DEMOGRAPHIC CHARACTERISTICS OF TEACHERS' PERCEPTIONS TOWARDS THE USE OF TECHNOLOGY IN EARLY CHILDHOOD EDUCATION

Baliqis Oladele Adeyinka[1], Adebunmi Yetunde Aina[2], & Ayodele Abosede Ogegbo[3]
[1]Department of Educational Foundations and Counseling Psychology, Lagos State University (Nigeria)
[2]Department of Education Management and Policy Studies, University of Pretoria (South Africa)
[3]Department of Science and Technology Education, University of Johannesburg (South Africa)

Abstract

The study focuses on the influence of demographic characteristics on early childhood education teachers' perception of the use of technology in teaching young children in Lagos state, Nigeria. This study's research design was quantitative, implying that an Ex post-facto research design was employed. Questionnaires were developed and administered to 100 randomly selected early childhood education teachers from 20 different schools in Lagos, Nigeria. The data collected was analyzed using descriptive statistics and linear regression analysis and the hypothesis was tested at a probability level of 0.05. Results revealed that teachers had positive perceptions (Mean=1.68, SD=.829) towards the use of technology in teaching young children. However, teachers' perception towards the use of technology was not statistically influenced by their demographic characteristics.

Keywords: Early childhood education, technology, demographic factors, teacher perceptions.

1. Introduction

The use of technology in a developmentally appropriate way can improve young children's learning, especially in the areas of emergent literacy, communication, problem-solving, and social skills through cooperation, and aiding children with disabilities and special needs (Blackwell et al., 2014). The majority of early childhood teachers are trailing behind in their use of ICT for high-quality instructional delivery, despite the benefits of technology use on young children's development and learning (Safitry et al., 2015). Nigeria trailed behind in terms of demands and expectations for technological use in education, but it was not left out (Owate et al., 2014). ICT is acknowledged by the Federal Republic of Nigeria's government as a byproduct of technological progress and as an innovation in education in the National Policy on Education (FRN, 2014). Utilizing technology tools can improve teachers' capacity for professional growth as well as the relationships and lines of communication between early childhood centres, parents, and other stakeholders in the early childhood education sector (Yusuf, 2010). Despite the advantages of using technology in Nigeria's ECE classrooms, studies show that technology integration into teaching and learning is a complicated process that may run into several problems (Olowe, 2012). These problems include, among other things, issues with educators, time, shortage of power supply, resource availability, manpower, limited technology tools and budgetary allocation (Aminu & Samah, 2019). Furthermore, in the study conducted by Onasanya, et. al, (2010) it was discovered that the majority of teachers in Nigeria either lacked the necessary skills or chose not to employ technology tools in their lessons.

Looking closely into the perception of ECE teachers on the use of technology in Nigeria, very few studies were conducted. A study shows that the majority of teachers (88.76%) believe that the use of technology in teaching and learning activities can improve children's ability to learn, although, teachers' usage of ICT in teaching is still somewhat limited (Garba & Alademerin, 2014). In a study conducted by Aminu & Samah (2019) on teachers' perception of the use of technology in teaching and learning in Zamfara state, Nigeria, the findings indicate a highly positive teacher perception of the use of technology. It appears that no study focuses on factors that influence teachers' perceptions of technology usage in early childhood education. To contribute to knowledge in the field of education technology and early childhood education, this study aimed to explore the factors that influence ECE teachers' perceptions of technology use in teaching young children. More specifically, the study was guided by the following research questions:

1) What are Nigerian ECE teachers' perceptions towards the use of technology in teaching young children? 2) Do teachers' demographic variables (age, gender, marital status, teaching experience, and educational qualification) influence their perceptions towards the use of technology in early childhood education in Nigeria?

The study hypothesis is

H_O: Teachers' demographic variable significantly influence their perceptions of technology use in early childhood education.

The findings and recommendations of this study are significant as they would bring to light relevant information that would enhance technology usage in Nigeria's ECE sector. Additionally, policymakers, researchers, and practitioners will be able to pinpoint the areas that need to be addressed regarding the usage of technology in ECE settings.

2. Conceptual framework

The Unified Technology Acceptance and Use of Technology (UTAUT) by Davis (1985) served as the theoretical base for this investigation. According to the UTUAT model, perceptions towards the use of technology are based on four main constructs: performance expectancy, effort expectancy, enabling factors, and social impact (Venkatesh et al., 2003). Performance expectancy, also known as perceived usefulness, refers to how much a teacher believes that using technology tools would increase his or her instructional performance. Studies have shown that the role of performance expectancy on behavioural intention is moderated by age and gender. Abubakar and Ahmad (2013) found that age and gender have significant moderating effects on the role of performance expectancy on behavioural intention. The degree to which a person thinks using a particular ICT tool may be simple is referred to as effort expectancy (Kiboro, 2018). Gender, age, and experience were hypothesized to influence the relationship between the constructs because the influence of effort expectancy on behavioural intention is larger in many experienced employees and young women (Abubakar & Ahmad, 2019; Venkatesh et al., 2003). The constructs of the UTAUT theory are relevant to understanding teachers' perceptions of technology use in the context of this study. It will also help to determine whether or not the age, gender, experience, and qualification of ECE teachers influence their attitudes toward the use of technology in the classroom for young children.

3. Methodology

This study followed the quantitative research approach adopting an Ex post-facto research design to investigate factors that influence ECE teachers' perception of the use of technology in teaching children. The population of the study comprised all ECE centre teachers situated in Agege Local Government Area Lagos State, Nigeria. Out of the total number of the ECE centre; a simple random sampling technique was used to draw one hundred (100) sample sizes from 20 ECE centres. Self-structured questionnaires were used for the collection of data from teachers. The questionnaire was divided into two sections A and B. Section A was on demographic data while section B contains self-rated items on perceptions towards the use of technology adapted from Venkatesh et al. (2003). Responses were scored by indicating appropriate information with (√) by the respondents. The dependent variable is teachers' perceptions while the independent variable is teachers' demographic characteristics. The variable (teachers' perceptions) consists of 15 items rated on a five-point Likert scale 'Strongly agree', 'Agree', 'Neutral', 'Disagree' and 'Strongly Disagree'. The reliability of this scale was measured with a Cronbach alpha coefficient at a value of $\alpha=.877$. Data obtained were analysed using descriptive statistics (Mean) while the hypothesis was tested using linear regression analysis at a probability level of 0.05.

4. Results

This section presents descriptive results on teachers' demographic characteristics. Analysis of teachers' demographic data is presented in Table 1.

Table 1. Demographic data of teachers.

	Value labels	Frequency (%)	Mean	Std. Deviation
Gender	Male	30.0	1.70	.461
	Female	70.0		
Marital Status	Married	74.0	1.30	.541
	Single	22.0		
	Divorce	4.0		
Age	20-29	23.0	2.14	.766
	30-39	40.0		
	40 &above	37.0		
Educational Qualification	Secondary/High	22.0	2.23	.790
	school certificate OND/Diploma	33.0		
	Bachelor's degree	45.0		
Years of teaching experience	1 – 5 years	31.0	1.82	.642
	6 – 10 years	56.0		
	11 – 15 years	13.0		

Table 2 presents data for answering research question 1. Items 12, 15, 9, 11, 10 and 14 have mean scores of 1.90, 1.89, 1.74 and 1.72 respectively. This implies that teachers perceive these items to be relevant in their use of technology. Items 1, 2, 3, 4, 5, 7, 8, and 13 had mean scores of 1.53, 1.69 1.66, 1.67, 1.57, 1.63, and 1.44 respectively. This means that teachers regard statements represented in these items as having a slightly high impact on their perceptions towards the use of technology in teaching young children. Table 2 shows that early childhood teacher in Nigeria generally has a positive perception towards the use of technology in teaching young children.

Table 2. Mean rating and standard deviation scores of teachers' perceptions towards
the use of technology in teaching young children.

S/N	Questionnaire items	Mean	Std Deviation
1	I find the use of technology in teaching young children very essential	1.53	.629
2	The use of technology in teaching young children will enable me to enhance interaction with the children	1.69	.866
3	The use of technology in teaching young children will help me provide students with independence and active learning	1.66	.861
4	The use of technology in teaching young children will help increase their academic achievement	1.67	.809
5	It would be easy for me to become skillful at using technology for teaching young children	1.66	.861
6	I would find it easy to use technology for teaching young children	1.57	.674
7	Learning to use technology for teaching would be easy for me	1.63	.842
8	I believe the interaction with technology is clear and understandable	1.44	.627
9	I have the knowledge and skills to use technology	1.74	.945
10	When I need help using technology, someone is there to help me	1.72	.847
11	I have the resources to use technology in teaching young children	1.74	.923
12	My fellow teachers believe that I should use technology in teaching young children	1.90	.958
13	This school has been helpful with learning to use technology	1.66	.773
14	I believe that the use of technology in teaching young children will help increase their academic achievement	1.72	.835
15	People who are important to me think that I should use technology in teaching young children	1.89	.983

Hypothesis

Table 3. Model Summary and Analysis of Variance (ANOVA) on the influence of demographic characteristics on teachers' perceptions towards the use of technology.

Model		Sum of Squares	df	Mean Square	F	Sig	R	R^2	Adjusted R^2	Standard error of the estimate
1	Regression	1.695	5	.339	1.681	.147[b]	.289[a]	.084	.034	.449
	Residual	18.557	92	.202						
	Total	20.252	97							

Predictors: (constant), Gender, Age, Educational Qualifications, Work experience, and Marital status.
Dependent Variable: Perception towards the use of technology.

Results from Table 3 show that the coefficient of determination is the proportion of the variation (R^2 value) is .084, meaning 8.4% of variation in teachers' perceptions towards the use of technology in teaching young children is explained by the model. Result also shows that there is no statistically significant linear relationship between teachers' demographic characteristics and their perceptions towards the use of technology in teaching young children, $F(5, 92) = 1.681$, $p = .147$). Thus, the null hypothesis (H_0) is rejected. This implies that teachers' demographic variables as defined by their gender, age, educational qualification, work experience, and marital status do not significantly influence their perceptions towards the use of technology in teaching young children.

5. Discussion and conclusion

The value of technology in education has long been argued in the literature. As a result, understanding teachers' attitudes and perceptions towards technology use is critical in using innovative teaching practices across schools. It was found that teachers generally demonstrated a positive perception towards the use of technology in teaching young children (Ogegbo & Aina, 2020). More importantly, teachers believe that using technology in the classroom to teach young children will help them achieve higher academic achievement, and they recognize the importance of having the knowledge and skills to use technology as an influential factor in how they perceive the use of technology. Teachers' positive perceptions toward the use of technology in the ECE classroom suggest that they are prepared to use technology in teaching young children. However, teachers' perceptions towards the use of technology are not influenced by demographic variables such as age, gender, work experience, marital status and educational qualification. When it comes to educational innovations, it is believed that teachers who are open to new ideas tend to have a higher success rate putting new theories and methods into practice than teachers who are not open to new ideas. The results of this study indicate positive developments in the use of technologies in early childhood education classrooms in Nigeria. Though this study focused on teachers' perceptions, more research into the actual use of technology in ECE classrooms in Nigeria is needed. This will aid in understanding the types of technologies used in ECE classrooms in Nigeria, how they are used and identify possible challenges facing teachers in using such technologies.

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