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The Impact of Technology in Developing Primary School Pupils in Kwara State

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Abstract

This study assessed preschool children use of technological device and its impact on their development and Survey research design was adopted for this study. The population for the study comprised of thirty (30) primary schools within the study area. Simple random sampling technique was used to select 10 primary schools in Kwara central and 200 pupils were selected from the schools selected. Three research questions were raised and three hypotheses were generated. The instruments used for data collection was a self-design questionnaire on which validity and reliability was carried out before final administration, the reliability coefficient is 0.73. Frequency distribution, percentages, mean, standard deviation, independent t-test and ANOVA were used to analyze the data obtained from the respondents. The findings showed that Teachers have favourable perception towards the impact of ICT devices on the child development in the areas of (physical, mental, emotional and social development), ($X=2.89 > 2.5$). there is no significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on gender ($p\text{-value } 0.192 > 0.05$). There is significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on teachers years of experience and qualifications ($p\text{-value } 0.045 \& 0.20 < 0.05$) respectively. It was however recommended that supply of technological device should be in right quality and quantity for the pupils in order to enhance their academic development. Government should provide grants for primary schools

for the purchase of desktop computer and mini-laptops. Teachers should also be encouraged to go for professional development programmes in order to update their knowledge.

Keywords: Information Communications Technology (ICT), Developmental Domain, Technology Devises.

Introduction

Technology and interactive media are now in vogue in teaching young children. Children live in a world of interactive media to develop and task their brain. They are growing up at ease with digital devices that are rapidly becoming the tools of the culture at home, at school, at work, and in the community. (Kerawalla and Crook 2002; Calvert. 2005; National Institute for Literacy 2008; Buckleitner 2009; Lisenbee 2009; Berson and Berson 2010; Chiong and Shuler 2010; Couse and Chen 2010; Rideout, Lauricella, and Wartella 2011). Technology tools for communication, collaboration, social networking, and user generated content have transformed mainstream culture. In particular, these tools have transformed how parents and families manage their daily lives and seek out entertainment, how teachers use materials in the classroom with young children, how children learn and communicate with parents and families. The pace of change is so rapid that society is experiencing a disruption almost as significant as when there was a shift from oral language to print literacy, and again when the printing press expanded access to books and the printed word. The shift to new media literacies and the need for digital literacy that encompasses both technology and media literacy will continue to shape the world in which young children are developing and learning (Linebarger and Piotrowski 2009; Flewitt 2011.). The distinction among the devices, the content, and the user experience has been blurred by multi-touch screens and movement-activated technologies that detect and respond to the child's movements. With guidance, these various technology tools can be harnessed for learning and development; without guidance, usage can be inappropriate and/or interfere with learning and development. There are concerns about whether young children should have access to technology and screen media in early childhood programs. Several professional and public health organizations and child advocacy groups concerned with child

development and health issues such as obesity have recommended that passive, non- interactive technology and screen media not be used in early childhood programs and that there be no screen time for infants and toddlers.

Because of the rapid development of technologies, they have changed children's lives and ways of learning, particularly in the past ten years. Researchers have urged a rethinking of the roles of technology in young children's development and consequently the development of learning theories and curricula that meet the needs of contemporary children (Fleer, 2011; Yelland, 2011). Although, many researchers and educators have advocated for the importance of young children's learning with technology and devoted themselves to investigating and implementing technology-related practices. The influence of young children's use of technologies on their development is still controversial. Some researchers believed that the use of technologies may impede these children's social, emotional, physical, and cognitive development (Armstrong and Casement, 2000; Cordes and Miller, 2000), while others support the use of technologies in improving young children's development in the aforementioned domains (e.g., Clements and Sarama, 2003; Plowman and McPake, 2013; Plowman and Stephen, 2003; Yelland, 2011). Many countries recognized the increasing role of technology in children's lives. In response to the aforementioned needs, a systematic finding will be conducted to initiate an evidence-based discussion on how technologies influence young children's learning and development (socio-emotional, physical, mental and gross motor) in pre-school children schools in Kwara State.

Purpose of the Study

The major purpose of this study is on the preschool children use of technological device and its impact on their development. Specifically this study intends to:

1. Examine the teachers' perception on impact of technological device on pupils' development (physical, mental, emotional and social development).
2. Find out factors that influence children's learning with technology
3. Find out the skills and competences needed by pupils to use technology devices.

Research Questions

1. What is the teachers' perception on the impact of technological device on pupils' development (physical, mental, emotional and social development)?
2. What are the factors that influence children's learning with technology?
3. What are the skills and competences needed by pupils to use technology devices?

Research Hypotheses

HO1: There is no significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on gender.

HO2: There is no significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on teachers years of experience.

HO3: There is no significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on teachers qualification.

Research Methodology

Survey research design was adopted for this study. Francis et.al (2003) observed that survey design enables the researcher to describe an event, situation or phenomenon as it is at the time of the study and observation enable the close watch and monitoring of an event or situation as it occur. It also helps the researcher to systematically document current opinions and information on research work. The population of the study comprised of thirty (30) primary schools within the study area. Twenty (20) schools were selected out of which 10 teachers each were randomly selected from each school to make a total of 200 samples for this study. To elicit information from the respondents, self-designed questionnaires were administered on the respondents. The close-ended questionnaire used comprised of two (2) sections; A. and B. Section A comprised of

respondents demographic data. Section B comprised of questions under study. The instrument was given to the research experts in the field of test, measurement and evaluation for validity. All their corrections and suggestions were incorporated into the final copy of the instrument before proceeding to administration of the questionnaire. The data collected was statistically analyzed for reliability coefficient using the test retest method and the reliability coefficient was 0.73.

The data collected from the respondents were quantified using descriptive statistic (frequency count and percentage) for demographic data, mean, standard deviation and percentage for answering the research questions while independent t-test and ANOVA was used to test the hypotheses generated.

Findings and Discussion

Demographic Description of Respondents

This section describes demographic characteristics of the respondents using frequency counts and percentage as illustrated below:

Table 1: Frequency and percentage distribution showing the demographic characteristics of the respondents.

Gender	Frequency (F)	Percentage (%)
Female	104	52
Male	96	48
Total	200	100
Marital status		
Single	67	33.5
Married	133	66.5
Total	200	100
Year of experience		
Less than five (5) years	75	37.5
More than five (5) years	125	62.5
Total	200	100
Qualification		
Below First degree	69	34.5
First degree and its equivalence	124	62.0
Above First degree	7	3.5
Total	200	100
	145	

Table I showed that out of 200 respondents that participated in the study, 96 (48%) were male, while 104 (52%) were female. It can be deduced from this that although the study sampled both gender, majority of the respondent were female. Also out of the 200 respondents sampled for this study 67 (33.5) were single while 133 (66.5) were married. It can equally be deduced that majority of the respondents are married. It was also seen that out of 200 respondent sampled for this study 75 (37.5%) had less than five (5) years' experience while 125 (62.5%) has more than five years working experience, it was therefore seen, that majority of the respondents has more than five years teaching experience. Lastly, it was seen that out of 200 respondents that participated in the study, 69 (34.5%) have below first degree, while 124 (62%) have first degree and its equivalence and 7 (3.5%) have above first degree. It can therefore, be deduced that majority of the respondent has first degree and its equivalence.

Results

Research Question I: What is the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development)?

In order to answer this research question, mean of responses of the teachers to each items on the questionnaire that addressed the teachers' perception on the impact of technological devise on pupils' development were calculated and 2.5 was used as cut off because of the four (4) likert response format of SA (4), A (3), D (2), SD (1). The output of the analysis reveals thus:

Table 2 Showing the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development)

S/N	Items	X	SD	Decision
	Physical Development			
	ICT devise cannot enhance children's learning and encourage purposeful and exploratory play.	2.01	1.180	Disagree
	Creative area of learning which includes arts & crafts, music, dance, imaginative play and role play are improve through pupils technology use.	3.15	1.086	Agree
	Children loss confidence in themselves and their ability to gain control over their movements and the way they handle tools and equipment when use ICT technology.	2.58	1.067	Agree
	Weighted mean	2.58		
	Mental Development			
	Pupils' creativity, problem solving, risk taking and flexible thinking skills are improved when using ICT devise	2.50	1.107	Agreed
	ICT technology encourages children to explore and discover things for themselves.	2.53	1.129	Agreed
	ICT helps children to make links across all areas of learning and development.	2.51	1.139	Agreed
	Playing back what was previously recorded by technological devise gives children an audience and appreciation for their creativity.	2.53	1.138	Agreed
	Role play supported by the use of ICT devise can encourage mathematical thinking, experience and language.	3.10	1.139	Agreed
	By providing resources that would be found in real environments such as calculators, phones, mobile phones, keyboards, tills, remote controls for TV will immerse children in real-world applications of mathematics.	2.62	1.096	Agreed
	Weighted mean	2.63		
	Emotional Development			
	ICT technologies provide the children with needed experiences that will build their self-esteem and self-confidence.	3.07	1.114	Agree

Emotional, social interests and needs of helping them to gain a sense of belonging is encourage when use ICT technology.	2.66	1.087	Agree
Most of them have long attention spans when using the technological devise	2.67	1.182	Agree
	2.8		

Weighted mean

Social Development

ICT technologies provide the children with needed experiences that will build their self-esteem and self-confidence.	2.92	1.179	Agree
ICT builds Self-confident in children and makes them feel good about themselves, learn and nurture their imagination	2.83	1.178	Agree
ICT technology encourage pupils sense of autonomy and encourage non self-directed learners	3.05	1.118	Agree
Creative area of learning which includes arts & crafts, music, dance, imaginative play and role play are improve through pupils technology use.	3.15	1.086	Agree
	2.89		

Weighted mean

It is seen from the table 2 above that ICT devise can enhance children's learning and encourage purposeful and exploratory play. Creative area of learning which included arts and crafts, music, dance, imaginative play and role play are also improve through pupils technology use and Creative area of learning which included arts and crafts, music, dance, imaginative play and role play are improved through the use of technology devise this is evident with the mean value of 2.01, 3.15 and 2.58 respectively. It can therefore be deduced that ICT technological devise has significant impact on pupils physical development because of the weighted mean value of 2.58 greater than 2.50.

It was equally seen from the table above that Pupils' creativity, problem solving, risk taking and flexible thinking skills are improved when using ICT devise, ICT technology encouraged children to explore and discover things by themselves, ICT helped children to make links across all areas of learning and development, Playing back what was previously recorded by technological devise gives children an audience and appreciation for their creativity. Role play supported by the use of ICT

device can encourage mathematical thinking, experience and language and by providing resources that would be found in real environments such as calculators, phones, mobile phones, keyboards, tills, remote controls for television will immerse children in real-world applications of Mathematics. This is evident with the mean value of 2.50, 2.53, 2.51, 2.53, 3.10 and 2.62 respectively which are all greater than 2.5. It can therefore be deduced that ICT device has significant impact on pupils mental development because of the weighted mean value of 2.62 greater than 2.50.

ICT technologies provided the children with needed experiences that will build their self-esteem and self-confidence, emotional, social interests and needs of helping them to gain a sense of belonging is encourage when use ICT technology and Most of them have long attention spans when using the technological device. This is evident with the mean value of 3.07, 3.66 and 3.67 respectively which are all greater than 2.5. It can therefore be deduced that ICT device has significant impact on the pupils emotional development because of the weighted mean value of 2.8 greater than 2.5.

Lastly, it is seen from the table 2 above that ICT device provide the children with needed experiences that will build their self-esteem and self-confidence, ICT builds Self-confident in children and makes them felt good about themselves, learn and nurture their imagination, ICT technology encourage pupils sense of autonomy and encourage non self-directed learners, creative area of learning which included arts and crafts, music, dance, imaginative play and role play are improve through pupils technology use. This is evident with the mean value of 2.92, 2.83, 3.05 and 3.15 respectively which are all greater than 2.5. It can therefore be deduced that ICT device has significant impact on the pupils social development because of the weighted mean value of 2.89 greater than 2.5.

Research Question 2: What are the factors influencing children's learning with technological devises?

In order to answer this research question, mean of responses of the teachers to each items on the questionnaire that addressed the factors influencing children's learning with technological devise were calculated and 2.5 was used as cut off because of the four (4) likert

response format of SA (4), A (3), D (2), SD (1). The output of the analysis reveals thus:

Table 3: Showing factors influencing children's learning with technological devices

S/N	Items	X	SD
1.	Non availability of required technological device in right quantity and quality.	3.01	1.171
2.	Inability of the teachers to use these technologies for instruction appropriately.	3.26	1.099
3.	Poor pupils' attitude to the use of the technology.	2.76	1.173
4.	Erratic power supply for the use these technological devise in the classroom.	3.32	1.021
5.	Ill-equipped classroom with required appliances to use the technological device.	2.72	1.147

It is seen from the table 3 above that factors influencing the children learning with technological devise are non-availability of required technological device in right quantity and quality, inability of the teachers to use these technologies for instruction appropriately, Poor pupils' attitude to the use of the technology, erratic power supply for the use these technological devise in the classroom and Ill-equipped classroom with required appliances to use the technological device. This is evident with the mean value of these items greater than 2.5.

Research Question 3: What are the skills and competences needed by pupils to use technology devises?

In order to answer this research question, mean of responses of the teachers to each item on the questionnaire that addressed the skills and competences needed by pupils to use technology devises were calculated and 2.5 was used as cut off because of the four (4) likert response format of SA (4), A (3), D (2), SD (1). The output of the analysis reveals thus:

Table 4: Showing the skills and competences needed by pupils to use technology devices

S/N	Items	X	SD
1.	Children's ability to use a mouse and touchscreen.	2.79	1.101
2.	Children's learning of computer programming.	2.69	1.127
3.	The digital tools and technology-related literacy practices that children had at home.	2.69	1.113
4.	Children as creators of multimodal, digital texts	2.76	1.113
5.	Children's ability to read and comprehend multimodal, digital texts	2.70	1.108
6.	Children's ability to search for information online.	2.76	1.143

Table 5 above showed the skills and competences needed by the pupils to use technological devices, which included: children's ability to use a mouse and touchscreen, children's learning of computer programming, the digital tools and technology-related literacy practices that children had at home, Children as creators of multimodal, digital texts, Children's ability to read and comprehend multimodal, digital texts and children's ability to search for information online. This is evident with the mean value of 2.79, 2.69, 2.69, 2.76, 2.70 and 2.76 respectively which are all greater than 2.5.

Research Hypotheses

Three research hypotheses postulated for this study were tested using t-test and ANOVA statistics at 0.05 level of significance.

H₀₁: There is no significant difference in the teachers perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on gender.

Table 5: t-test analysis on the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on gender.

Variables	N	Mean	SD	Df	t	Sig (2 tailed)	Decision
Male	96	72.93	7.795	198	1.308	0.192	Rejected
Female	71.51	71.51	7.526				
P>0.05							

Results from table 5 showed the t value yielded 1.308 which is significant with p value $0.192 > 0.05$. This shows a non-significant result. Hence, the null hypothesis is accepted. This means that there is no significant difference in the teachers perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on gender.

Ho2: There is no significant difference in the teachers perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers years of experience.

Table 6: t-test analysis on the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on gender.

Variables	N	Mean	SD	Df	t	Sig (2 tailed)	Decision
Below 5years	75	73.59		8.144	2.010	0.045	Rejected
Above 5years	125	71.35		7.276			
P<0.05							

Results from table 6 showed the t value yielded 2.010 which was significant with p value $0.045 < 0.05$. This showed a significant result. Hence, the null hypothesis was rejected. This means that there was a significant difference in the teachers perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers yearsof experience.

Ho3: There is no significant difference in the teachers perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers qualification.

Table 7: Analysis of variance showing difference in the academic performance of children exposed to child labour in public primary schools in Ilorin East Local Government, Kwara State

	Sum of Squares	Df	Mean Square	F	Sig	Decision
Between Groups	456.532	2	228.266			
Within Groups	11250.248	197	57.108	3.997	0.020	Rejected
Total	11706.780	199				

P<0.05

From table 7, result showed the df (2, 199) and F value yielded 3.997 which was significant at 0.05 alpha level. Hence, the null hypothesis was rejected since the P-value 0.020 was less than 0.05 ($0.020 < 0.05$). This means that there was significant difference in the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers qualification.

Table 8: Scheffe's post hoc Analysis on the difference in the in the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers qualification

Subset for alpha = 0.05				
Qualification	N	Mean	SD	S. Error
Below first degree	7	67.57	5.827	2.202
First degree and its equivalent	124	73.29	8.447	.759
Above first degree	69	70.68	5.779	.696
Total	200	72.19	7.690	.542

Table 5 showed the Scheffe's post hoc Analysis on the teachers' perception on the impact of technological devise on pupils' development (physical, mental, emotional and social development) based on teachers

qualification. It was revealed that the three qualification groups were significantly different as the first degree and its equivalent has the highest mean of 73.29, followed by above first degree with a mean of 70.68 and below first degree with a mean of 67.57.

Summary of Findings

1. Teachers have favourable perception towards the impact of ICT devices on the child development child in the areas of (physical, mental, emotional and social development).
2. Factors influencing the children learning with technological device includes non-availability of required technological device in right quantity and quality, inability of the teachers to use these technologies for instruction appropriately, poor pupils' attitude to the use of the technology, erratic power supply for the use these technological device in the classroom and ill-equipped classroom with required appliances to use the technological device.
3. The skills and competences needed by the pupils to use technological devices includes: children's ability to use a mouse and touchscreen, children's learning of computer programming, the digital tools and technology-related literacy practices that children had at home. Children as creators of multimodal digital texts, Children's ability to read and comprehend multimodal digital texts and children's ability to search for information online.
4. There is no significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on gender.
5. There is a significant difference in the teachers perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on teachers years of experience.
6. There is significant difference in the teachers' perception on the impact of technological device on pupils' development (physical, mental, emotional and social development) based on teachers qualification.

Recommendations

- There should be a sufficient supply of technological device in right quantity and quality for the pupils in order to enhance their development. It should as well be regularly supplied for pupils use, of electricity to use the technological device for the pupils.
- There should be provision of standard and conducive classroom that can allow proper use of the technological device for the pupils.
- Parents should be encouraged to equip their children with educative technological device suitable for their age for child development.
- Government should be encouraged to provide grants for primary schools for the purchase of these devices. Teachers should also be encouraged to go for professional development programme and reflective thinking in order to update their knowledge to meet the need of 21st century.
- Pupils' attitude/behaviour should be studied at a particular time so that suitable technological device will be provided as this technological device builds self-confidence in children, makes them feel good about themselves and learn how to nurture their imagination.

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