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Evaluating Preschool Librarians' Information and Communication Technology Competency Level for Online Teaching

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Abstract

For adequate teaching and learning, twenty-first-century classrooms, combined with the needs of the new normal in the face of the Covid-19 pandemic, have mandated the effective use of online education platforms. This begs the question of how well-versed in information and communication technologies Nigerian Preschool Librarians are (ICT). Because there is a scarcity of studies on the subject, this is the case. As a result, the researchers were in a good position to determine or measure the level of ICT expertise of Preschool Librarians in order to embrace online education during and after the Covid-19 pandemic. The descriptive survey research design was used in this study, which was based on the scientific research paradigm and quantitative research technique. The survey included 165 Preschool Librarians from the Nsukka Education Zone in Enugu State, Nigeria. Data was collected using an ICT competency questionnaire that has been adequately validated and trial-tested. Using the Cronbach Alpha reliability method, the questionnaire's internal consistency reliability index was assessed to be 0.87. The data was analyzed using the mean statistical method to produce a response to the research question. Preschool librarians were found to have a low level of ICT expertise for the use of online instruction. It was also discovered that preschool librarians' level of ICT skills was significantly ($p < .05$) influenced by their age. As a result, it was suggested that the Local Government Education Authority provide in-service ICT training opportunities for teachers to ensure proper ICT use in the classroom.

Keywords: Evaluating, Information and communication technology, Online teaching, Preschool Librarians

Introduction

The old method of teaching and learning in schools is no longer appropriate for classrooms in the twenty-first century. Furthermore, the introduction of Covid-19 has compelled most developed countries to use remote or online teaching and learning methods. According to (Adarkwah, 2021), numerous countries and educational sectors have been forced to use online learning as a result of

the COVID-19. On a global scale, information and communication technology (ICT) is commonly regarded as a reliable tool for promoting educational reform and growth (Adarkwah, 2021). Learners must be prepared to use digital media in the twenty-first century for learning, teaching, gathering, generating, and sharing information for educational purposes, according to the International Society for Technology in Education's 2019 criteria (Cobanoglu & Cobanoglu, 2021). Practitioners should also widen their students' online, distance, or blended (both online and face-to-face) learning experiences as prospective teachers of 21st-century learners (Cobanoglu & Cobanoglu, 2021).

Rapid improvements in information and communication technology (ICT) have changed university teaching and learning (Rudhumbu, 2020). The use of ICT has revolutionized the way/mode of delivering education and pedagogy in the last two years, resulting in a range of learning opportunities for students (Amin et al., 2021). Information and communication technology is essential for both teacher training and delivering high-quality education (Eufrasio, 2021). Students use technology to expand their knowledge and increase their personalized learning and creativity (Amin et al., 2021). In educational institutions, the use of information and communication technologies (ICT) in the teaching-learning process is becoming increasingly common (Colmenero et al., 2021). However, the acceptance of the concept by instructors and parents is critical to the success of efforts aimed at achieving this goal (Colmenero et al., 2021). Teachers working in primary schools were more likely to utilize mobile devices in class than those working in high schools or general/vocational lyceums (Nikolopoulou et al., 2021).

In light of the current situation, one could wonder how well-versed or competent Nigerian Preschool Librarians are in using information and communication technology (ICT) for classroom instruction. One of the educational challenges that teacher education is currently confronting is the increase of digital competence among teachers as a result of the entrance of information and communication technology into the educational environment (Garz, 2020). A crucial component is instructors' ability/competency to use information and communication technology (ICT) into the teaching-learning process (Daz- et al., 2016). As a result, it is vital to examine Preschool Librarians' ICT competency in order to use online instruction during and after the Covid-19 outbreak. Teacher and student orientation to ICT for online learning, motivation, and school leadership practices all influence ICT integration in education (Adarkwah, 2021). Technical support infrastructure (competent support staff, ICT tools and systems, internet, and steady power supply) and policy support infrastructure (ICT policy, ICT policy implementation plan, and clear ICT vision) all acted as antecedents to ICT adoption in Zimbabwean universities (Rudhumbu, 2020). According to the findings, motivational variables and virtual competency are the most important determinants of e-learning efficiency (Amin et al., 2021). Early childhood educators lack the digital abilities essential to be deemed "digital natives," and they are unable to use ICT in their academic or professional lives (Martn et al., 2019). Age and gender have an impact on the level of pedagogical digital competence of teaching staff, but the educational stage in which they teach has no impact (Guillén et al., 2020).

Lack of technical equipment and support, as well as teachers' and students' ICT abilities/competences, are all key considerations in effective online teaching and learning (Turgut

& Aslan, 2021). Gender, age, and academic degree are all influences on digital skill acquisition, but they do not determine it (Cabezas-gonz & Casillas-mart, 2021). During the previous lockdown owing to teachers' lack of basic ICT proficiency, students' academic achievement was mostly driven by their personal motivation in learning and the pleasure or fulfillment that digital learning activities may bring (Christopoulos & Sprangers, 2021). ICT ownership and daily use, ICT frequency, professional ICT education or training, and ICT skills are all things to think about when it comes to adopting online teaching and learning (Dong & Xu, 2021). Digital literacy, as a set of skills, lays the groundwork for teachers' full participation in the knowledge society, as well as their students' involvement in demonstrating their abilities (Zabolotska et al., 2021).

Pre-service teachers have a moderate level of digital proficiency and struggle with content creation (Galindo-domnguez & Bezanilla, 2021). Only children who were deemed capable of online learning showed a link between online learning and achievement (Yi et al., 2021). Rather than implementing ICT into the curriculum, Chinese primary school teachers opted to limit the role and scope of its use in Early Childhood Education (Dong & Mertala, 2021). Online teaching and learning are hampered by a lack of preparation, skills, money, and distance learning equipment (Asio et al., 2020). The data suggest that the majority of Indonesian students were willing to study online, but that a number of factors, including ICT proficiency, limited their capacity to do so (Suci et al., 2021). Teachers were found to be inept in all five digital dimensions, notably in the creation of digital content (Garz, 2020). Based on self-reported use, proficiency, and the requirement for professional training in digitalization in teaching, it was discovered that teacher educators do not use digital resources primarily for pedagogical aims (Amhag et al., 2019).

The preceding has demonstrated that required ICT skills are relevant to the adoption of online teaching and learning. According to the literature, certain variables prevent teachers from effectively using the online reaching option. However, no research has been undertaken in Nigeria to determine the degree of ICT competences of Preschool Librarians in preparation for the introduction of an online teaching style. This study was prompted by a gap in the literature.

Research Questions

The following were the research questions: 1. What is the level of ICT competency of Preschool Librarians for the adoption of online teaching during and after the Covid-19 pandemic? 2. What is the level of ICT competency of Preschool Librarians for the adoption of online teaching during and after the Covid-19 pandemic?

2. What effect does age have on the level of ICT competency of Preschool Librarians in terms of online teaching adoption?

Hypothesis

A single hypothesis was developed and tested at a probability level of 5%.

Ho: The level of ICT competency of Preschool Librarians for the implementation of online instruction has no bearing on their age.

Methods

The descriptive survey research design was used in this study, which was based on the scientific research paradigm and quantitative research technique. Eze et al. (2020), Ezema et al. (2021), Ezeaku et al. (2021), Okeke, Okeke et al. (2020), Okeke et al. (2020, Ugwuanyi et al. (2020), Okenyi et al. (2021) in similar studies have adopted this research approach and design. The survey included 165 Preschool Librarians from the Nsukka Education Zone in Enugu State, Nigeria. This sample was generated from a population of 1,768 Preschool Librarians in the Nsukka Education Zone using a simple random sampling process. In the first stage, a simple random selection procedure was used to choose 24 primary schools from the study area's entire population of primary schools. The descriptive survey research design was used in this study, which followed the scientific research paradigm and used a quantitative research approach. The study enlisted the participation of 165 Preschool Librarians from the Nsukka Education Zone in Enugu State, Nigeria. This sample was chosen from 1,768 preschool librarians in the Nsukka Education Zone using a simple random sampling approach. In the first step, 24 primary schools were chosen at random from the entire population of primary schools in the study area using a simple random selection procedure. The instrument/measure was validated by two specialists in early childhood care and education, as well as one expert in educational research, all from the University of Nigeria, Nsukka's Faculty of Education. The experts were in charge of double-checking the items on the instrument against the study's objectives.

Prior to trial testing, the validators' feedback was used to develop the instrument. Following that, copies of the instrument were sent to 20 Preschool Librarians who were not involved in the study for trial testing. The data were subjected to a Cronbach alpha reliability estimate to determine the internal consistency dependability of the instrument's items. The investigation obtained a dependability index of 0.87 for the instrument. The study's conduct was approved by the University of Nigeria's research ethics committee. Participants were given informed consent forms to sign prior to data collection. The heads of each of the participating schools supplied timely authorization letters to gain access to the research facilities. During visits to each of the study's participating schools, data was obtained. As a result, an on-the-spot device administration strategy was chosen. At their individual schools, participants were handed copies of the instrument and given 20 minutes to respond before being picked up. To address the study questions and test the null hypothesis, the data were analyzed using mean and analysis of variance.

Results

The results were presented in line with the research questions and hypothesis

Table 1

Mean analysis of the ratings of the Preschool Librarians' ICT competency

S/No	Item Statement	Mean	Std. Deviation	Remark
1	The ability to start a computer	2.86	.45	LC
2	Having the ability to turn off the computer	2.12	.23	LC
3	Creating instructional materials on a computer	1.27	.89	VLC
4	Using the internet to obtain lesson materials	1.15	.98	VLC
5	The ability to navigate the internet	1.45	.93	VLC
6	Delivering class materials with a projector	1.56	.89	LC
7	Using a computer to give students assignments	1.78	.87	LC
8	Using Google Forms to assess the students' learning outcomes	1.98	.45	LC
9	Using the internet to grade the pupils	1.17	.90	VLC
10	Making instructional materials accessible to students via the internet	1.12	.43	VLC
11	Possessing the ability to create powerpoint slides	1.35	.56	VLC
12	Possessing the ability to deliver a PowerPoint presentation	1.09	.65	VLC
13	Ability to provide feedback to students via email Ability to communicate with students via the internet	1.94	.09	LC
14	Knowledge of how to use a blackboard collaborate for the goal of teaching	1.42	.92	VLC
15	Marking pupil's test online	1.39	.76	VLC
	Overall	**16.57**	**9.08**	**VLC**

LC = Low Competence, VLC = Very Low Competence

Table 1 demonstrates that the Preschool Librarians' mean ratings on items 1, 2, 6, 7, 8, and 13 are within the range of 1.50 to 2.49, indicating a low level of ICT expertise. However, their mean ratings on items 3, 4, 5, 9, 10, 11, 12, 14, and 15 are all within the range of 1.0 to 1.49, showing a relatively low degree of ICT expertise in those areas. Furthermore, the preschool librarians' overall mean score of 16.57, with a standard deviation of 9.08, shows that they had very low ICT ability.

Table 2

Mean scores of the Preschool Librarians' ICT competency based on age

Age	n	Mean	Std. Deviation
20-26 years	32	17.52	.38
27-30 years	42	16.14	.49
31-35 years	37	16.42	.55
36 years and above	54	15.97	.40

Table 2 shows that Preschool Librarians between the ages of 20 and 26 had a mean ICT competency score of (*M* = 17.52, *SD* =.38), those between the ages of 27 and 30 had a mean ICT competency score of (*M* = 16.14, *SD* =.49), those between the ages of 31 and 35 had a mean ICT competency score of (*M* = 16.42, *SD* =.55), and those between the ages of 36 and above had a mean ICT competency score of (*M* = 15.97, *SD* =.40).

Table 3

Analysis of variance of the influence of age on the level of ICT competency of Preschool Librarians

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52.471	3	17.490	80.902	.000
Within Groups	34.591	160	.216		
Total	87.062	163			

Table 3 shows that age has a significant impact on preschool librarians' degree of ICT competency for the adoption of online instruction, *F* (3,161) = 80.902, *p* = .000. Because the p-value of .000 is less than the.05 level of significance, the null hypothesis was rejected. Table 4 shows that the mean difference between the age groups of 20-26 and 36 years and up was the most significant factor in the significant influence of age.

Table 4

Post Hoc comparison test for the significant influence of age

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
20-26	27-30	1.37571*	.10910	.000	1.0851	1.6664
	31-35	1.09635*	.11225	.000	.7973	1.3954
	36 and above	1.54632*	.10409	.000	1.2690	1.8236
27-30	20-26	-1.37571*	.10910	.000	-1.6664	-1.0851
	31-35	-.27936*	.10484	.050	-.5586	-.0001
	36 and above	.17061	.09605	.384	-.0853	.4265
31-35	20-26	-1.09635*	.11225	.000	-1.3954	-.7973
	27-30	.27936*	.10484	.050	.0001	.5586
	36 and above	.44997*	.09961	.000	.1846	.7153
36 and above	20-26	-1.54632*	.10409	.000	-1.8236	-1.2690
	27-30	-.17061	.09605	.384	-.4265	.0853
	31-35	-.44997*	.09961	.000	-.7153	-.1846

*. The mean difference is significant at the 0.05 level.

Discussion

The goal of this study was to determine the level of ICT expertise of Preschool Librarians in order to use an online teaching modality. Preschool practitioners/teachers had a poor degree of ICT proficiency for adopting an online teaching method, according to the findings of the study. This indicates that Preschool Librarians' use of an online teaching modality will be ineffective due to their lack of ICT expertise. The poor ICT proficiency level of Preschool Librarians could be due to a variety of circumstances. It's possible that the teachers haven't received any in-service training on how to use ICT in the classroom. It could also be due to a lack of suitable ICT facilities in preschools. The age of the preschool librarians was also discovered to be a major predictor in their degree of ICT ability. As a result, younger preschool librarians had a better level of ICT proficiency than the older groups. Recent empirical studies have bolstered these conclusions.

During the previous lockdown owing to teachers' lack of basic ICT proficiency, students' academic achievement was mostly driven by their personal motivation in learning and the pleasure or fulfillment that digital learning activities may bring (Christopoulos & Sprangers, 2021). Pre-service teachers have a moderate level of digital proficiency and struggle with content creation (Galindo-domnguez & Bezanilla, 2021). Only children who were deemed capable of online learning showed a link between online learning and achievement (Yi et al., 2021). Rather than implementing ICT into the curriculum, Chinese primary school teachers opted to limit the role and scope of its use in Early Childhood Education (International et al., 2019). Online teaching and learning are hampered by a lack of preparation, skills, money, and distance learning equipment (Asio et al., 2020). The majority of Indonesian students were willing to study online, but a number of factors, such as ICT skills, limited their capacity to do so (Suci et al., 2021). Teachers were found to be inept in all five digital dimensions, notably in the creation of digital content (Garz, 2020). Based on self-reported use, proficiency, and the requirement for professional training in

digitalization in teaching, it was discovered that teacher educators do not use digital resources primarily for pedagogical aims (Amhag et al., 2019). Gender, age, and academic degree are all influences on digital skill acquisition, but they do not determine it (Cabezas-gonz & Casillas-mart, 2021).

Conclusion and Recommendations

The researchers determined that the Preschool Librarians' ICT skill level is quite low, and as a result, they cannot ensure the effective adoption of online teaching mode. The use of online teaching method in the post-Covid-19 period will be severely restricted due to the poor ICT skill level of preschool librarians. As a result, the researchers recommended that

1) Local Government Education Authority make adequate arrangements for in-service training of teachers on the use of ICT in teaching and learning.

2) Local Government Education Authority should ensure adequate provision of ICT facilities necessary for online teaching platforms.

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APPENDIX A

PRESCHOOL LIBRARIANS' ICT COMPETENCY SCALE

S/no	Item Statement	VHC	HC	LC	NC
1	Ability to boot computer				
2	Being able to shut down the computer				
3	Using computer to prepare lesson materials				
4	Getting lesson materials on the internet				
5	Ability to browse the internet				
6	Using projector to deliver lesson materials				
7	Giving students assignment using computer				
8	Carrying out assessment of the students' learning outcome using the google forms				
9	Scoring the students online				
10	Making lesson materials available online for students to access				
11	Ability to prepare powerpoint slides				
12	Ability to carry out powerpoint presentation				
13	Ability to give students feedback via the email				
14	Ability to communicate with the students online				
15	Ability to use blackboard collaborate for teaching purpose				

VHC = Very Low Competent, HC = Highly Competent, LC = Low Competent, NC = Not Competent