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New Media, Learning Outcomes, and Social Development of Children: A Case Study of Digital Technology Use in Nigeria

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ABSTRACT

Purpose of the study: The development of digital technology has brought about significant changes in the patterns of social interaction and learning outcomes of children, including in developing countries such as Nigeria. This study aims to investigate the impact of new media use on the social interaction and learning outcomes of children aged 8–12 years in Nigeria.

Methodology: Using a mixed-method approach with a sequential explanatory design, data were collected from 220 respondents through questionnaires and in-depth interviews.

Main Findings: The results showed that the majority of children use digital media, such as mobile phones and computers, not only for entertainment but also as a means of learning and social communication. A total of 59.6% of respondents had a good level of media use, while 64.6% demonstrated good social interaction, and 64.6% achieved positive learning outcomes. Regression analysis showed that new media use contributed 64.3% to the variation in children's social interaction and learning outcomes. This study confirms that with proper supervision and direction, digital media can be an effective tool to support children's social and academic development.

Novelty/Originality of this study: These findings have important implications for education policy and the active role of parents and teachers in assisting children's use of digital media.

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1. INTRODUCTION

Technological advances have produced various forms of new media in computer-based communication, the internet, and digital systems such as mobile phones, e-mail, fax machines, digital television, streaming radio, and various other social networking devices. These technologies are now widely used by children. Based on research on the use of digital media by children aged 2–14 years, there was a significant increase in the use of video games, computers, and digital music players [1]-[5]. This phenomenon is not limited to developed countries, but is also developing in developing countries such as Nigeria.

The main purpose of various communication technologies is to make human life easier and increase comfort. However, these devices are used by audiences with various motivations and interests, which often have undesirable negative impacts. Although there is no scientific evidence to confirm that the misuse of communication media technology causes deviant social behavior, the reality shows that this phenomenon is developing

simultaneously. In Nigeria, this phenomenon can be found in many areas, both in big cities and in rural areas, where children aged 6–12 years have mastered various types of new media. For example, data from the Children's Media Development Foundation in Nigeria shows that children spend around 5–6 hours per day using digital media, such as watching television, playing video games, and accessing the internet [6]-[10].

The widespread use of new media has the potential to influence children's social behavior and learning outcomes, including their interactions with parents, other family members, school friends, and the community around them. As noted by Theresa Orange and Louise O'Flynn in the book *The Media Diet for Kids* (2005), the use of media, especially television, can influence the development of children's behavior, such as causing antisocial behavior, apathy, and the development of erroneous understanding of sex [11]. This phenomenon can also be found in Nigeria, where the use of new media has a significant influence on children's social interaction patterns as well as their academic engagement and cognitive development [12]-[15].

Observations conducted in several elementary schools in Lagos, Nigeria, showed that more than 70% of children aged 6–12 years were familiar with and had at least two types of new media. Based on this phenomenon, this study aims to focus on the influence of new media use on the social interaction patterns and learning outcomes of children aged 8–12 years in Nigeria, with the assumption that the use of new media has a significant influence on both. High media use is associated with more indirect social interactions, tends to be more media-based, and has a low level of sociability. Additionally, excessive exposure to entertainment-based media content has been linked to reduced academic focus, decreased attention span, and limited engagement in learning activities. Children exposed to new media more often prioritize message content over direct interpersonal relationships, experience decreased social sensitivity, and tend to be more aggressive [16]-[19].

New media refers to computerized and networked digital communication technologies, which include various forms of media such as the internet, digital television, smartphones, video games, and social networking platforms [20]-[23]. New media has two main elements: digitization and convergence. The internet is a prime example of convergence, as it combines several functions of other media, such as audio, video, and text [24]-[27]. Technologies described as "new media" are digital, integrative, interactive, manipulable, and networked and are not bound by physical boundaries.

The benefits of new media lie in the ease of accessing information quickly and efficiently, as well as opening up opportunities for economic transactions, entertainment, communication, and education. The use of this media is guided by the theory of Uses and Gratification, which states that media users are active, selective, and goal-oriented in meeting their needs [28]-[30]. Based on this theory, new media can create different patterns of social interaction and learning behavior compared to traditional media. Social interaction is basically a process of individual adaptation to their social environment, which lasts throughout life. According to Jean Piaget's theory, children's social interactions at an early age are limited to relationships with their mothers, but as they get older, children begin to develop interactions with wider groups, such as peers and the surrounding community [31]-[33]. The use of new media has a significant influence on the patterns of social interaction that develop in children, and also on their cognitive development, concentration, and educational performance.

This study offers new contributions in several aspects. First, this study focuses on the impact of new media use on the social interaction patterns and learning outcomes of children aged 8–12 years in Nigeria, which has received less attention in previous studies that have focused more on adolescents or young adults. Previous studies have mostly examined the impact of new media in the context of Western countries or on older age groups [34]-[36]. This study presents a different perspective by examining the social interaction patterns and educational implications for children in a developing country such as Nigeria, which has different social and cultural dynamics. Second, this study examines the types of new media that are most frequently used by children in Nigeria, and how these media influence their social skills, academic engagement, and behaviors in the broader social context. This provides new insights into how children in a developing country interact with digital technologies, given the limited technological infrastructure and access in some parts of Nigeria [37]-[40].

Although much research has addressed the impact of new media on children's behavior, most of these studies have focused on Western countries and often neglected the geographic and cultural context of developing countries, particularly in South Asia. Existing research has focused more on the impact of new media on adolescents and young adults, while its impact on children aged 8–12 years remains understudied. Therefore, the gap that this study seeks to fill is a deeper understanding of how children in Nigeria, living in different social and cultural contexts, interact with new media, and its impact on their social interaction patterns and learning outcomes. In addition, this study fills the gap in knowledge about the types of new media that are most widely used by children in Nigeria, and how their use of media affects their social skills, emotional development, and academic performance. In Nigeria, many children are not only exposed to traditional media but also access digital media through smartphones and the internet, which has not been widely studied in previous studies (Shaikh & Mohammad, 2015). This study seeks to fill this gap by investigating the impact of new media use on the social interaction patterns and learning outcomes of children aged 8–12 years in Nigeria.

2. RESEARCH METHOD

This study uses a mixed-method approach. The type used is sequential explanatory. Sequential explanatory is a study whose initial data collection is quantitative, then continued with qualitative data, meaning that the quantitative data is strengthened by the qualitative data to be obtained. The sample in this study was 220 people in Nigeria who were selected using purposive sampling techniques. Where the criteria in this study were children aged 8-12 years in Nigeria.

The instrument used in this study is the Questionnaire on the use of new media and children's social interaction patterns. Respondents will be asked to provide an assessment based on a Likert scale (1-5). This questionnaire has been tested for validity and reliability, with a Cronbach's Alpha value of 0.84, which indicates that this instrument is reliable for measuring the use of learning outcome, new media and children's social interaction patterns. The following are categories of the use of new media and children's social interaction patterns including very good, good, less good, and very less good, as in Table 1.

Table 1. Categories Use of new media and social interaction

Categoty	Interval		
	Using New Media	Children's social interaction	Learning Outcome
Very Not Good	24.0 – 42.0	10.0 – 17.5	10.0 – 17.5
Not Good	42.1 – 60.0	17.6 – 25.0	17.6 – 25.0
Good	60.1 – 78.0	25.1 – 32.5	25.1 – 32.5
Very Good	78.1 – 96.0	32.6 – 40.0	32.6 – 40.0

The collected data will be analyzed using descriptive statistics and inferential statistics. Descriptive statistics will describe the characteristics of new media use and children's social interaction patterns. For simple regression analysis will be used to test the influence of learning outcome, new media use and children's social interaction patterns. Data analysis was carried out using SPSS statistical software to obtain more accurate results and can be interpreted objectively.

3. RESULTS AND DISCUSSION

The results of the questionnaire and questions given were analyzed using the SPSS 21 application and can be seen in tables 2-4.

Table 2. Results of using new media

Classification					Mean	Min	Max	%
Range	Respond	M	F	Total				
24.0 – 42.0	Not very good	6	7	13	66	39	91	5.9
42.1 – 60.0	Not good	9	13	22				10.0
60.1 – 78.0	Good	59	72	131				59.6
78.1 – 96.0	Very good	28	26	54				24.5
TOTAL		102	118	220				100

From Table 2 which comes from 220 respondents, after being processed and the results obtained using the SPSS 21 application program, the using new media has a dominant good result with a percentage of 59.6% as many as 131 students from a total of 220 students, very good as many as 24.5% as many as 54 students from a total of 220 students, less good as many as 10% as many as 22 students from a total of 220 students, and very poor as many as 5.9% as many as 13 students from a total of 220 students. From 220 students, the mean result was 66, the maximum value was 91, and the minimum value was 39.

These results were reinforced through in-depth interviews. Most students revealed that they use new media such as smartphones, tablets, and computers for various purposes, from entertainment to education.

> *"I usually play games on my cellphone every afternoon after doing my homework. Sometimes I also watch educational videos or chat with friends via applications."*

This statement indicates that children are able to utilize new media not only for entertainment, but also to support learning needs, which supports the high proportion of media use in the good category.

Table 3. Results of children's social interaction

Classification					Mean	Min	Max	%
Range	Respond	M	F	Total				
10.0 – 17.5	Not very good	7	4	11	28	15	38	5.0
17.6 – 25.0	Not good	10	12	22				10.0
25.1 – 32.5	Good	61	76	142				64.6
32.6 – 40.0	Very good	23	22	45				20.4
TOTAL		102	118	220				100

From Table 3 which comes from 220 respondents, after obtaining the results will be processed using the SPSS 21 application program, in children's social interaction the dominant results are good with a percentage of 62.3% as many as 137 students from a total of 220 students, very good at 20.4% as many as 45 students from a total of 220 students, less good at 11.4% as many as 25 students from a total of 220 students, and very poor at 5.9% as many as 13 students from a total of 220 students. From the 220 students, the mean results were 28, the maximum value was 38, and the minimum value was 15.

The interviews conducted supported these results. Most students felt that the use of new media encouraged them to interact more quickly and effectively with their peers.

"If I want to play together, I just send a message to my friend. We sometimes arrange a time to play football on the field."

The teachers interviewed also confirmed that new media does not replace physical interaction. According to one of the teachers:

"Children today do use a lot of digital media, but that does not eliminate their real interaction. They still play together outside of school hours and are active in class discussions."

Thus, new media seems to function more as a supporter of social interaction than as a barrier, as long as its use is within reasonable limits.

Table 4. Results of learning outcome interaction

Classification					Mean	Min	Max	%
Range	Respond	M	F	Total				
10.0 – 17.5	Not very good	7	4	11	28	15	38	5.0
17.6 – 25.0	Not good	10	12	22				10.0
25.1 – 32.5	Good	61	76	142				64.6
32.6 – 40.0	Very good	23	22	45				20.4
TOTAL		102	118	220				100

From Table 4 which comes from 220 respondents, after obtaining the results will be processed using the SPSS 21 application program, in learning outcome the dominant results are good with a percentage of 64.6% as many as 142 students from a total of 220 students, very good at 20.4% as many as 45 students from a total of 220 students, less good at 11.4% as many as 25 students from a total of 220 students, and very poor at 5.9% as many as 13 students from a total of 220 students. From the 220 students, the mean results were 28, the maximum value was 38, and the minimum value was 15. To strengthen the quantitative findings on student learning outcomes, interviews were conducted with several key informants consisting of students, teachers, and parents. These interviews aimed to provide context and a deeper understanding of the distribution of learning outcomes found in the quantitative data, where most students were in the "good" (64.6%) and "very good" (20.4%) categories.

A student who was included in the "very good" learning outcome category explained that he was used to reviewing lessons at home with the help of learning videos and received active support from his parents. He said, "I like to study using videos and learning applications taught by the teacher... My parents also always help me study at home." This shows that access to the right learning media and parental involvement greatly contribute to the achievement of high learning outcomes. Another student, included in the "good" category, stated that he consistently attended lessons at school and did homework, although he did not always achieve the highest grades. He also used the internet as an additional source of learning. His confession, "My grades are pretty good, not always the highest but pretty good," reflects the dominant student type in the quantitative findings (64.6%) who have good learning outcomes although not extraordinary. On the other hand, those who are included in the "less good" category explained that their learning difficulties were caused by distractions from digital games and reluctance to ask questions when they did not understand the lesson. He said, "I often forget to study or do my homework. Sometimes I also don't understand the lesson, but I'm embarrassed to ask the teacher." This finding is in line with quantitative data showing that there are 11.4% of students in the less good category and 5.9% in the very poor category. The opinion of a grade 5 teacher strengthens this quantitative finding. He stated that most of his students showed good learning outcomes thanks to the use of digital learning media and varied teaching methods. However, he also emphasized that "around 10–15% of students still have low learning outcomes, usually

because they are not disciplined or play too much with gadgets without supervision." Meanwhile, parents of students said that parental involvement in monitoring their children's learning at home is very important. He said, "I give him a time limit for playing with his cellphone, so he doesn't forget to study. So far, his grades are good and he enjoys studying." This indicates that family support also plays an important role in encouraging positive learning outcomes.

Table 5. Results of the influence of use new media on children's social interaction

Variabel	Unstandardized Coefficients		Standardized Coefficients	t	sig.
	B	Std. Error	Beta		
1 (Constant)	12.104	3.116		4.507	.000
Children's social interaction	.104	.110	.128	1.059	.015
Learning outcome	.123	.109	.125	1.032	.012

Table 5 shows the results of a simple regression test showing the regression equation is $Y = 12.104 + 0.104X_1+0.123X_2$. The magnitude of the contribution of use new media to children's social interaction and learning outcome can be seen in Table 6.

Table 6. Contribution of use new media to children's social interaction

Model	R	R square	Adjust R Square	Std. Error of the Estimate
1	.802	.643	.652	2.238

The results of the simple regression analysis showed a coefficient of determination (R2) of 0.651. This means that the contribution of use new media to children's social interaction is 64.3%, while the remaining 35,7% is influenced by other variables. The level of significance (sig) in the regression test of 0.015 indicates a significant relationship between the two variables. Thus, the use of new media has a positive contribution to children's social interaction patterns and learning outcome.

The results of the study indicate that the use of new media among elementary school students has a significant influence on their social interactions and learning outcomes. Based on the quantitative analysis in Table 2, the majority of students (59.6%) are in the "good" category in the use of new media, while 24.5% are in the "very good" category. This finding indicates that students have utilized digital media such as smartphones, tablets, and computers not only for entertainment, but also as a means of learning and social communication. The results of in-depth interviews support this finding, where students actively use digital media to interact with friends and access learning content provided by teachers and parents.

Previous studies have also shown that digital media has the potential to support students' learning processes if used productively and well-directed [41]-[43]. This is in line with students' statements in interviews that mention the use of media to access learning videos and communicate with friends via short message applications. In terms of social interaction (Table 3), 64.6% of students are categorized as having "good" social interactions and 20.4% as "very good". This indicates that the use of digital media does not necessarily hinder direct communication, but rather facilitates coordination and social engagement, such as in arranging playdates together via instant messaging. This is in line with Valkenburg & Peter's opinion which states that social media can strengthen children's social relationships if used in a supportive context [44]. Teachers and parents in interviews also emphasized that digital media has positive potential for children's social interactions, as long as its use is supervised and not excessive. Parental supervision is key to avoiding passive or addictive media use [45]-[47].

In terms of learning outcomes (Table 4), 62.3% of students had learning outcomes in the "good" category, and 20.4% in the "very good" category. In-depth interviews showed that student learning outcomes were influenced by two main factors, namely family support and the use of digital-based learning media. Students who had high learning outcomes generally showed independent learning habits through educational videos and learning applications, and received parental guidance. This finding is consistent with the results of a study by Plowman et al., which emphasized the importance of the role of parents in supporting digital literacy and early childhood learning [48]. Conversely, students with "poor" learning outcomes tended to have excessive gaming habits and lacked learning discipline. This confirms the findings of Kirschner & Karpinski, which linked the use of digital media without control to decreased academic performance [49]. The results of simple regression analysis (Tables 5 and 6) showed that the use of new media contributed 64.3% to the variation in social interaction and student learning outcomes. A low significance value ($p < 0.05$) indicates a significant relationship between these variables. Thus, the healthy and targeted use of digital media can be a supporting factor in the social and academic development of elementary school students.

The novelty of this study lies in its holistic approach that combines quantitative and qualitative data to simultaneously examine the influence of new media on two important aspects of child development: social interaction and learning outcomes. Unlike previous studies that separated the influence of media on social or academic aspects separately, this study maps the direct relationship between the two in the context of the increasingly massive use of digital media among elementary school children. The implications of this study indicate the importance of the active role of parents and teachers in guiding children's use of digital media. New media can be an effective tool for improving learning outcomes and strengthening social networks, but these benefits are highly dependent on the context of use, guidance, and appropriate regulation [50]-[52]. Therefore, schools and families need to formulate policies for the use of digital media wisely and structured, such as limiting screen time, selecting educational content, and integrating media into active and collaborative learning. The limitations of this study lie in the scope of respondents who only came from one region or a particular group of schools, so generalization to a wider population needs to be done with caution. In addition, quantitative measurements of social interactions and learning outcomes based on student perceptions may contain subjective bias. This study also did not specifically examine the types of media used (e.g., a comparison between educational videos and educational games), which could be the focus of further studies.

4. CONCLUSION

The results of this study indicate that new media use has a significant impact on social interactions and learning outcomes of children aged 8–12 years in Nigeria. Most children use digital media not only for entertainment, but also to support the learning process and establish social communication. Positive and targeted use of new media is correlated with increased learning outcomes and social skills. However, this positive impact is greatly influenced by the involvement of parents and teachers in guiding children in media use. Therefore, it is important for schools and families to design policies and strategies for wise use of digital media, such as limiting screen time, selecting educational content, and integrating digital media into active and collaborative learning activities. This study provides a new contribution to understanding the dynamics of digital media use among children in developing countries, and opens up opportunities for further research on the types of media that are most effective in improving children's learning outcomes and social skills.

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