.

In this study, the target population is four hundred and twenty (420) teachers from the forty two (42) nursery/primary schools in Anambra East Local Government Area, Anambra State.

In this research, the sample comprises of ten (10) teachers each from the twenty (20) selected nursery/primary schools in Anambra East Local Government Area, Anambra State. This makes it a total of two hundred (200) teachers on the whole. A simple random sampling technique was used for selection of samples to ensure that all the elements of the population have equal chance of being selected.

The major instrument used in this research was a questionnaire constructed by the researchers. The questionnaire used in this study was given to two experts in the field of Early Childhood Department and one expert from Measurement and Evaluation Department all in Nwafor Orizu College of Education, Nsugbe for validation.

Data Analysis

The response to the questionnaire items was analyzed and research questions were responded utilizing average and usual deviancy. The meaning less than 2.50 would be rejected. While the mean of 2.50 and above would be accepted.

Hence, $\frac{4 + 3 + 2 + 1}{4} = 2.50$

Results and Discussion

Presentation of Result

Research Question I: What are the influences of Information and Communication Technology on Early Childhood Education in Anambra East Local Government Area, Anambra State?

Table I: Normal and Standard Deviation evaluating the effects of Information and Communication Technology on Early Childhood Education.

N = 200

S/N	Items	∑FX	$\bar{X}$	SD	Decision
1.	ICT encourages children to express and communicate their ideas	687	3.43	0.69	Agreed
2.	ICT encourages children to read, write and learn	683	3.41	0.75	Agreed

3.	ICT boosts children confidence and make them more communicative	692	3.46	0.66	Agreed
4.	ICT helps children to be more creative and innovative in their thoughts	695	3.47	0.67	Agreed
5.	ICT helps children to learn all the skills and competencies during in their physical development	702	3.51	0.64	Agreed

Source: Researcher's Field Survey, 2024.

Table 1 shows that items 1-5 with their mean and corresponding standard deviation of 3.42(0.69), 3.41(0.75), 3.46(0.66), 3.47(0.67), and 3.51(0.64) were all received. This was because they were up to and above the accepted mean level of 2.50 respectively. Therefore, the result implies that information and communication technology encourages children to express, communicate their ideas as well as to read, write and learn. It boosts children confidence and makes them more communicative and helps children to be more creative and innovative in their thoughts. It also helps children to learn all the skills and competencies during in their physical development in Anambra East Local Government Area, Anambra State.

Research Question II: What are the encounters associated with the implementation of Information and Communication Technology in Early Childhood Education within Anambra East Local Government Area, Anambra State?

Table II: Mean and Standard Deviation rating the Challenges on the Use of Information and Communication Technology in Early Childhood Education

N = 200

S/N	Items	∑FX	$\bar{X}$	SD	Decision
1.	Lack of human skills	684	3.42	0.74	Agreed
2.	Lack of relevant software	684	3.42	0.70	Agreed
3.	Limited access to the internet	685	3.42	0.75	Agreed
4.	High cost of ICT materials	682	3.41	0.77	Agreed
5.	Weak infrastructures like electricity	686	3.43	0.68	Agreed

Source: Researcher's Field Survey, 2024.

Table 2 shows that items 6-10 with their mean and corresponding standard deviation of 3.42(0.74), 3.42(0.70), 3.42(0.75), 3.41(0.77), and 3.43(0.68) were all accepted. This was because they were up to and above the accepted mean level of 2.50 respectively. The findings reveal that deficiencies in human skills, inadequate software, restricted internet access, elevated

costs of ICT materials, and insufficient infrastructure, such as electricity, pose challenges to the implementation of Information and Communication Technology in early childhood education within Anambra East Local Government Area, Anambra State.

Research Question 3: What are the prospects in the use of Information and Communication Technology in Early Childhood Education in Anambra East Local Government Area, Anambra State?

Table III: Mean and Standard Deviation rating the prospects in the use of Information and Communication Technology in Early Childhood Education

N = 200

S/N	Items	∑FX	$\bar{X}$	SD	Decision
1.	ICT will offer the Nigerian teachers improvement in the techniques of research	693	3.46	0.72	Agreed
2.	ICT can change current pedagogical practices in the classrooms	688	3.44	0.73	Agreed
3.	ICT can be used for individualized learning at schools	695	3.47	0.71	Agreed
4.	ICT can serve administrative functions	684	3.42	0.66	Agreed
5.	ICT can enhance educational efficiency	691	3.45	0.72	Agreed

Source: Researcher's Field Survey, 2024.

Table 3 shows that items 11-15 with their mean and corresponding standard deviation of 3.46(0.72), 3.44(0.73), 3.47(0.71), 3.42(0.66), and 3.45(0.72) were all accepted. This was because they were up to and above the accepted mean level of 2.50 respectively. The findings indicate that the implementation of Information and Communication Technology in early childhood education within Anambra East Local Government Area, Anambra State, presents opportunities for Nigerian teachers to enhance research methodologies, transform existing pedagogical practices, personalize learning experiences, fulfill administrative roles, and improve educational efficacy.

Discussion of the Results

The findings of this study were considered according to the research questions. The research question I exposed that Information and Communication Technology urges children to express, communicate their ideas as well as to read, write and learn. It boosts children confidence and makes them more communicative and helps children to be more creative and innovative in their

thoughts. It also helps children to learn all the skills and competencies during their physical development in Anambra East Local Government Area, Anambra State. These findings agree with Sailee, el al. (2018) who posited that the use of Information and Communication Technology in the early childhood education provides great opportunities for children in their development areas, supports communication during pretend play activities, and helps all the age group children to be more creative and innovative in their thoughts. As such, Information and Communication Technology is the major tool to boost children confidence and make them more communicative.

Research question II identified that deficiencies in human skills, inadequate software, restricted internet access, prohibitive costs of Information and Communication Technology resources, and insufficient infrastructure, such as unreliable electricity, pose challenges to the implementation of Information and Communication Technology in early childhood education in Anambra East Local Government Area, Anambra State. These findings were supported by Aduwa-Ogiegbaen and Iyamu (2015) who posited that lack of relevant software, limited access to the internet, high cost of Information and Communication Technology materials, and weak infrastructures like electricity are the challenges on the use of Information and Communication Technology in early childhood education.

Research question III indicated that the potential applications of Information and Communication Technology in early childhood education within Anambra East Local Government Area, Anambra State, encompass enhancing Nigerian teachers' research methodologies, transforming existing pedagogical practices, personalizing learning experiences, fulfilling administrative roles, and improving educational efficacy. These were in line with Ozoji (2016) who posited that Information and Communication Technology offers the Nigerian teachers improvement in the techniques of research, changes current pedagogical practices in the classrooms individualizes learning at schools, and serves administrative functions among others.

Conclusion

After discussion of the findings, the researcher arrived at the following conclusions:

Information and Communication Technology has numerous positive effects on early childhood education because it encourages children to express, communicate their ideas as well as to read, write and learn. It boosts children’s confidence and makes them more communicative and helps children to be more creative and innovative in their thoughts. It also helps children to learn all the skills and competencies during their physical development. The encounters to the

application of Information and Communication Technology in early childhood education in Anambra East Local Government Area, Anambra State, include insufficient human skills, inadequate software, limited internet access, high costs of ICT materials, and feeble substructure such as unreliable electricity. Conversely, the prospects for exploiting Information and Communication Technology in this educational context encompass enhancing Nigerian teachers' research methodologies, transforming existing pedagogical practices, personalizing learning experiences, facilitating administrative tasks, and improving overall educational efficacy.

Recommendations

- The government should help to install internet infrastructure in preschools to facilitate effective ICT integration.
- The government should ensure reliable and uninterrupted power supply in our schools to support ICT usage.
- The government should provide financial support for teacher training programmes, enabling educators to effectively integrate ICT into early childhood education.
- The government should procure and distribute ICT materials to all the schools, ensuring that children (regardless of their abilities or disabilities) utilize these resources regularly to develop essential digital skills in today's technology-driven world.
- Schools should encourage parental involvement in ICT education, providing guidance on how to support children's digital learning at home.

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