

Relationship Between Social Media Usage and Cognitive Development among Senior Secondary School Students in Rivers State

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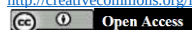
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ABSTRACT

This study examined study social media usage and cognitive development among senior secondary schools in Rivers State. Three research questions and three hypotheses guided the study. The population comprised all senior secondary school students in Rivers State. The study adopted a correlational research design. The population was 82,303 senior secondary school students. The sample comprised 450 students selected through Taro Yamane and stratified random sampling technique. The instrument for data collection was a self-structured questionnaire titled "Social Media Usage and Student' Cognitive Development Questionnaire". The instrument was validated by three experts in Educational Psychology, Guidance and Counselling, and Measurement and Evaluation. The reliability of the instrument was determined using test re-test method. Pearson Product Moment Correlation (PPMC) was used to answer and test all the hypotheses. The study revealed that the social media usage of Whatsapp, Twitter and tiktok all showed high positive significant relationship with cognitive development among public senior secondary school students. Facebook had a moderate positive significant relationship with cognitive development of students in senior secondary schools in Rivers State. Based on the study recommended that school administrators and parents should effectively monitor students on the use of Facebook social usage to discourage spending too much of time on the social network while neglecting their academics.

Introduction

Cognitive development in psychology involves the study of developmental and mental processes such as thinking, remembering, perception, language memory and how these processes are carried out. Jean Piaget who is known as the father of genetic epistemology offer explanation to how mental knowledge grow. He developed four cognitive development stages; Sensory-Motor Stage (0-2 years), Pre-Operational Stage (2-7 years), Concrete Operational Stage (7-12 years), Formal Operational Stage (12 years and above). Piaget argued that at the first stage, the new-born starts with reflex or involuntary actions which are modified during growth and maturation. Factors that affect cognitive development include genetics, environment, education and social interactions.

The rise of social media in the 21st century has fundamentally altered the way individuals communicate, share information, and perceive themselves. In particular, adolescents referred to as the "digital generation" are growing up in an environment where digital interactions are central to their social, emotional, and psychological development. This shift has profound implications for the psychological growth of secondary school students, especially in urban settings, where social media engagement is increasingly prevalent. Adolescence, a critical developmental stage, is marked by identity formation, self-concept development, and the establishment of interpersonal relationships (Erikson, 1968). However, with the pervasive nature of social media, these aspects of psychological development are being shaped in new and often complex ways.

Social media platforms such as Facebook, Instagram, Twitter, WhatsApp, and TikTok are now integral parts of everyday life for young people all over the world. According to the Nigerian Communications Commission (2023), mobile phone penetration in Nigeria has increased dramatically, leading to higher access to social media platforms among adolescents. As these platforms provide avenues for self-expression, connection with peers, and access to information, they also introduce risks

related to mental health, self-esteem, and academic performance. While the benefits of social media use, such as fostering creativity, facilitating social connections, and providing educational content, are well-documented (Best, Manktelow & Taylor, 2014), there are also growing concerns about its negative impacts, including anxiety, depression, cyberbullying, and unhealthy social comparisons (Twenge & Campbell, 2018).

In Nigeria, the advent of social media has had both positive and negative effects on adolescents. On one hand, social media platforms have served as important spaces for social interaction, personal expression, and cultural exchange, helping students navigate the complexities of adolescence (Boyd, 2014). On the other hand, the constant exposure to idealized versions of others' lives and the pressure to maintain a perfect online image have been linked to increased anxiety and depression among young users (Primack et al., 2017). Furthermore, the rise of cyberbullying and the dissemination of harmful content have exacerbated these psychological challenges, particularly in the context of Nigerian secondary school students (Nwankwo, Okechi & Ugwuanyi, 2015). The rapid integration of these technologies into daily life calls for urgent attention to the psychological consequences of social media use, and the need for effective counselling strategies to mitigate these effects.

Adolescence is a crucial period for psychological development, during which individuals experience significant changes in cognitive, emotional, and social functioning. According to Erikson's (1968) theory of psychosocial development, adolescence is characterized by the crisis of identity versus role confusion, where young people seek to establish a coherent sense of self. This developmental stage involves a shift from dependency on family to increased reliance on peer relationships, which are increasingly mediated by social media. Social media platforms offer adolescents opportunities to explore their identities, connect with peers, and receive feedback on their self-concept, but they also expose them to the pressures of peer comparison and societal expectations.

Cognitive development during this period is also influenced by emotional regulation, self-esteem, and the development of interpersonal relationships. Steinberg (2005) argues that adolescents are particularly vulnerable to external influences, as their cognitive and emotional systems are still maturing. The instant feedback loops provided by social media platforms, such as likes, comments, and shares, can significantly impact how adolescents view themselves and their place in the world. In this context, excessive use of social media can lead to distorted perceptions of self-worth and body image, as students may compare their lives to the curated and often unrealistic portrayals of others on these platforms (Omeje & Anyanwu, 2020).

While social media has the potential to foster social connections and provide a sense of community, research has shown that prolonged use can lead to negative psychological outcomes. Social media has been associated with increased rates of anxiety, depression, and social comparison among adolescents (Twenge & Campbell, 2018; Primack et al., 2017). In particular, the pressure to conform to societal ideals of beauty, success, and happiness often exaggerated on social media—can lead to body dissatisfaction and lowered self-esteem. For example, studies have demonstrated that adolescents who engage in frequent social comparison on social media are more likely to report feelings of inadequacy and depression (Sampasa-Kanyinga & Lewis, 2015). In Nigeria, where Western beauty standards are often idealized, this issue is particularly pronounced, as students are exposed to images that conflict with their own cultural identity and physical appearance (Okon & Abasiubong, 2013).

Moreover, social media's role in fostering unhealthy social comparison can negatively impact academic performance. Kolan and Dzandza (2018) found that excessive social media use correlates with reduced focus on academic tasks, as students spend more time on digital platforms, leading to fragmented attention and diminished cognitive resources. The addictive nature of these platforms, with constant notifications and demands for engagement, further disrupts students' ability to concentrate on their studies (Rosen, Carrier & Cheever, 2013). This can lead to lower academic achievement, which in turn affects their self-perception and overall psychological development.

The integration of social media into the lives of secondary school students in Rivers State has profound implications for the students' cognitive development. While social media offers opportunities for connection and self-expression, it also introduces risks such as anxiety, depression, and unhealthy social comparison. Given the developmental vulnerabilities of students, it is essential to examine these psychological impacts and develop appropriate counselling strategies to support students in navigating

the challenges of the digital world. This study aims to contribute to the growing body of knowledge on adolescent mental health and provide practical guidance for educators, mental health professionals, and policymakers in promoting the psychological well-being of the digital generation.

The study is targeted towards the achievements of Sustainable Development Goals (SDGs) 4 which state, “Ensuring inclusive, equitable, and quality education, and promoting lifelong learning”. The study will explain how social media usage affects learning ability, attention, memory and critical thinking and SDGs 3 which states, “Good health and well-being”. This study will reveal that cognitive is closely tied to mental health as such excessive social media use may affect the attention span, sleep pattern and psychological well-being and SDGs 9 which states, “Industry, innovation and infrastructure”. Social media is part of digital innovation. This research will help to understand how digital tools impact on human development especially the adolescents.

Statement of the Problem

The rapid proliferation of social media has transformed the way individuals communicate, access information, and interact with the world around them. Secondary school students, as part of the digital generation, are particularly influenced by social media platforms such as Facebook, Instagram, Twitter, and TikTok. While these platforms offer opportunities for learning, socialization, and entertainment, there is growing concern about their impact on the psychological development of young people.

In Rivers State, secondary school students are increasingly engaging with social media which may increase students’ short memory span, poor attention span, lack of concentration during class sessions, poor teacher-student engagement and poor understanding of lesson content. This could lead to poor academic performance. Social media usage could lead to several psychological consequences such as negative self-evaluation, poor self-expression, increase anxiety, depression, low self-esteem, cyberbullying, and distorted body image perceptions (body shaming). These psychological issues are worrisome especially given the developmental stage of adolescence, when students are highly vulnerable to external influences and are forming their identities.

Many educational stakeholders have advocated for control in the use of social media but the problem of social media usage is on the increase. More students would abandon class just to engage in social media in order to connect with friends or watch YouTube. It is becoming worrisome that students are no longer interested in their studies while they spent so much time on social media. Some researcher findings have been done to investigate on the possible link between social media use and academic performance of students but there is dearth of research work on the relationship between social media usage and cognitive development of students. The challenges of social media usage if not adequately checked may affect the achievement of Sustainable Developmental Goal 4 which emphasized and quality education. This study therefore seek to investigate the relationship between social media usage and cognitive development among secondary school students in Rivers State.

Purpose of the Study

This study examined the relationship between social media usage and cognitive development among senior secondary school students in Rivers State. Specifically, the study sought to achieve the following objectives:

1. Determine the extent to which Facebook social media usage relates to cognitive development of senior secondary school students in Rivers State.
2. Ascertain the extent to which Tik Tok social media usage relates to cognitive development of senior secondary school students in Rivers State.
3. Find out the extent to which WhatsApp social media usage relates to cognitive development of senior secondary school students in Rivers State.

Research Question

The following research questions guided the study:

1. What is the relationship between Facebook social media usage and cognitive development of senior secondary school students in Rivers State?
2. What is the relationship between Tik Tok social media usage and cognitive development of senior secondary school students in Rivers State?
3. What is the relationship between WhatsApp social media usage and cognitive development of senior secondary school students in Rivers State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between Facebook social media usage and cognitive development of senior secondary school students in Rivers State.
2. There is no significant relationship between Tik Tok social media usage and cognitive development of senior secondary school students in Rivers State.
3. There is no significant relationship between WhatsApp social media usage and cognitive development of senior secondary school students in Rivers State.

Methodology

The study adopted a correlational survey design. The population comprised all senior secondary school students in Rivers State. The population was 82,303 senior secondary school students. The sample comprised 450 students selected through Taro Yamane and stratified random sampling technique. The researcher developed two sets of self-structured questionnaires titled “Social Media Usage and Student’ Cognitive Development Questionnaire” (SMUSCDQ). The instrument was divided into two parts, A and B. Part A is made up of demographic variables such as gender, age, school type and class level. Part B is divided into two (2) areas: “Social Media Usage Questionnaire” (SMUQ) and “Students’ Cognitive Development Questionnaire” (SCDQ). The instrument was validated by three experts in Educational Psychology, Guidance and Counselling, and Measurement and Evaluation. The reliability of the instrument was determined using test re-test method. 30 students who were not part of the sample were given the SMUSCDQ. The scores were correlated to obtain the reliability indices were as follows; SMUQ ($r=0.75$) and SCDQ ($r=72$). Pearson Product Moment Correlation (PPMC) was used to answer and test all the hypotheses.

Results

Research Question One: What is the relationship between Facebook social media usage and cognitive development of senior secondary school students in Rivers State?

Hypothesis One: There is no significant relationship between Facebook social media usage and cognitive development of senior secondary school students in Rivers State.

Table 1: PPMC Analysis (r) of the Relationship between Facebook Social Media Usage and Cognitive Development of Public Senior Secondary Schools Students in Rivers State

			Correlations	
Facebook Usage	Social Media	Pearson Correlation	Facebook Media Usage	SocialCognitive Development
			1	0.631**
			Sig. (2-tailed)	0.00
Cognitive Development		Pearson Correlation	441	441
			0.631**	1
			Sig. (2-tailed)	0.00
		N	441	441

** . Correlation is significant at the .05 level (2-tailed).

The result of research question one as indicated in Table 1 above shows the extent to which Facebook social media usage relates to cognitive development among public senior secondary school students in Rivers State. An over view of the table revealed that Facebook social media usage has a moderate positive relationship ($r = .631$) with cognitive development among the students. What this means is that Facebook social media is associated with a moderate increase in cognitive development among public senior secondary school students in Rivers State.

The finding of hypothesis one as indicated in Table 1 above shows that the extent to which Facebook social media usage relates to cognitive development is significant as the calculated p-value of .000 is below .05 level of significance. Thus, the null hypothesis earlier stated that Facebook social media does not significantly relate to cognitive development among public senior secondary school students in Rivers State is rejected. The implication is that Facebook social media usage significantly relates to cognitive development of public senior secondary school students in Rivers State.

Research Question Two: What is the relationship between Tik Tok social media usage and cognitive development of senior secondary school students in Rivers State?

Hypothesis Two: There is no significant relationship between Tik Tok social media usage and cognitive development of senior secondary school students in Rivers State.

Table 2: PPMC Analysis (r) of the Relationship between Tik Tok Social Media Usage and Cognitive Behaviour among Public Senior Secondary School Students in Rivers State

		Correlations	
		Tik Tok Social Media Usage	Cognitive Development
Tik Tok Social Media Usage	Pearson Correlation	1	0.312**
	Sig. (2-tailed)		0.00
	N	441	441
Cognitive Development	Pearson Correlation	0.312**	1
	Sig. (2-tailed)	0.00	
	N	441	441

** . Correlation is significant at the .05 level (2-tailed).

The result of research question two as indicated in Table 2 above shows the extent to which Tik Tok social media usage relates to cognitive development among public senior secondary school students in Rivers State. An over view of the table revealed that Tik Tok social media usage has a low positive relationship ($r = .312$) with cognitive development among the students. What this means is that Tik Tok social media is associated with a low increase in cognitive development among public senior secondary school students in Rivers State.

The finding of hypothesis two as indicated in Table 2 above shows that the extent to which Tik Tok social media usage relates to cognitive development is significant as the calculated p-value of .001 is below .05 level of significance. Thus, the null hypothesis earlier stated that Tik Tok social media usage does not significantly relate to cognitive development among public senior secondary school students in Rivers State is rejected. The implication is that Tik Tok social media usage significantly relates to cognitive development among public senior secondary school students in Rivers State.

Research Question Three: What is the relationship between WhatsApp social media usage and cognitive development of senior secondary school students in Rivers State?

Hypothesis Three: There is no significant relationship between WhatsApp social media usage and cognitive development of senior secondary school students in Rivers State.

Table 3: PPMC Analysis (r) of the Relationship between WhatsApp Social Media Usage and Cognitive Development in Public Senior Secondary School Students in Rivers State

		Correlations	
		Whatsapp Media	SocialCognitive Development
Whatsapp Social Media	Pearson Correlation	1	0.876**
	Sig. (2-tailed)		0.00
	N	441	400
Cognitive Development	Pearson Correlation	0.876**	1
	Sig. (2-tailed)	0.00	
	N	441	400

** . Correlation is significant at the .05 level (2-tailed).

The result of research question three as indicated in Table 3 above shows the extent to which WhatsApp social media usage relates to cognitive development among public senior secondary school students in Rivers State. An over view of the table revealed that Whatsapp social media usage has a high positive relationship ($r = .876$) with cognitive development among the students. What this means is that Whatsapp social media usage is associated with a high increase in cognitive development among public senior secondary school students in Rivers State.

The finding of hypothesis three as indicated in Table 3 above shows that the extent to which Whatsapp social media usage relates to cognitive development is significant as the calculated p-value of .000 is below .05 level of significance. Thus, the null hypothesis earlier stated that Whatsapp social media usage does not significantly relate to cognitive development among public senior secondary school students in Rivers State is rejected. The implication is that Whatsapp social media usage

significantly relates to cognitive development among public senior secondary school students in Rivers State.

Discussion of Findings

The results of research question one and hypothesis one (Table 1) revealed that Facebook social media usage has a significant moderate positive relationship with cognitive development among senior secondary school students in Rivers State. This shows that moderate Facebook social media usage creates students' ability to think and develop cognitively; however too much Facebook social media usage may not be in the best interest of the students as it can make them not to focus on their studies due to much time given to socializing.

This result agrees with the findings of Naik et al. (2025) which revealed that certain platforms like Facebook and YouTube showed potential benefits in enhancing language skills and memory through educational engagement. The impact varied by platform type, usage intensity, and individual emotional states. While social media presents opportunities for cognitive enrichment, its overuse may hinder critical developmental processes. The result equally concatenates the findings of Okon et al. (2024) It is observed that social media have negative and moderately positive significant influence on students' academic achievement in physics in senior secondary schools in Calabar Municipality Local Government Area, Cross River State, Nigeria. Finally, the present finding is supported by Mancitta (2020) The study found that: majority of RSU students use Social media platforms for information and academic purposes, than for socialization and entertainment; majority of RSU students spend not less than 6 hours on SNSs daily surfing the websites and interacting with other users for academic and non-academic purposes; and most students of RSU believe that the use of SNSs negatively affect their academics in that SNSs reduce the time they spend on their studies, distract them during lectures and library sessions as well as directly affect their cumulative grade point average.

The results of research question two and hypothesis two (Table 2) revealed that Tik Tok social media usage has a significant low positive relationship with scholastic adjustment among public senior secondary school students in Rivers State. This shows that Tik Tok social media use is not helpful to the cognitive development of the students as it can make them intellectually lazy or unserious with school work overtime if students depends on it for too much.

The result gives credence to the findings of Omachonu and Akanya (2019) which revealed that majority of the students use social media such as Tik Tok, spending a lot of time which displaces their study time which negatively affect their studies. The result equally agrees with the findings of Emeri (2019) which revealed that social media usage has a significant influence on students' academic performance; there is a gender difference in social media usage among secondary school student. Age was found not to have a significant influence on social media usage among secondary school students.

The results of research question three and hypothesis three (Table 3) revealed that Whatsapp social media usage has a significant high positive relationship with cognitive development among public senior secondary school students in Rivers State. The result shows that Whatsapp social media usage can be a powerful tool to the cognitive development of the students if used appropriately. Teachers can use it to send academic materials.

This result is in line with the findings of Kenya et al. (2019) the finding showed that Whatsapp social media has a significant influence on students' cognitive development and the academic performance of secondary school students. However, the result disagreed with the finding of Kiplagat and Ombiro (2016) which revealed that majority of students in day secondary school were aware and access social media sites with majority of them spending an average of over two hours per day. The most frequented social sites being WhatsApp and Facebook and teachers, students and principal strongly agreed that access of social media sites by high school students has affected negatively their academic and language usage.

Conclusion

Based on the findings of the study, the researcher concluded that: social media usage is integral to cognitive development among public senior secondary school students in Rivers State. When students judiciously use social media for academic purposes, they experience positive cognitive development. The social media usage of Whatsapp, facebook and tiktok all showed high positive significant relationship with cognitive development among public senior secondary school students. Facebook had

a moderate positive significant relationship with cognitive development. Tik Tok had low positive significant relationship with cognitive significant relationship with cognitive development of students in senior secondary schools in Rivers State. The implications of the finding require urgent interventions by stakeholders in the educational sector.

Recommendations

Based on the findings of the study, the study recommended as follows:

1. School administrators and parents should effectively monitor students on the use of Facebook social usage to discourage spending too much of time on the social network while neglecting their academics.
2. School administrators and teachers should help their students to by making short educational videos (Tik Tok) and direct students to watch and make notes.
3. Teachers should meaningfully engage students on Whatsapp social media with learning materials and even assignments for the students.

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