INVESTIGATING THE IMPACT OF IT DEVICES USAGE BY YOUNG LEARNERS AND ITS IMPLICATIONS ON THEIR EDUCATIONAL DEVELOPMENT

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ABSTRACT
This paper examines the impact of Information Technology (IT) on Early Childhood Education (ECE). The goal is to establish the extent to which IT tools usage impact on young learners and how this challenge can be leveraged upon by stakeholder including parents, teachers and regulatory agencies. Taking advantage of Chi-square statistic, the results obtained in this investigative research, corroborates similar findings by other scholars and at the same time serving to stimulate further research on the subject.

Keywords: Chi-square; Childhood; Education; IT

1. INTRODUCTION
The advent of IT in the educational system has provided young learners at all levels with the potential to become the much needed and highly skilled manpower of the future - IT professionals, engineers, scientists, technicians among others.
On the other hand, the influence of these tools on these young learners need to be assessed in order to ascertain the impact (both positive and negative) on their development. Lately, most households are known to have acquired computer games, personal computers and other internet-based tools and technologies such as television sets and stereo systems which preoccupy the children with dare consequences on their studies.
Concerns bordering on the use of IT tools by young learners is often centered around the level at which they are exposed to these devices and how early in their general development. Children are known to learn more from real-life experiences than from IT channels, especially if the content is not suitable for them. The debate about IT's influence on child development has since gone beyond the borders of the academia. Furthermore, it is generally perceived, in most societies, that IT is dangerous for the child, while its creative potentials on the other hand is sometimes overlooked.
 Based on the work of (Attewell, Savill-Smith, & Douch, 2009), the dangers and hence the disadvantages of IT usage are categorized into three. The first is concerned with the child's socio-cultural development. The authors opined that IT usage by children endangers their social development, because less time is spent playing with their peers leading to isolation. The second category includes the dangers associated with child's cognitive development. IT usage supposedly endangers the child's intellectual development, imagination (it stimulates passivity and not activity) and the development of language (lack of communication with peers). The last category includes dangers and disadvantages of IT usage for the child's general wellbeing. These challenges form the basis for this investigative research.

The rest of the paper is organized as follows: Section 2 present a review of related literature; section 3 presents the research methodology. Results and discussion of same is given in section 4. The paper is concluded in section 5 with a summary of findings as well as suggestions for further research on the subject.

2. Literature review
The authors of (Iskander & Curtis, 2005) state that childhood is apparently considered by society as a time of innocence. It is also seen as a time of oppression for children. Aries uses the representation of children in the visual arts in the Middle Ages as evidence to buttress the fact that, prior to the 16th century, little concern was given to childhood issues. Children were considered too fragile to take part in the life of adults hence they were not taken into consideration.
Lawrence Stone (Stone, 1987) , the author of 'The Past and The Present Revisited' asserts that the conditions of pre-modern childhood was characterized as an era of freedom and sociability on the one hand and an era of oppression and isolation on the other. Furthermore, the authors also view the period as that of happy social polymorphism, devoid of divisions based on age, separation between child and adult, privacy as well as external pressure from the state. Children and adults mixed together easily and naturally, wearing same clothes, playing same games, and working together on similar jobs.
Several issues raised by Stone to convey the impression that the concept of childhood is invariably an invention of modern society which came into being in the eighteenth century. Similarly, (Hall & Rudkin, 2011) corroborate this position by asserting that childhood is exclusively a modern societal concept which is enforced and unnatural. Accordingly, childhood is a European invention of the sixteenth century. This position is supported by the fact that most languages of the time had no words for childhood however, by the seventeenth century the division between adulthood and childhood had become widespread thereby separating the mature from the immature (Simms, 2008).
Concept of childhood has evolved over the centuries. Modern concept of childhood is presumably progressing towards effective and meaningful freedom. Consequently, the dominant view is that children are incapable of making substantial contributions to society on account of their immaturity and incompetence. (Volk, 2011) clarifies that children were not missing from the Middle Ages, at least from the thirteenth century. He insists that a child that had died too soon in life was buried almost everywhere much as domestic pets (e.g. cat or dog) are buried today. Children were viewed passively and childhood was considered as the most crucial stage in life, therefore need protection in order to be prepared for adulthood.

In modern societies, childhood is considered a crucial stage in the development of an individual based on societal expectations. Some theorists are of the view that children have not been victims of ill-treatment by society in general. To elaborate this, the author of 'Goodnight Noises' argues that in the modern world, quietness as a need for the child is often overlooked.

In this respect, (Rury, 2012) propounded the idea that children begin as a blank slate and their personalities and moral compasses are formed through life experiences. Based on this theory, children are seen as imperfect, not yet rational, and incomplete version of their adult counterparts. Furthermore, the author sees the acquisition of reason as a gradual process in humans which vary from animals in being rational. Though, it's part of the natural process of psychological development, adulthood is perceived as a state of mind rather than a question of age.

Similarly, children are perceived to be weak, vulnerable and incapable of providing for their upkeep. (Rury, 2012) concedes that being incapable of reasoning is not exclusive to children. In fact, there are adults who remain in the state of naturally defined childhood regardless of their ages.

The authors of (Cassidy, 2012) opined that there are different views of childhood. Thus, the concept of childhood is a function of both cultural and ideological concerns of the society. Consequently, the concept of childhood requires that children be separable from adults with respect to certain sets of attributes. The authors maintain that the concept of childhood has always been with societies at all ages but with different conceptions of the subject.

The authors of (Taylor & Giugni, 2012) defend the concept of childhood and stressed that childhood has its place in the order of human life. In other words, childhood implies recognizing that children differ interestingly from adults. As a matter of fact, the concept of childhood is strictly associated with the adulthood. Thus, being a child is the opposite of being an adult, and vice versa.

According to (Wyn, 2015), childhood is a period of life where play and carefree pleasure should be indulged, where the child is protected from the adult world of work and is cared for, kept warm and well fed. Similarly, (Klimley, Bang, Carpinteri, & Hasselt., 2017) maintains that children have only one chance of childhood therefore, they deserve adequate protection from harm to enjoy good emotional, mental and physical health and to have a sense of belonging at home, school and in the community.

To sum up, (Nodelman, 2016) articulates that adults offer children images of childhood that they expect the children to mimic in order to be ideal children. This viewpoint inevitably results in failures since children are not yet actually what adults wish them to pretend to be for their own good.

The years prior to kindergarten are among the most critical in the life of the child to influence learning. This becomes a challenge and commitment to the parents, teachers, community and government, to ensure that children receive appropriate training. Twyman et al. (Twyman & Heward, 2016) explained that children grow and develop in orderly ways, learning to move about their world, communicate, and play with objects and among themselves. As the ability of the children to manipulate their environment increases, their level of independence also increases correspondingly.

Most societies currently face challenging times providing children the much needed quality education. Some of these challenges include effective planning and management of scarce resources, shortage of highly qualified early childhood teachers, undefined curriculum and inclusion among others. Besides the aforementioned challenges, exposure to IT tools usage has the potential to impact the educational development of the young learners.

3. METHODOLOGY
This section presents the method of data collection and analysis utilized in this research.

3.1. Data Source
The study utilizes primary data obtained directly from respondents.

3.2. Research Hypothesis
Five key hypothesis are considered for this investigative research. These will be tested based on the Chi Square method. The hypothesis are as follows:

Hypothesis 1 (Null): There is no significant difference between school children who own mobile phones and those who do not.

Hypothesis 1 (Alternative): There is significant difference between school children who own mobile phones and those who do not.

Hypothesis 2 (Null): There is no significant difference between those who use mobile phones with internet access compared to those whose phones have no internet capabilities.

Hypothesis 2 (Alternative): There is significant difference between those who use mobile phones with internet access compared to those whose phones have no internet capabilities.

Hypothesis 3 (Null): There is no significant difference between learners who use their phones in class compared to those who do not.

Hypothesis 3 (Alternative): There is significant difference between learners who use their phones in class compared to those who do not.

Hypothesis 4 (Null): Social media does not significantly impact on children's academic performance.

Hypothesis 4 (Alternative): Social media significantly impact on children's academic performance.

Hypothesis 5 (Null): Exposure to social media interactions does not lead to the use of abbreviations in writings.

Hypothesis 5 (Alternative): Exposure to social media interactions leads to the use of abbreviations in writings.

3.3. Method of Data Analysis
Chi Square (Lancaster, 1969) statistical data analysis technique is used in this paper. The justification for the use of these tools in this study is based on the fact that data collected is usually subject to the time and cross-sectional attributes. Secondly, it is noted for reduction in any biased judgment that could result from

aggregation of individual units into broad aggregates. This is due to the fact that data is sourced from several respondents from different learning institutions. Thirdly, it addresses the challenges associated with heterogeneity in the estimation process because it allows for individual or specific variable assessment.

The Chi Square Statistic is evaluated using equation (1).

$$X^2_j = \sum_{i=1}^{k} \frac{[Oi-Ei]2}{Ei} \tag{1}$$

Where X^2_j is the statistic, j being the degree of freedom, O is recorded observation and E is the expected value.

4. RESULTS AND DISCUSSIONS

In conducting the research 120 school children whose ages range from 10 to 15 years spread across five different schools within Kaduna Metropolis were randomly selected. Forty-five percent (45%) of the children were males while the remaining 55% were females.

The significance level was set at 5%. Using the t-table, the critical value is 3.84 approximately for 1 degree of freedom (df).

Hypothesis 1 (Null): There is no significant difference between school children who own mobile phones and those who do not.

Hypothesis 1 (Alternative): There is significant difference between school children who own mobile phones and those who do not.

Table I: Chi Square Summary on Hypothesis 1

Variations	Responses				df	X²
	Yes		No			
Do you own a mobile phone?	Observed	Expected	Observed	Expected		
	68	60	52	60	1	2.13

From Table 1, the Chi square statistic (X^2) of 2.13 indicates the fitness level of the data observed with the expected value. Recall that the significance level of the null hypothesis was set at 5% (i.e. 0.05). Since this statistic (i.e., 2.13) is less than the critical value of 3.84, the null hypothesis is accepted and the alternative hypothesis is rejected. Based on this information, it is proper to conclude that there is no significant difference between school children who own mobile phones and those who do not.

Hypothesis 2 (Null): There is no significant difference between those who use mobile phones with internet access compared to those whose phones have no internet capabilities.

Hypothesis 2 (Alternative): There is significant difference between those who use mobile phones with internet access compared to those whose phones have no internet capabilities.

Table 2: Chi Square Summary on Hypothesis 2

Variations	Responses				df	X²
	Yes		No			
Does your mobile phone have internet?	Observed	Expected	Observed	Expected		
	85	60	35	60	1	20.83

From Table 2, the Chi-square statistic (X^2) is 20.83 indicating the fitness level of the data observed with respect to the expected

value. Clearly, 20.83 is greater than the critical value of 3.84. Based on this result therefore, the null hypothesis is rejected while the alternative hypothesis is however upheld.

Hypothesis 3 (Null): There is no significant difference between learners who use their phones in class compared to those who do not.

Hypothesis 3 (Alternative): There is significant difference between learners who use their phones in class compared to those who do not.

Table 3: Chi Square Summary on Hypothesis 3

Variations	Responses				df	X²
	Yes		No			
Does you use your mobile phone in class?	Observed	Expected	Observed	Expected		
	65	60	55	60	1	0.83

From Table 3, the Chi square statistic (X^2) is 0.83. Comparing this statistic with the critical value of 3.84, it is easily deduced that 0.83 is less than 3.84 implying that the null hypothesis is upheld in this case while the alternative hypothesis is rejected. This means that there is no significant difference between school children who use their mobile phones in class compared to those who do not.

Hypothesis 4 (Null): Social media does not significantly impact on children's academic performance

Hypothesis 4 (Alternative): Social media significantly impact on children's academic performance.

Table 4: Chi Square Summary on Hypothesis 4

Variations	Responses				df	X²
	Yes		No			
Does the use your mobile phone for social interaction affect your academic performance?	Observed	Expected	Observed	Expected		
	40	60	80	60	1	13.33

From Table 4, the Chi square statistic (X^2) is 13.33. Recall that the critical value is 3.84. In this case, the Chi square statistic is greater than the critical value, implying that the null hypothesis is rejected in while the alternative hypothesis is upheld.

Hypothesis 5 (Null): Exposure to social media interactions does not lead to the use of abbreviations in writings.

Hypothesis 5 (Alternative): Exposure to social media interactions leads to the use of abbreviations in writings.

Table 5: Chi Square Summary on Hypothesis 5

Variations	Responses				df	X²
	Yes		No			
Do you abbreviate words while using your IT devices to do your homework?	Observed	Expected	Observed	Expected		
	89	60	31	60	1	28.03

Table 5 shows the Chi square statistic (X^2) of 28.03. Comparing the value of this statistic with the critical value of 3.84, it is obvious that the former is greater than the later, implying that the null

hypothesis is rejected in this case. The alternative hypothesis on the other hand is upheld therefore, it is safe to conclude that exposure to social media interactions by school children encourages the use of abbreviations in young learners' assigned homework.

5.   Conclusion

This paper sought to establish, if any, the impact of Information Technology (IT) tools usage on the educational developing of our learner. After the collection and analysis of data, it is safe to conclude that IT tools usage has varying degree of impact on the educational development of young learners within 10 to 15 years' age bracket.

This paper did not however take into account the level of exposure of the teachers and counsellors responsible for nurturing the young learners. Moreover, the literacy backgrounds of the parents and guardians of the young learners was not also considered in this research.

Going forward, these attributes will be explored further with a view to adequately doing justice to this problem domain. Moreover, it is recommended that adequate training and monitoring be provided by all stake-holders for optimum deployment and usage of IT tools by young learners within the 10 to 15-year age bracket in order to enhance their educational development.

Acknowledgements

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