Perceived Impact of Digital Education in Early Childhood Education Practice in Delta State, Nigeria.

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ABSTRACT

The study investigated the perceived impact of Digital Education in Early Childhood Education Practice in Delta State Nigeria. Digital technologies are now used to enhance social inclusion and facilitate child-centered learning both formal and informal learning environment. However, the integration of digital education in early childhood education settings poses significant challenges for educators. The objective of the study was to investigate the perceived impact of Digital education in Early Childhood Education practice in Delta State Nigeria. Three research questions were raised in the study. The study adopted the survey research method. The population for this study comprised all public pre-primary school heads and teachers in Delta State. There are currently 1350 pre-primary schools in Delta State. The sample for this study was 100 head teachers and 400 teachers in Delta State pre- primary schools. A self-developed questionnaire titled "Perceived Impact of Digital Education in Early Childhood Education Practice Questionnaire (PIDEECEPQ)", was validated and its reliability determined using test re-test reliability technique with a coefficient index of 0.85. The researcher administered a total of 500 questionnaires to randomly selected head teachers and teachers from the selected pre-primary schools in the study area. Simple percentage, Mean, standard deviation, were used to analyze the data collected. Based on the findings, it was concluded that digital education in Early Childhood Education (ECE) practice has transformed the learning landscape, offering unprecedented opportunities for young children to explore, create and learn. The recent digital education trends in Early Childhood Education (ECE) practice focus on technology integration, play-based pedagogy, learning management system, educational apps, virtual field trip, coding and robotics. This can harness the power of digital technologies to enhance teaching, learning and outcomes for young children. Based on the conclusion, the paper recommended that government and policy-makers should provide regular professional development for early childhood educators, ensure equity and access for all children, foster partnership with families and communities, integrate digital technologies into play-based learning, develop policies and guideline, provide infrastructure and resources.

Keywords: Digital Education, Trends, Early Childhood Education, Practice.

INTRODUCTION

Early childhood education in Nigeria has gained increasing attention in recent years. Historically, early childhood education in Nigeria was informal and community-based. However, formal early childhood education centers have been expanding rapidly. These centers provide structured learning environments for children aged 0 to 5 years. The Nigerian government recognizes the significance of early childhood education. Early childhood education is crucial for holistic child development. It lays the foundation for lifelong learning and success. At this stage, children develop essential cognitive, social, and emotional skills and even basic health education skills (Atakpo,2020). These skills are critical for their future academic performance and personal growth (Golden, 2020).

Early childhood education also helps in identifying and addressing developmental delays. It provides an opportunity for early intervention, ensuring that children receive the support they need. Moreover, early

childhood education fosters a love for learning. It encourages curiosity and creativity, which are vital traits for innovation. Children exposed to quality early education are more likely to excel in later stages of education. They also tend to have better social skills and higher self-esteem and thus, the developmental experiences children have while growing up serves as a tool for combating future security challenges (Atakpo, 2020) b. This early exposure to structured learning environments also, prepares them for the demands of formal schooling (Adeyemi, 2022).

In Nigeria, the importance of early childhood education is increasingly recognized by parents and educators. There is a growing awareness of its benefits in shaping well-rounded individuals. Atakpo (2024) listed some strategies that can help to improve early childhood education includes some of the following; play-based learning, child-centered approach, family engagement and support, technology integration, among others. Community involvement and support also, play a significant role in promoting early childhood education. The Nigerian government's commitment to improving early childhood education is evident through various initiatives. These efforts aim to expand access, enhance quality, and ensure inclusivity. Investing in early childhood education is investing in the future of Nigeria (Okoh, 2019).

However, the digital education revolution was a driver for transforming teaching and learning through digital education and focused on all aspects of education from teacher training and professional learning to digital resources, curriculum design and community engagement (Patrick, 2012). It was proposed through this initiative that digital technologies should be used to enhance social inclusion and facilitate child-centered learning in both formal and informal learning environments. The drive to provide quality teaching and learning through digital education (Ogunyemi, 2020). This initiative went beyond simply providing computers to schools by including the design of digital learning resources, online diagnostic tools and professional development for teachers. This multi-pronged strategy aimed to reshape how students learn and even what they learn through powerful 21st century tools. The initiative encouraged reform to education systems and for educators to see the opportunities that digital technologies provide to support improved learning and teaching (Newton, 2021).

Digital Education Trends in Early Childhood Education practice

Akporhonor (2020) observed that Digital literacy is becoming a crucial aspect of early childhood education with a focus on developing skills that prepare children for a technology-driven world. Technology integration is another significant trend with educators leveraging digital tools to create engaging and interactive learning experiences. However, many educators may require training and professional development opportunities to effectively integrate technology into their teaching practices (Watkins, 2023).

Oghor (2018) noted that play-based pedagogy is also being enhanced with digital technologies, allowing children to explore and learn through interactive games and simulations. This approach is shown to improve digital literacy outcomes for early childhood learners. Additionally, national and international collaboration are being facilitated through digital technologies, enabling children to connect with peers from diverse backgrounds and cultures. This can foster global awareness, empathy and understanding. Learning management system is another trend in early childhood education. Many early childhood education institutions are adopting LMS to manage and deliver digital content, track students and parents.

In the same vein, there is a growing number of educational apps designed for early childhood learners, covering various subjects such as literacy, numeracy and STEM. Virtual field trip is another trend in early childhood education. Digital technologies enable early childhood learners to participate in virtual field trips, exploring places and environment that may be difficult to access physically (Babalola, 2021). Coding and robotics is another trend in early childhood education. Many early childhood education institutions are introducing coding and robotics programs, teaching children fundamental programming concepts through play-based activities.

Challenges of Digital Education in Early Childhood Education Practice

Digital Education according to Atakpo (2024) b have the potential to revolutionize early childhood education.Atakpo (2024) b have the potential to revolutionize early childhood education. However, it is crucial

to address the challenges and limitations of digitalization. Watkins (2023) asserted that Early Childhood Education practice with digital education is faced with some challenges such as:

1. Infrastructure and Access: Limited access to devices, internet connectivity, and digital tools can hinder the effective integration of technology in early childhood education.
2. Technical Support: Insufficient technical support can lead to frustration and decreased use of digital technologies.
3. Cybersecurity: Ensuring the online safety and security of young children is a significant concern.
4. Effective Integration: Integrating digital technologies into existing curricula and pedagogies can be challenging.
5. Balancing Screen Time: Finding a balance between screen time and other learning activities is essential.
6. Assessing Learning Outcomes: Assessing the impact of digital technologies on early childhood learning outcomes can be difficult.
7. Teacher Training and Support: Providing teachers with adequate training and support to effectively integrate digital technologies is crucial.
8. Staying Current with Technological Advancements: Keeping up-to-date with the latest digital technologies and trends can be overwhelming for educators.
9. Collaboration and Communication: Fostering collaboration and communication among educators, administrators, and parents is essential for effective professional learning.
10. Digital Divide: The digital divide can exacerbate existing inequalities, with some children having greater access to digital technologies than others.
11. Inclusive Design: Ensuring that digital technologies are designed to be inclusive and accessible for all children, regardless of their sex, abilities or disabilities (Atakpo, Obed-Chukwuka and Akpotu, 2024), is essential.

Statement to the Problem

The rapid evolution of digital education has transformed the way young children learn and interact with their environment. However, the integration of digital education in early childhood education settings poses significant challenges for educators. Despite the growing importance of digital literacy in the 21st century, many early childhood educators lack the necessary skills and confidence to effectively integrate digital education into their teaching practices. Furthermore, the lack of standardized guidelines and professional learning opportunities for early childhood educators hinders the effective use of digital technologies to support young children's learning and development. The study therefore seeks to find solution to some of these problems.

Research Questions

The following research questions were raised in the study:

1. What are the digital education trends in Early Childhood Education practice in Delta State?
2. What are the digital education challenges of Early Childhood Education practice in Delta State?
3. What are the digital education strategies to improve Early Childhood Education practice in Delta State?

Research Hypotheses

The following hypotheses were answered.

Hypothesis 1: There is no significant relationship between digital education and trends in Early Childhood Education practice in Delta State

Hypothesis 2: There is no significant relationship between digital education and the challenges of Early Childhood Education practice in Delta State

Hypothesis 3: There is no significant relationship between digital education and the strategies to improve Early Childhood Education practice in Delta State

METHODOLOGY

Three research questions and hypotheses were raised in the study. The study adopted the survey research method.

The population for this study comprised all public pre-primary school heads and teachers in Delta State. There are currently 1350 pre-primary schools in Delta State. The sample for this study was 100 head teachers and 400 teachers in Delta State pre- primary schools. A self-developed questionnaire titled "Digital Education and Trends in Early Childhood Education Practice Questionnaire (DETECEPQ)", was validated and its reliability equally determined through a pilot study using test re-test reliability technique with a coefficient index of 0.85. The researcher administered a total of 500 questionnaires to randomly selected head teachers and teachers from the selected pre-primary schools in the study area. Simple percentage, Mean, standard deviation, t-test, analysis of variance (ANOVA), and regression statistics (simple and multiple) were the statistical tools deployed for the analysis of data collected.

Research Question 1

What are the digital education trends in Early Childhood Education practice in Delta State?

Table 1: Digital Education Trends in Early Childhood Education Practice

Trends in Early Childhood Education	**SA**	**A**	**D**	**SD**	**Mean**	**Std**	**Remark**
Technology integration	187 (37.4%) `	150 (30%)	85 (17%)	78 (15.6%)	3.14	.81	Agreed
play-based pedagogy	100 (20%)	210 (42%)	84 (16.8%)	106 (21.2	2.94	.77	Agreed
Learning management system	30 (6%)	301 (60.2%)	60 (12%)	109 (21.8%)	2.84	.79	Agreed
Educational apps	223 (44.6%)	55 (11%)	140 (28%)	82 (16.4%)	2.90	.74	Agreed
Virtual field trip	150 (30%)	160 (32%)	40 (8%)	150 (30%)	2.86	.78	Agreed
Coding and robotics	83 (16.6%)	250 (50%)	77 (15.4%)	90 (18%)	2.92	.83	Agreed

Table 1 shows the digital education trends in Early Childhood Education practice in Delta State. From the remark, the respondents agreed to the all items.

Research Question 2

What are the digital education challenges of Early Childhood in Delta State?

Table 2: Digital Education Challenges of Early Childhood Education Practice

Challenges of Early Childhood Education	**SA**	**A**	**D**	**SD**	**Mean**	**Std**	**Remark**
Limited access to devices, internet connectivity, and digital tools can hinder the effective integration of technology in early childhood education	135 (27%)	150 (30%)	83 (16.6%)	132 (26.4%)	3.16	.74	Agreed
Insufficient technical support can lead to frustration and decreased use of digital technologies.	90 (18%)	210 (42%)	100 (20%)	100 (20%)	2.96	.90	Agreed
Ensuring the online safety and security of young children is a significant concern.	300 (60%)	30 (6%)	60 (12%)	110 (22%)	2.78	.79	Agreed
Integrating digital technologies into existing curricula and pedagogies can be challenging	200 (40%)	78 (15.6%)	142 (28.4%)	80 (16%)	2.98	.82	Agreed
Providing teachers with adequate training and support to effectively integrate digital technologies is crucial.	130 (26%)	180 (36%)	80 (16s%)	110 (22%)	2.94	.89	Agreed
Assessing the impact of digital technologies on early childhood learning outcomes can be difficult.	90 (18%)	80 (16%)	80 (16%)	250 (50%)	2.38	.78	Disagreed

Table 2 shows the digital education challenges of Early Childhood Education practice in Delta State. From the remark, the responses, 1 – 5 items had positive responses while, item 6. responses were negative.

Research Question 3

What are the digital education strategies to improve Early Childhood Education practice in Delta State?

Table 3. Digital Education Strategies to Improve Early Childhood Education Practice

Strategies to improve Early Childhood Education	**SA**	**A**	**D**	**SD**	**Mean**	**Std**	**Remark**
Ensure reliable internet connectivity, devices, and technical support.	140 (28%)	223 (44.6%)	82 (16.4%)	55 (11%)	2.90	.74	Agreed
Implement device management systems to ensure safe and efficient use of devices.	250 (50%)	90 (18%)	77 (15.4%)	83 (16.6%)	2.93	.90	Agreed
Provide access to high-quality digital tools and resources that support early childhood learning.	60 (12%)	300 (60%)	30 (6%)	110 (22%)	2.72	.77	Agreed
Embed digital technologies into existing curricula and pedagogies.	150 (30%)	160 (32%)	40 (8%)	150 (30%)	2.96	.80	Agreed
Use digital technologies to support play-based learning, promotes exploration and discovery.	130 (26%)	180 (36%)	80 (16s%)	110 (22%)	2.94	.89	Agreed
Provide regular training and support for teachers to develop their digital literacy and confidence.	160 (32%)	250 (50%)	10 (2%)	80 (16%)	2.68	.78	Agreed

Table 3 shows the digital education strategies to improve Early Childhood Education practice in Delta State. From the remark, the respondents' responses were positive for all items.

DISCUSSION OF FINDINGS

Findings revealed the different digital education trends in Early Childhood Education practice in Delta State. This is in line with Akporhonor (2020) who stated that early childhood education practice and professional learning with digital technologies are rapidly evolving. Digital literacy is becoming a crucial aspect of early childhood education with a focus on developing skills that prepare children for a technology-driven world. Technology integration is another significant trend with educators leveraging digital tools to create engaging and interactive learning experiences.

The findings also showed the digital education challenges of Early Childhood Education practice were much in Delta State. This is in line with Watkins (2023) who asserted that Early Childhood Education practice with digital education is faced with some challenges such as; limited access to devices, internet connectivity, and digital tools can hinder the effective integration of technology in early childhood education. Insufficient technical support can lead to frustration and decreased use of digital technologies. Ensuring the online safety and security of young children is a significant concern. Integrating digital technologies into existing curricula and pedagogies can be challenging.

More so, it revealed that digital education strategies is required to improve Early Childhood Education practice in Delta State. This is in line with Okoh (2019) who highlighted strategies to improve Early Childhood Education practice with digital education as follows; ensuring reliable internet connectivity, devices, and technical support. Implementing device management systems to ensure safe and efficient use of devices. Providing access to high-quality digital tools and resources that support early childhood learning. Embedding digital technologies into existing curricula and pedagogies. Using digital technologies to support play-based learning, promoting

exploration and discovery. Using digital technologies to support differentiated instruction, catering to diverse learning needs. Provide regular training and support for teachers to develop their digital literacy and confidence.

CONCLUSION

Based on the findings, it concluded that digital education and Early Childhood Education (ECE) practice has transformed the learning landscape, offering unprecedented opportunities for young children to explore, create and learn. The recent trends in Early Childhood Education (ECE) practice with digital education focuses on technology integration, play-based pedagogy, learning management system, educational apps, virtual field trip, coding and robotics. This can harness the power of digital technologies to enhance teaching, learning and outcomes for young children.

RECOMMENDATIONS

Based on the conclusion, it therefore recommended that government and policy-makers should provide regular professional development, ensure equity and access, foster partnership with families and communities, integrate digital education into play-based learning, develop policies and guideline, provide infrastructure and resources, etc.

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