Influence of Technology on the Social and Emotional Development of Primary School Children in Anambra State, Nigeria

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Abstract
The study investigated influence of technology on the social and emotional development of primary school children in Anambra State, Nigeria. Descriptive survey design was adopted for the study. The study answered two research questions while two null hypotheses were tested at 0.05 level of significance. The population of the study comprised 4,043 respondents in the 327 public primary schools in Anambra State. It comprised of 327 head teachers: 2,115 teachers and 1,601 parents. The sample size was 1,213 respondents. It comprised of 98 head teachers, 635 teachers and 480 parents of school children from 98 public primary schools in the six Education Zones in Anambra State. A researcher developed questionnaire titled 'Technology, Social and Emotional Development of Children Questionnaire (TSEDCQ)' was used for data collection. The instrument was validated by three experts, one from the Measurement and Evaluation Unit of Department of Educational Foundations, and two from Early Childhood and Primary Education Department. Cronbach alpha was applied in determining the internal consistency of the instrument with reliability coefficients of the two clusters being; 0.85 and 0.92 respectively. The researcher with the help of five research assistants collected data for the study. The Mean was adopted in answering the research questions while analysis of variance (ANOVA) was deployed in testing the null hypotheses It revealed that technology has both positive and negative influence on the social and emotional development of public primary school children in the state. The study further found that the perception of school heads, teachers and parents did not differ significantly on the extent of influence of technology on the social and emotional development of public primary school children in Anambra State. The study concluded that the influence is understood to be both positive and negative. It was recommended that school heads, teachers and parents should endeavour to pay more attention to the kind of technological gadgets and experience that primary school children are exposed to, so as to channel the children's attention to technologies that would positively impact them more appreciably.

Keywords: Technology, Social Development, Emotional Development, Primary School Children

Introduction

Technology has become an integral part of modern society, influencing various aspects of daily life, including education, communication, and social interactions. In recent years, primary school children have been increasingly exposed to digital devices such as smartphones, tablets, computers, and gaming consoles. These technological advancements have transformed how children learn, interact, and express emotions. While technology offers numerous educational benefits, such as access to digital learning resources, interactive learning platforms, and virtual collaboration, its impact on social and emotional development remains a subject of concern and debate. Technology has become ubiquitous and evolving part of life, offering opportunities for learning and assisting human beings carry out duties faster and more effectively in a sustainable manner. Supporting this, Wheel (2023) posited that technology improves the human environment by assisting humans in solving problems. Wheel stressed that in the present world, aside from adults, children take advantage of high technologies for the purpose of communication, grow up with the use of technological devices and consumption of internet content, as well as build their social networks through You Tube, Facebook, Instagram, TikTok and other technological oriented venues. This might be an indication that children, especially at the primary school level could be impacted upon by their exposure to technology.

Technology is a terminology used to describe the application of science knowledge and competences in addressing challenges confronting human beings. Luenendonk (2023) and Wheel (2023) stated that technology is the practical application of scientific knowledge to solve real-world problems and improve human welfare. This is a pointer to the fact that technology is fundamentally aimed at solving problems for the betterment of humanity. By this definition, it means technology's focal interest is to improve the human environment by remedying needful situations. For instance, mobile phone, which is part of communication technology, partly serves to solve problems in communication, such as distance barrier. This could mean that technology manifests in different forms and types with veracities of methods of application, way of solving problems, and purposes they serve.

Luenendonk (2023) identified the types and forms of technology to include, but are not limited to: mechanical technology, medical technology, communication technology, industrial and manufacturing technology, electronic technology, educational technology, business technology, construction technology, assistive technology and entertainment technology. The various classifications could be interpreted to mean that technology is simply seen as the application of scientific knowledge, skill and competencesin solving different problems. These 'technologies' are known to be unique, assisting human beings perform tasks in peculiar ways that are necessary. So, when technology is referred to in this study, it is simply the composite or combination of multiple types of technologies that primary school pupils are exposed to, directly or indirectly. Examples might include, but are not limited to exposure to television, mobile phones, smart classrooms, laptops, iPads, internet, social media handles, video games, smart cars and smart learning materials, which might influence their social and emotional development.

Child development is a term that is used to refer to noticeable changes and transformation in a child as he/she grows. It could mean the various changes that occur in a child as he advances. It could be a combination of physical changes, emotional changes, intellectual prowess, changes in relationship structure and changes in language formation. Development is the sequence of changes in human beings that begin with conception and continue throughout life. It involves the

emergence and expanding of the capacities of the individual to provide greater facility in functioning. In development there is change that is both quantitative and qualitative. Like this, University of Nothingham staff (2023) outlined that development in a child could be physical, social, language, emotional/affective and intellectual/cognitive. Also, Levin (2023) stated that child development portrays the growth and changes, physically, cognitively, emotionally and socially that an individual experiences from infancy through to adolescence.

Throwing more light to the foregoing, University of Nothingham (2023) buttressed that, child development covers the full scope of skills that a child masters over their life span including development in cognition (the ability to learn and solve problem); social interaction and emotional regulation (interacting with others and mastering self-control); speech and language (understanding and using language, reading and communicating); physical skills (finger skills and whole body skills), and sensory awareness (the registration of sensory information for use). In terms of child development, the study will pay more attention to the physical, social, emotional and intellectual aspects of development. These aspects are believed to be more critical for behavioural changes of a child at the primary school level and could be mostly affected by exposure to technology. In essence, child development is simply the changes in social, intellectual, physical and emotional aspects of the child as he moves from one stage of life to another.

Social and emotional development in children encompasses the ability to form healthy relationships, understand and manage emotions, develop empathy, and exhibit prosocial behavior. Traditionally, these skills are nurtured through face-to-face interactions with peers, teachers, and family members. However, the rise of digital communication and screen-based activities has altered the nature of social interactions, potentially influencing children's emotional intelligence, communication skills, and overall well-being. Technology can enhance social development by facilitating communication, collaboration, and access to diverse perspectives through online platforms. Educational apps and digital storytelling tools can also support emotional learning by helping children recognize and regulate their emotions. On the other hand, Madueke (2020) noted that excessive screen time, exposure to inappropriate online content, and reduced face-to-face interactions may contribute to social isolation, emotional detachment, and difficulties in developing critical interpersonal skills. Additionally, the prevalence of cyberbullying, online addiction, and the passive consumption of digital content raises concerns about children's social, emotional resilience and mental health.

Social development of children could be seen as the process by which children learn to interact with others, develop relationships, and build skills to manage social situations. Madueke (2020) considered social development of a child as having to do with emotional regulation, communication skills, empathy, and understanding societal norms, making it a critical aspect of childhood, impacting how individuals relate to others throughout their lives. Similarly, Onuoha (2023) stated that social development is influenced by various factors such as family, culture, education, individual temperament and technology around children with its stages from birth to primary school level providing a framework for understanding typical social behaviours of children within certain age brackets. Onuoha added that challenges such as attachment issues, social anxiety, and developmental disorders which are common among children might hinder social progress. In essence, combating these challenges might require early intervention and supportive environments which foster healthy social relationships and emotional well-being and

exposing them to age-appropriate and unharmful technologies could help them develop better, socially.

Emotional development in children refers to how children learn to recognize, express, and manage their emotions, as well as how they develop empathy and emotional understanding of others (Madueke, 2020). It is known to be essential for emotional stability, emotional regulation, self-awareness, and building meaningful relationships with self and friends. Madueke further stated that emotional development is a fundamental aspect of childhood, shaping how children interact with the world and others, because most children follow typical emotional development patterns that are often challenging. These include but are not limited to like emotional dysfunction, anxiety, or difficulties with empathy. For primary school children to make commendable progress in emotional development there is need for early intervention, a supportive environment, and emotional education that can promote healthy emotional growth through technologies. With all these technologically driven supports, children would have been better equipped with relevant tools to self-manage emotions throughout their schooling at the primary school level.

Primary education is considered as the formal basic education that every child is literally compelled to attain in Nigeria for basic numeracy and literacy. The primary schools established and managed by the government are referred to as the public primary schools, and constitute the focus of the study. It is basically meant for children of age range 6 to 11years$^+$old. Primary education is the basic level of education in Nigeria given to children between the age of 6 to 11 years$^+$ old (Federal Republic of Nigeria, FRN, 2013). Primary education is basic education in Nigeria and describes basic educational experience for children below adolescence and undertaken for 6 years. Abdussalam (2019) buttressed that what is regarded as primary education in the Nigerian law is the first six years of schooling after preschool experience, and given as part of the universal basic education curriculum. Abdussalam further outlined some of the objectives of primary education as stated in the Nigerian National Policy on Education thus: to inculcate permanent literacy, numeracy, and the ability to communicate effectively, and to lay a sound basis for scientific, critical and reflective thinking among others.

In pursuance of the objectives of primary education in Nigeria, various subject curricula have been designed, one of which is coding that is meant to expose pupils to programming. This is a signal that technology is almost indispensable and unavoidable for pupils at the primary school level, as it is thought to play significant roles in children's behaviour and development. The nature of the impact which technology is believed to be playing in every pupil's behaviour and development could better be understood if the perception of the head teachers, parents and teachers are sought for.

A head teacher also referred to as the headmaster or headmistress is the equivalence of secondary school principal for the primary school level of education. He or she is considered as the Chief Executive Officer, Chief Administrator and Manager of the affairs of the primary school under his or her care. To be a head teacher in a school is to be in charge of monitoring and supervising curriculum implementation at the primary school he or she is assigned to manage. In the course of discharging relevant duties for the school, he or she relates with pupils, observing and examining their behaviours and different aspects of their growth and development. Even at home, head teachers who are understood to be mostly married also observe and monitor their primary school children, in terms of their exposure and usage of available technologies and could

possibly understand how such might be influencing the children, behaviourally and developmentally.

Teachers on the other hand, are the ones who are directly tasked with training and nurturing the pupils in line with provisions of the curriculum. The teachers who are ideally learning facilitators are believed to be close observers of children's behaviour and development at the primary school level and could make input regarding what aspect of their behaviour and development that could have been interfered with, by their exposure to technology. This is why the perception of head teachers and teachers are an important medium through which the foreseeable impact of technology on the primary school pupils could be better understood.

There is no denying the fact that technology is important in addressing most challenges that human beings, including primary school children, might be confronted with. However, there have been series of observations by different technology related scholars which argued that technology is not all-round healthy and good for humanity, and more especially children. Supporting this, Asiegbu, Akudo and Igbokwe (2023) observed that children are growing up using multifunctional technological devices with potential of information overload, misleading information, adult content, interference with security and privacy, and forming a questionable habit, especially in Awka South Local Government Area of Anambra State.

Similarly, Charles Nechtem Associates (2021) argued that even though modern technologies create new and unimaginable possibilities, it opens new dangers and psychophysical development consequences on children. In addition, with the increased use of technology, children might not be adequately developing their social skills which could lead to more children being socially awkward, withdrawn, shy, or intimidated by social situations. In support of this, Luenendonk (2023) observed that children seem to become reliant on a device to solve problems for them rather than using brain connections to work through a problem and this deforms patterns of behaviour and formation of brain structures. This could lead to reduced sleep quality, affecting their overall wellbeing and immune system. Burley (2019) observed that children might get used to being alone and lose the desire to engage with their parents, siblings or even friends, outside of the internet. All these seem to have led to certain physical and psychological problems in society, such as obesity, physical deformities, loss of muscle mass, hypertension, weakening of density and elasticity of joints and ligaments, weakening of respiratory and cardiovascular capacity, vegetative and psychological disorders.

Based on the foregoing, it is obvious that there exists a very few, if not absence of studies carried out on the influence of technology on primary school pupils' behaviour and development in the entire Anambra State. This is evidential because most of the scholarly evidencewas not in the State, and particularly in primary schools. Given the spotted gap in literature, it is essential to examine the influence of technology on the social and emotional development of primary school children in Anambra State, Nigeria.

Purpose of the Study

The purpose of the study was to ascertain the influence of technology on the social and emotional development of primary school children in Anambra State, Nigeria. Specifically, this study sought to ascertain:

1. The extent to which technology influences the social development of primary school children in Anambra State.
2. The extent to which technology affects the emotional development of primary school

children in Anambra State.

Research Questions
This study was guided by the following research questions:
1. To what extent does technology influence the social development of primary school children in Anambra State?
2. To what extent does technology influence the emotional development of primary school children in Anambra State?

Hypotheses
The following null hypotheses were tested at 0.05 level of significance:
1. The mean ratings of school heads, teachers and parents of public primary schools' children in Anambra State do not differ significantly on the influence of technology on the social development of their children.
2. There is no significant difference in the mean ratings of school heads, teachers and parents of public primary schools' children in Anambra State on the influence of technology on the emotional development of their children.

Method
Descriptive survey design was adopted for the study. The study answered two research questions while two null hypotheses were tested at 0.05 level of significance. The population of the study comprised 4,043 respondents in the 327 public primary schools in Anambra State, which comprised of 327 head teachers; 2,115 teachers and 1,601 parents. The sample size was 1,213 respondents, comprised of 98 head teachers, 635 teachers and 480 parents of school children from 98 public primary schools in the six Education Zones in Anambra State. A researcher developed questionnaire titled 'Technology, Social and Emotional Development of Children Questionnaire (TSEDCQ)' was used for data collection. The instrument was validated by three experts, one from the Measurement and Evaluation Unit of the Department of Educational Foundations, and two from Early Childhood and Primary Education Department. Cronbach alpha was applied in determining the internal consistency of the instrument with reliability coefficients of the two clusters being 0.85 and 0.92 respectively, The researcher, the help of five research assistants collected data for the study. The Mean was adopted in answering the research questions while analysis of variance (ANOVA) was deployed in testing the null hypotheses at 0.05 level of significance.

Decision Rules
For the null hypotheses, Analysis of Variance (ANOVA) used to test each of the hypotheses at 0.05 level of significance. Each null hypothesis was rejected if p-value was less than the 0.05 but was not rejected if p-value was greater than or equal to 0.05.
For the items of research questions, the Mean ratings were used. For the remarks on each item, the following range of values were used:
1.0   –   1.49   =   Very Low Extent
1.50   –   2.49   =   Low Extent
2.50   –   3.49   =   High Extent
3.50   –   4.00   =   Very High Extent

Results

Research Questions 1: To what extent does technology influence the social development of primary school children in Anambra State?

Table 1: Responses of school heads teachers and parents of public primary schools' children in Anambra State on the influence of technology on the social development of their children.

S/N	Influence of social development	Sch. H X (N=98)	Remark	Teachers' X (N=635)	Remark	Parents' X (N=480)	Remark
1.	makes children develop friendships with other kids	2.81	HE	2.95	HE	2.76	HE
2.	motivates children to play with other children	2.72	HE	2.84	HE	2.77	HE
3.	enable children understand what is right or wrong	2.87	HE	2.65	HE	2.73	HE
4.	makes children become disinterested in playing with other children	2.79	HE	2.70	HE	2.72	HE
5.	makes children look extremely rigid about routines	2.82	HE	2.78	HE	2.77	HE
6.	makes children become upset when things change	2.78	HE	2.77	HE	2.80	HE
7.	makes it difficult to separate children from parents or caregivers	2.78	HE	2.74	HE	2.78	HE
8.	triggers off undue comparison among children	2.76	HE	2.76	HE	2.73	HE
	Cluster Mean	**2.79**		**2.77**		**2.76**	

Table 1 showed that school heads, teachers and parents agreed that technology has both positive and negative influence on the social development of public primary schools' children, since the items all had a mean score of 2.50 and above. Also, the cluster mean scores of 2.79, 2.77 and 2.76 for school heads, teachers and parents, respectively, confirmed that to a high extent technology influenced the social development of public primary school children.

Research Questions 2: What is the extent of influence of technology on the emotional development of primary school children in Anambra State?

Table 2:

Reponses of school heads (Sch. H), teachers and parents of public primary schools' children in Anambra State on the influence of technology on the emotional development of their children.

S/N	Influence of technology on the emotional development	Sch. H X (N=98)	Remark	Teachers' X (N=635)	Remark	Parents' X (N=480)	Remark
9.	makes children develop tendency to become shy	2.81	HE	2.87	HE	2.78	HE
10.	makes children to be expressing regrets	2.72	HE	2.77	HE	2.79	HE
11	makes children to be reacting violently	2.87	HE	2.69	HE	2.75	HE
12	makes children develop tendency to feel frustrated for any difficulty	2.79	HE	2.72	HE	2.70	HE
13	makes children develop tendency to become afraid and freight	2.82	HE	2.74	HE	2.74	HE
14	makes children to be expressing surprises	2.66	HE	2.70	HE	2.72	HE
15.	makes children to develop feeling of excitement when visiting crucial places	2.79	HE	2.80	HE	2.77	HE
	Cluster Mean	**2.78**		**2.76**		**2.75**	

On table 2,(items 9-14) revealed that all items have a high extent, the respondents agreed that technology has both positive and negative influence on the emotional development of public primary schools' children, because all the individual items had a mean score of 2.50 and above. Also, the cluster mean scores of 2.78, 2.76 and 2.75 for school heads, teachers and parents, respectively, showed that to a high extent technology influenced the emotional development of public primary school children.

Hypothesis 1: The mean ratings of school heads, teachers and parents of public primary school children in Anambra State did not differ significantly on the influence of technology on the social development of their children.

Table 3:
Summary of Analysis of Variance (ANOVA) Statistics on the mean ratings of school heads, teachers and parents of public primary school children in Anambra State on the influence of technology on the social development of their children.

Status	Sum of Squares	Df	Mean Square	F-ratio	F-critical	Prob.
Between	.74	2	0.74			

Status	Sum of Squares	Df	Mean Square	F-ratio	F-critical	Prob.
Groups				0.22	3.15	.06
Within Groups	2,109.17	1,211	1.40			
Total	2,111.81	1,213				

On table 3 the f-ratio value is 0.22; f-critical is 3.15 while the degree of freedom is 1,211, all at 0.05 alpha level of significance. Based on this observation, the critical value (3.15) is greater than 0.22 being the value of f-ratio. Also, the probability level of significance, P=0.06) is greater than 0.05. Hence, the null hypothesis is not rejected. This means that the mean ratings of school heads, teachers and parents of public primary school children in Anambra State did not differ significantly on the influence of technology on the social development of their children.

Hypothesis 2: There is no significant difference in the mean ratings of school heads, teachers and parents of public primary school children in Anambra State on the influence of technology on the emotional development of their children.

Table 4:
Summary of Analysis of Variance (ANOVA) Statistics on the mean ratings of school heads, teachers and parents of public primary school children in Anambra State on the influence of technology on the emotional development of their children.

Status	Sum of Squares	Df	Mean Square	F-ratio	F-critical	Prob.
Between Groups	.75	2	0.75			
				0.62	3.15	.060
Within Groups	2,116.61	1,211	1.34			
Total	2,180.76	1,213				

For table 4, the f-ratio value is 0.62; f-critical is 3.15 while the degree of freedom is 1,211, all at 0.05 alpha level of significance. Based on this observation, the critical value (3.15) is greater than 0.62 being the value of f-ratio. Also, the probability level of significance, P=0.06) is greater than 0.05. Hence, the null hypothesis is not rejected. This means that there is no significant difference in the mean ratings of school heads, teachers and parents of public primary schools' children in Anambra State on the influence of technology on the emotional development of their children.

Discussion of Findings
Influence of Technology on the Social Development of Primary School Children in Anambra State.
Table 1 showed that the cluster mean of ratings are 2.79, 2.77 and 2.76 for school heads, teachers and parents, respectively. This indicates that the individual items on the influence of technology on the social development of primary school children are generally considered by the respondents to be influential to a high extent. On the other hand, the report on table 7 further revealed that the mean ratings of school heads, teachers and parents of public primary schools'

children in Anambra State did not differ significantly on the influence of technology on the social development of their children. This means that each of the 3 categories of respondents acknowledged the influence of technology on social development indifferently. The report from the analysis could not establish any evidence that could have led to rejection of the null hypothesis. Similarly, Fairlie and Ariel (2016) reported that there was no significant difference in the mean response of private and public-school respondents regarding the impact of technology on the number of friends that pupils relate with, and the amount of time children hang out with their friends in person. Fairlie and Ariel further reported that pupils assigned to computers are less likely to participate in sports teams and will not have time to play with friends. This shows that the more children are presented with the opportunity to make use of technological gadgets, the less likely they are to hang out with their friends. Also, on table 1, item 4 and 5 of the current pointed out that usage of technology makes children look extremely rigid about routines and become disinterested in playing with other children.

Influence of Technology on the Emotional Development of Primary School Children in Anambra State.

Table 2 showed the cluster mean of ratings are 2.78, 2.76 and 2.75 for school heads, teachers and parents, respectively. Thus, the result from the table indicates that the influences of technology on the emotional development of primary school children are of high extent. Technology makes children develop a tendency to feel frustrated with any difficulty; develop a tendency to become afraid and freight and become used to expressing surprises. Furthermore, the study on table 4 reported that there is no significant difference in the mean ratings of school heads, teachers and parents of public primary schools' children in Anambra State on the influence of technology on the emotional development of their children. Similarly, Hatzigianni, *et al* (2023) who examined the role of digital technologies in early childhood education and quality of emotional care in Australia revealed that new technologies play important role in most of the early childhood education and care (ECEC) settings, including emotional care of the child, collaborative partnerships, as well as families and communities for childcare. They argued that turning off rhyme videos during the classes for children make them sad and moody, showing a sign of frustration with such decision whoever is their caregiver or teacher. Even though the reviewed study was not carried out at primary school level, yet the finding underscores the fact that technology does influence the emotional aspect of children, irrespective of location.

Conclusion

Based on the findings, it was concluded that technology has positive and negative influence on both the social and emotional development of children. On the other hand, technology has positive influence on both the social and emotional development of primary children. For the findings, the perceptions of school heads, teachers and parents did not differ statistically on the influence of technology on the social and emotional development of public primary school children. It is understandable that technology can influence the social and emotional development of primary school children in either positive or negative ways, depending on how children's exposure to technology is moderated and controlled. If a primary school pupil is well guided and monitored when using technological gadgets, he or she stands to gain commendable and positive touch of technology. On other hand, if the child is allowed to use technology without proper guidance, he or she will become vulnerable, leading to negative

influence of technology being experienced by the child. Therefore, technology can influence social and emotional development in both positive and negative way, hence the need for vigilance and effective guidance of children's exposure to the use of technology.

Recommendations
Based on the findings the following recommendations were made:
1. The school community and parents should collaborate to continuously promote awareness and sensitization of primary school children on how best to manage their time when using technologies, to have time for social and meaningful engagement with friends, family members and loved ones. This will help to curb unhealthy addiction to the use of technological gadgets.
2. The school community and parents should purposefully work together on rechanneling pupils' commitment to using technology into positive energy. Children should continuously be sensitized to the fact there is time for everything, and that turning off or pausing a technological gadget they might be using at a time should not be considered as an attempt to hurt them. This might be a way to curtail and address the issue of technological addiction often formed by children, especially those in primary schools.

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