

An appraisal of Access to Learning in the early years: Employing Innovation and Technology

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Abstract: Access to education in terms of quality has become a major source of concern for educators, parents, caregivers, special interest groups and related agencies. Given that the early years are a crucial period in the life of the child, it is expedient to come up with measures that will guarantee access to education for all. It is against this background that this paper examined the measures that can facilitate and enable learning employing innovative practices through technology. The research design used for the study is survey research design of the descriptive type. A simple random sampling technique was used to select teachers who are the participants of the study. A total of 100 teachers were sampled. One research instrument was used to collect data from the respondents. There was a significant difference between male and female teachers in their perception about accessibility to education through innovation and technology ($t = 2.46$; $df = 86$; $P < 0.05$). However, there was no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on their educational qualification ($F_{(3,84)} = 1.380$; $P > 0.05$). It was concluded that teachers should be provided with an enabling technologically assisted environment to enhance their technological pedagogy.

Keywords: Access to Learning, Early years, Employing Innovation, Technology

the pandemic of the corona virus has orchestrated changes in almost every sphere of human endeavour and halted several activities, particularly in the education sector. The scenario that played out during this precarious time in the history of the world was that of despair, fear, anxiety and loss of hope. Even so now with the discovery of the vaccine it is not yet over, as everything keeps taking a new dimension every passing day attesting to the popular maxim that the only constant thing in life is change itself. As it relates to those in the education sector, parents, teachers, school owners, caregivers and interested stakeholders have come up with different “coping strategies” in the form of new innovations that would help mitigate against the lost time of no schooling during the different lock down periods. This period gave more room to explore how technology could interface with innovation and give the much-desired succor.

Technology in this study is the use of digital technologies such as interactive whiteboards, e-books CDROMs, tablets as well as online learning materials such as zoom, Microsoft teams, Whatsapp and telegram platforms, among others. Integrating digital technologies in the teaching of children have been debated by educators, researchers and theorists as whether technology should be adopted at this level or not (Blackwell, 2013; Alper, 2011; Plowman & McPake, 2013; Lindahl & Folkesson, 2012). One school of thought is of the view that adopting technology is not appropriate developmentally since children acquire knowledge using concrete and real instructional materials (House, 2012; Healy, 2004; Plowman & Stephen, 2003). It is argued that this could result to difficulties in concentrating in class, injurious to their psychomotor and visual development; impairment in their literacy skills as well as social isolation (House, 2012; Healy, 2004; Plowman & Stephen, 2003; Cordes & Miller, 2000)..

Conversely, Blackwell, Lauricella, & Wartella, 2014; Blackwell, 2013; Lindahl & Folkesson, 2010, argued that appropriate adoption of digital technology would promote the development of literacy and social skills through collaboration leading to learner-centred practices. In the advent of natural pandemic such as Covid-19 pandemic currently ravaging worldwide, there is need to integrate technology in the teaching of young children that would enhance and support curiosity, creativity and play providing genuine learning experiences that would cater for the massive change in children.

The massive change that occurs in the early years cannot be quantified. Thus, according to UNESCO, (2020), “Early childhood and care is more than the preparation of children for school. It is the holistic development of a child’s social, emotional, cognitive and physical needs so as to create a solid and broad foundation for lifelong learning and wellbeing. Early childhood and care have the possibility to nurture, caring, capable and responsible citizens”. Underscoring this further, (Olagunju, 2017) opined that ‘The foundation of all life’s later living and experiences are laid in the early childhood years, it follows that particular attention and care needs to be given at this crucial stage in order to produce responsible citizens.

This being so the early years as the bedrock for further learning is an important time in which the learning experiences must be maximized, for the utmost good of the child. Thus, introducing children to technology at this stage of their life can further enhance their learning. As a matter of fact when technology is deployed innovatively it can help children explore, discover and express themselves.

The Oxford Dictionary defines Innovation as the process of innovating. It also involves early intervention in the form of risk taking, sharing of ideas and letting go of ideas that don’t work. Kahn (2018) opines that though innovation appears to been used pervasively, thus making it seem elusive. It cannot be overemphasized that as a process it helps in organizing for better output. This viewpoint further amplifies the point that innovation should not be seen as restrictive. It therefore can be employed in virtually every sphere. Employing it in education is of prime importance because it is a transformative process of taking something original into something more effective that adds value. This involves doing things in a new way that encourages learning, redesigning teaching in a way that is geared towards relevance and effective learning. Thus, innovation highlights features such as fluency, flexibility and originality (Cremin 2009).

It safe to say that technology is required to be able to innovate. At the global level technology is embraced in the teaching and learning process. Alluding to this, National Association for the Education of Young Children and The Fred Rogers Center, 2012; noted that technology and interactive media are tools in early childhood programme that are important to the child learning wise. Some of these include Flipped classroom and chrome boards replacing textbooks, Slide show presentation. Also, computers, word processors, talking books and word banks. Colourful images, short video clips, graphs, animation and sound backs are examples of multimedia technology in the classroom. Others are podcast and virtual tour. Teachers can employ digital cameras, webcams, wireless cameras, digital still cameras and tablets and computer cameras. In addition to these, a child’s experience could be further enhanced with audio recorders, computer soft wares such as MS power point to share learning journeys.

Access to education is major issue that requires the concerted effort of concerned stakeholders particularly the teachers. As it were it behooves on them to come up with child friendly child centered technologically driven innovative practices that would guarantee learning, devoid of gender bias. Development Goal 4, which projected that, by 2030, “all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education”. Early Childhood education is thus considered an essential vehicle for achieving Universal Primary Education and the SDGs. A key strategy to the improvement of learning experiences is ensuring that pre-primary school children have access to quality pre-primary education. Education planners and curriculum developers need to be cautious in the implementation of pre-primary education to prevent the temptation of extending primary education ideas and strategies of instruction down into the pre-primary programme.

Internationally, in Early Child education, it appears there is shift from subject-based to a learner-centered, wholisticview of learning, thus, there is need for teachers to adapt their pedagogical strategies to de-emphasize subject-based learning and integratinglearning which is more of play. According to Tsumura & Robertson (2017), some literatures exists on Early Years learners and the use of technology, which indicate that kindergarten use different digital technologies with their parents aligning to the use of technologies in the homes. This serves as a gateway to the development of technological literacy which assists the children to build technological ideas in their environment (Plowman, McPake, & Stephen, 2008). Although, there is dearth in literature on Early Years education programmes and the use of technology, Beschorner, & Hutchison, (2013), Neumann, & Neumann, (2014) and Neumann, (2014) however, who focused on the use of iPadsreported that iPads assisted learners to develop literacy andnumeracy skills. Meanwhile, Edwards (2013) reported that many kindergarten education programmes separate play and the use of digital technologies. This implies that kindergarten teachers are not integrating digital technologies in their classrooms effectively, rather digital technology is often used for instructional reasons instead for the use of learners (Vaughan & Beers, 2016 & Blackwell, 2013). Reasons for lack of integration of technology into the classroom teaching include lack of wireless internet connectivity, teachers' poor attitude, lack of technological knowledge, lack of internet accessibility for teachers and learners among others.

The success of technology integration in the classroom could be effective and possible if teachers develop positive attitudes and believe in the importance of technology to students learning. Thus the major problem here has to do with how accessible are these mediums and how can they be effectively deployed to facilitate learning. This study sought to assess Early Childhood eEducation teachers' awareness on the integration of technology to their teaching.

The study was guided by two research questions and three null hypotheses. The research questions are: What are the perceptions of Early Childhood Education teachers on the advantages of integrating technology to their teaching? What is the level of awareness of Early Childhood Education teachers on the integration of technology to their teaching?

The null hypotheses are: There is no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on gender. There is no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on their educational qualification.

METHODS

The population for the study consisted of all the teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres in Ojo Local Government Education Authority of Lagos State, Nigeria. A total of 44 ECCDE centres were purposively selected for the study from both public and private schools. The ECCDE centres must have spent at least six sessions on the programme. A teacher/caregiver who had spent at least three sessions was purposively selected from each of the centres making a total of 88 participants. The study adopted the descriptive survey type to obtain information on what type, how and when the various technological innovations can be used. To this end researchers-developed questionnaire was administered to the teachers/caregivers.

Research Question 1: What are the perceived advantages of innovation and technology to access education by teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres?

Table 1. Perceived advantages of innovation and technology to access education

Items	SA %	A %	D %	SD %
Digital simulations and models can help students understand various disciplines.	57	41	2	-
Tech-savvy teachers are able to prepare lessons strategically.	44	54	2	-

Items	SA %	A %	D %	SD %
Useful in online collaboration in assigning projects to students.	38	51	9	2
Cloud storage of academic materials such as assignments and projects.	54	43	3	-
Software for assessing and retrieving assessment results of students' progress.	56	44	-	-
Accessing live streaming videos online to better understand an idea, subject, or concept.	70	27	3	-
Online collaboration platforms enhance students' discussing and chatting as well as sharing of academic discourse.	51	40	8	1
Parents have access to real-time updates on their children's grades, attendance, and even classroom behavior reports.	44	49	6	1
Websites such as classcraft can help provide personalized learning opportunities for students through gamification.	43	52	4	1
Simulation of virtual field trips with Google Cardboard.	42	40	13	5
Google Calendar helps the teacher create and share a class calendar.	50	45	5	-
Watching videos helps in remembering key concepts longer than reading.	55	41	3	1
Teachers can connect students to curriculum, classroom resources, and one another.	48	47	5	-

Table 1 shows that perceived advantages to access education through innovation and technology includes by teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres: Digital simulations and models can help students understand various disciplines (98%); Tech-savvy teachers are able to prepare lessons strategically (98%); useful in online collaboration in assigning projects to students (89%); cloud storage of academic materials such as assignments and projects (97%); assessing and retrieving assessment results of students' progress (100%); accessing live streaming videos online to better understand an idea, subject, or concept (97%); online collaboration platforms enhance students' discussing and chatting as well as sharing of academic discourse (91%) and parents having access to real-time updates on their children's grades, attendance, and even classroom behavior reports (93%). Other advantages are: Websites such as classcraft helping to provide personalized learning opportunities for students through gamification (95%); simulation of virtual field trips with Google Cardboard (82%); Google Calendar helps the teacher create and share a class calendar (95%); watching videos helps in remembrance of key concepts longer than reading through watching of videos (96%) and teachers connecting students to curriculum, classroom resources, and one another (95%).

Research question 2 What is the awareness level of teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres using innovation and technology to access education?

Table 2. Level of Teachers' Awareness of Teachers/Caregivers in Early Childhood Care, Development and Education (ECCDE) Centres Using Innovation and Technology to Access Education

ICT Tool	N	Aware	% Aware	Not Aware	% Not Aware
Mobile phones	88	81	91.7	7	8.3
Tablets	88	83	94.3	5	5.7
Pen Drive	87	38	43.3	49	56.7
iPod	88	69	78.9	19	21.1
iPad	88	76	86.2	12	13.8
Web boards	87	32	37.3	55	62.7
Interactive white board	88	40	45.2	48	54.8
DVDs and CDs	86	48	55.3	38	44.7
Flash discs	88	39	44.2	49	55.8
Video Games	88	57	64.6	31	35.4

Table 2 shows that most of the teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres using innovation and technology to access education ranging from 55.3% to 94.3% are aware of the usability of majority of the technology tools in accessing education. Specifically, almost all (94.3% and 91.7%) of the teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres respectively, are aware of using Tablets and Mobile phones to access education. Table 2 further reveals that majority, 86.2% of the teachers/caregivers are aware of the usability of iPads while 78.9% of them are aware of the use of iPods in accessing education. However, less than average of the teachers/caregivers 45.2%, 44.2%, 43.3% and 37.3% respectively are aware of the usage of Interactive white board, flash discs, Pen Drive and Web boards to access education.

Hypothesis 1

There is no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on gender.

Table 3. Showing t-test analysis of the difference between male and female teachers in their perception about accessibility to education through innovation and technology

Gender	N	Mean	Std.D	t	df	Sig.
Male	41	49.59	4.894	2.46	86	0.016
Female	47	47.19	4.236			

Table 3 shows that there is a significant difference between male and female teachers in their perception about accessibility to education through innovation and technology ($t = 2.46$; $df = 86$; $P < 0.05$). This implies that the perception of male and female teachers about the ways to access education through innovation and technology differs.

Hypothesis 2

There is no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on their educational qualification.

Table 4. One-Way Analysis of Variance Showing the Difference in the Perception of Early Childhood Education Teachers on the Integration of Technology Based on Their Educational Qualification

Tests	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	89.676	3	29.892	1.380	.254
Within Groups	1819.040	84	21.655		
Total	1908.716	87			

Table 4 shows that there no significant difference in the perception of Early Childhood Education teachers on the integration of technology based on their educational qualification ($F_{(3,84)} = 1.380$; $P > 0.05$). This implies that ECCDE teachers do not differ in their perception on the integration of technology based on their educational qualification.

DISCUSSION OF FINDINGS

Findings revealed that innovations such as digital simulations and models, Cloud storage, soft wares, computers, tablets, and mobile phones, live streaming videos online to better understand an idea, subject, or concept, Google, Using Hippo Video can help to record digital whiteboard explainers, classroom activities, and peer presentations as videos. These have all been noted to help students not only better understand various disciplines, but also get acquainted with the wonders of the modern world. It has also made research a lot easier for the teachers and pupils, in order to improve their assignments and projects and as a result there has been a great scope of education applications that allow learners to learn various concepts in a playful manner. The finding is in support of the views of Cicconi, (2014); Shifflet, Toledo, & Mattoon, (2012); Alper, (2011) & Lieberman, (2009), who emphasized that social skills could be developed through collaboration.

The finding also shows that the perception of male and female teachers about the ways to access education through innovation and technology differs. This mean that both male and female teachers believed that innovations such as digital simulations and models, Cloud storage, soft wares, computers, tablets, and mobile phones, live streaming videos online to better understand an idea, subject, or concept are the innovations and technological way of accessing education especially in the COVID-19 era, but the perception of male teachers is higher than that of the female teachers. The study also found out that teachers' educational qualification does not significantly influence their perceived ways of accessing education through innovation and technology. This mean that most of the teachers, regardless of their educational background believed the earlier mentioned ways to access education through innovation and technology to be the way to access education through technology.

Findings in this study also revealed that most of the teachers/caregivers in Early Childhood Care, Development and Education (ECCDE) centres use innovation and technology such as Tablets and Mobile phones, iPads and iPods to access education. This finding is in agreement with finding of Etobro, (2021) who reported that majority of primary school teachers are aware that Ipad, video, DVDs & CDs, Ipod, games and projectors are good ICT gadgets which could be used for teaching and learning.

CONCLUSION

Education in the 21st century is no longer a black and white affair but a multi-modal approach. This multi-modal approach is brought to life through technology. These ways include digital simulations and models, Cloud storage, soft wares, computers, tablets, and mobile phones, live streaming videos online to better understand an idea, subject, or concept, Google, Using Hippo Video can help to record digital whiteboard explainers, classroom activities, and peer presentations as videos. These ways of accessing education through technology therefore becomes important especially during and after the pandemic era.

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