

SOCIAL MEDIA USAGE AND ACADEMIC ACHIEVEMENTS AMONG BASIC SCIENCE JUNIOR SECONDARY SCHOOL STUDENTS IN MINNA, NIGER STATE

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ABSTRACT: This study investigates the influence of social media usage on the academic achievement of Basic Science junior secondary school students in Minna, Niger State. The study adopted an expo facto research design. The population consists of Junior Secondary School Two (JSS 2) students in the selected schools in Minna. A sample of 59 students was selected using a stratified random sampling technique to ensure adequate representation across gender and school type. The instrument for data collection was a structured questionnaire titled Social Media Usage and Academic Achievement Questionnaire (SMUAAQ), validated by expert in Educational Technology, Sokoto State University, Sokoto. A Cronbach Alpha coefficient formula was used to obtain the reliability of 0.83. Data collected were analyzed using frequency, percentage, mean, standard deviation and multiple linear regression analysis. The findings revealed that social media platforms such as Facebook, WhatsApp and TikTok were the most commonly used among students. It was found that students used social media to high level only to communicate with friends, classmates, teachers, make new friends, upload videos and pictures, follow latest trends, and search for educational contents. The analysis further reveals that school type significantly influences academic achievement, while individual factors like social media usage and gender show no significant effects in this sample. It was concluded that students do not abuse the good uses of social media, while parents and teachers continue to encourage them consuming the appropriate contents online. The study recommended that teachers, parents and school administrators promote responsible and purposeful social media use among students through digital literacy education and the integration of social media into classroom learning to enhance their academic achievement.

KEYWORDS: Digital Literacy, Social Media, Academic Achievement, Basic Science Junior Secondary School, Niger State

I. INTRODUCTION

The rapid evolution of technology has transformed the way individual's access and share knowledge. The internet has become a primary medium for communication, with social media playing a crucial role in information dissemination and interaction (Kaplan & Haenlein, 2020). Today, nearly two-thirds of the world's internet users actively engage with social networking or blogging sites, making social media an integral part of everyday life (Statista, 2023). Social media refers to online platforms that enable users to create, share, and exchange content, ideas, and personal messages. While social networking focuses on building communities among users, social media encompasses a broader range of digital interactions (Carr & Hayes, 2021).

The uses of social media are relevant to the education, as learning resources and notices on academic issues can be communicated to students through the platforms. Studies have found that some types of social media engagement can improve learning outcomes particularly when used for academic discussion and resource sharing (Ansari & Khan, 2020). Uses of social media facilitates peer-to-peer contact and knowledge exchange, which promotes collaborative learning (Adelakun et al., 2022). Social media platforms allow students to engage in a synchronous discussion, and improve their comprehension. Students can seek quick explanation and engage in significant academic exchanges by participating in interactive session, question and answer session, and live discussion using Social Media platforms (Chugh et al., 2020). Social media also promotes interactions between teachers, subject specialists, and students (Ashraf et al., 2021). Though, the impact of social media has been widely debated. While it offers numerous benefits, concerns about its negative effects have also emerged. Research by Twenge (2023) suggests that excessive social media use can lead to increased anxiety, depression, and decreased academic performance among students. Murthy (2024) advocated for warning labels on social networking sites. More importantly, the use of social media is prevalent across all age groups, including junior secondary school students, who often engage in online interactions (Al-Rahmi et al., 2021). Many students use platforms like TikTok, WhatsApp, Facebook, Instagram, Twitter, and YouTube for both academic and non-academic purposes. While these platforms can support learning they may also serve as distractions, leading to reduced study time and poor academic performance (Ansari and Khan, 2020), disrupting sleep patterns (Adelakun et al., 2022). Given this background, this study examined the influence of social media usage on the academic achievement of Basic Science junior secondary school students in Minna, Niger State.

II. LITERATURE REVIEW

Social media is an online service platform that focus on facilitating the building of social networks among people who share interest, activities and backgrounds on real life connections. It is a means of interaction among people in which they create, share and exchange information and ideas on virtual communities and networks (Paljug, 2025). Some researchers refer to it as a website and applications that enable users to create and share content in social networking (Carry, 2019). While, social media usage refers to the amount of time and effort spent on websites like Facebook, Instagram, TikTok, YouTube, WhatsApp, and Twitter that facilitate networking, communication, and content sharing. Basic science students in junior secondary school are affected by social media in a variety of ways, both positively e.g., collaborative learning and access to educational resources (Chukwu, 2022) and negatively e.g., distraction and ineffective time management (Bhandarkar et al., 2021). As internet usage increases, students are depending more and more on social media for learning and entertainment, which calls for a review of its overall effects. Academic Achievements is a key indicator of learning outcomes and is determined by grades, test scores, and participation in class. A number of factors, such as instructional strategies, student participation, and the availability of resources, affect academic achievement in basic science (Tunde, 2022). Studies have argued using social media excessively for non-academic purposes is associated with low grades, but using it strategically for academic activities can improve performance (Ogedebe et al., 2020; Adeboye et al., 2021). Younger generation often employs social media for various purposes which may enhance their academic achievements and boost self-confidence (Ali et al., 2021). In a study of Adegoke *et al.* (2024) who examines the influences of age, gender, and school type on

social media usage among students in Ogbomoso, Nigeria advocated for strategies that consider socioeconomic influences on students' digital behaviors.

Gender as one of the variables considered in this study to have impact on how students use social media in terms of patterns, preferences, and outcomes. Male and female social media usage differs in terms of purpose, preferred platforms, frequency, and perceived impact (Ogundele, 2023). Studies have found that female students engage more in social and interpersonal interactions on apps like Snapchat, Instagram, TikTok, and WhatsApp (Asante, 2024). They use social media more for self-expression, peer bonding, and relationship maintenance (Adebayo & Edewor, 2021). Females are more likely to report being distracted by social media, especially because of the emotional investment in online relationships and trends (Ogunleye et al., 2022). In contrast, male students are more interested in playing games, creating content, and finding information (Nadeem, 2023). They also frequently spend more time on Facebook, YouTube, and Telegram for both academic and extracurricular purposes (Okon & Asuquo, 2023). According to Ibrahim and Nature (2021), males are more likely to participate in educational content like tutorial videos and forums. previous studies show that both genders, male and female, agreed that most social media help them to improve their understanding, get educational help and provide guidance concerning their academic matters (Ali et al., 2021; Alharbi et Al., 2020). Another notable gender difference is that seeking advice and guidance is a common motivation among female students when watching fitness TikTok videos, whereas social interaction tends to be more common among male students (Garcia, 2024). Males primarily use it for social interaction and building connections (Theophilou et al., 2023)

The type of school also affects how students use social media and how much of an impact it has on their academic achievements. Students attending private schools usually have greater access to digital literacy resources, dependable internet, and devices that can connect to the Internet (Mhlongo et al., 2023). They are more likely to use educational apps, YouTube tutorials, Google Classroom, and other platforms to improve their learning (Ogundele & Fasasi, 2023). Digital tools are frequently incorporated into the curriculum of private schools, which promotes social media use for positive purposes (Ogunbukola, 2024). On the other hand, students in public schools frequently have limited access to these online resources (Mangarin, 2024). Due to lack of digital supervision and infrastructure issues, their use of social media may be more oriented toward entertainment (Akinwale & Belo, 2021). Digital tools may not be incorporated into the curriculum at public schools, and students frequently use social media on their own without academic guidance, making them more prone to distraction and time waste (Lawal & Yakubu, 2020).

Studies on academic achievement of students focuses on factors like socio-economic background, class environment, gender differences, family's educational background, teaching and learning style among others. However, there appears to be limited studies that identified social media usage as a factor that could influence students' academic achievement in Basic Science. Furthermore, students in Minna Niger State are not excluded from the notion identified by the researchers on the increase in use of mobile devices by junior school students. Based on literatures available to the researchers at the time of this study, there seem to be limited empirical studies to support the fact that students' engagement in social media activities influence significantly or otherwise on academic achievement in Minna. Besides, there were also disagreements in literatures regarding the moderating influence of gender on social media usage and academic achievements of students. Based on these premises, the aim of this study is to ascertain the influence of social media usage

on the academic achievement of Basic Science junior secondary school students in Minna, Niger State. while, maintaining the moderating effects of gender and school type.

III. RESEARCH METHOD

A. RESEARCH DESIGN

This study adopted ex-post facto research design. This design is suitable for collecting data on social media usage and how it affects junior secondary school students studying Basic Science in terms of their academic achievement. In educational research, an ex-post facto research design is a type of study which tries to establish cause-effect relationships between variables of interest that cannot be manipulated (Nworgu, 2015). This study linked some already existing effects or observations to some variables as causative agents of the influences social media has on the academic achievements of junior secondary school students in Basic Science. Therefore, this research design was considered appropriate for this study.

B. Participants

The target population comprises junior secondary schools (JSS II) students offering Basic Science subject across three different public and private schools in Minna. The study participants consist of 59 students. A multistage sampling technique was utilized to ensure representation across key subgroups: gender (male and female) and School type (private and public). Purposive sampling technique was used in selecting schools within the study area where social media platforms are mostly used; and to also select six co-educational schools for proper representation of both genders. In the third stage, disproportionate stratified random sampling technique was employed in selecting the sample of students who were used for the study, from each selected school. This method was enhancing the generalizability of the findings and reduces sampling bias (Garba, 2020). The small sample size (n=59) was due to constraints in accessibility but efforts were made to ensure representation across the school type and gender.

C. Instrument for Data Collection

The instruments used for data collection were structured questionnaire title Social Media Usage and Academic Achievements Questionnaire (SMUAAQ). The questionnaire has two sections: Section A contained demographic information (gender and school type), section B on Social Media Usage Pattern (platforms used, frequency, duration, purposes). Students' Basic Science Achievement Proforma (SBSAP) was used to collect the existing terms' results and cumulative scores for previous academic sessions of the sampled students. The proforma consisted of nine columns: serial numbers, name, Matric No., class, academic year, 1st term, 2nd term, 3rd term and cumulative score. Academic Achievement scores were standardized using z-scores to ensure comparability across different schools and grading systems.

D. Validation and Reliability of the Instrument

The instrument was validated by two experts; One from Educational Technology Sokoto State University, Sokoto and One from Science Education Department from Federal University of Technology Minna, Niger State. The validators examined the items of the instruments to ensure that the items were clear and in line with the objectives of the study, as well as the appropriateness of the instrument' items in terms of the language used. Their valuable observations and corrections were used to design the final versions of the instruments which were used for data collection for the study. The Cronbach's Alpha method was used to evaluate the instrument's reliability. A

reliability coefficient of 0.83 was obtained and considered acceptable for internal consistency in this study.

E. Method of Data Analysis

Descriptive Statistics of frequencies and percentages was use to summarize demographic data and social media usage patterns. Also, Mean, Standard Deviation and Linear Regression Analysis was used to ascertain the impact of social media usage patterns on academic achievement.

IV. RESULTS AND DISCUSSION

A. Demographic Characteristics

Figure 1. shows that 35.6% respondents were male and 64.4% were female which means that female students responded higher than their male counterparts. This finding is supported by Okon & Asuquo, (2023) and Asante, (2024) which says that male and female frequently spend more time on social media. It was revealed that private schools participated (66.1%,) more than those in public schools (33.9%).

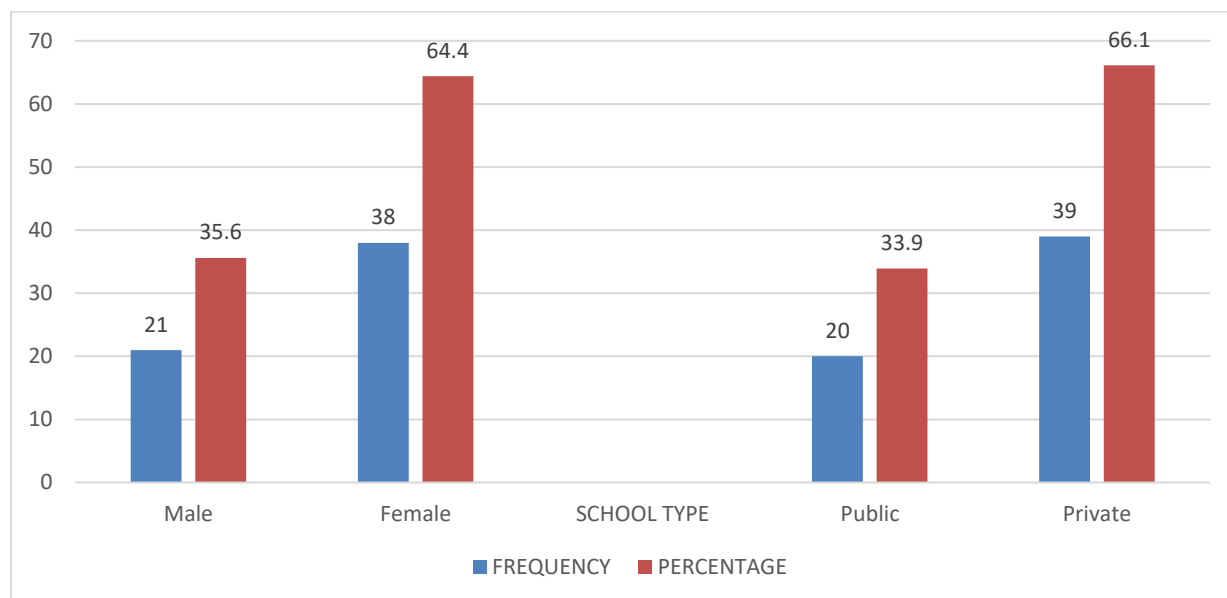


Figure 1: Cluster Column Chart Compare Values across Gender and School Type

B. Commonly Used Social Media Platforms

In Figure 2, Facebook has the highest respondents with 23.0%, WhatsApp has 20.2%, Instagram has 11.3%, TikTok has 16.4%, YouTube has 11.7%. while, Telegram, Metal AI, and Other social media platforms has the least responses. This shows that Facebook, WhatsApp and TikTok are the most commonly used social media platform among Basic science junior secondary school students in Minna, Niger State. This is in agreement with (Chinthakayala, *et al.*, 201; Manasi 2019; Basil et al., 2020). They all pointed out in their respective studies that Facebook and WhatsApp are general social media site and is more popular among students.

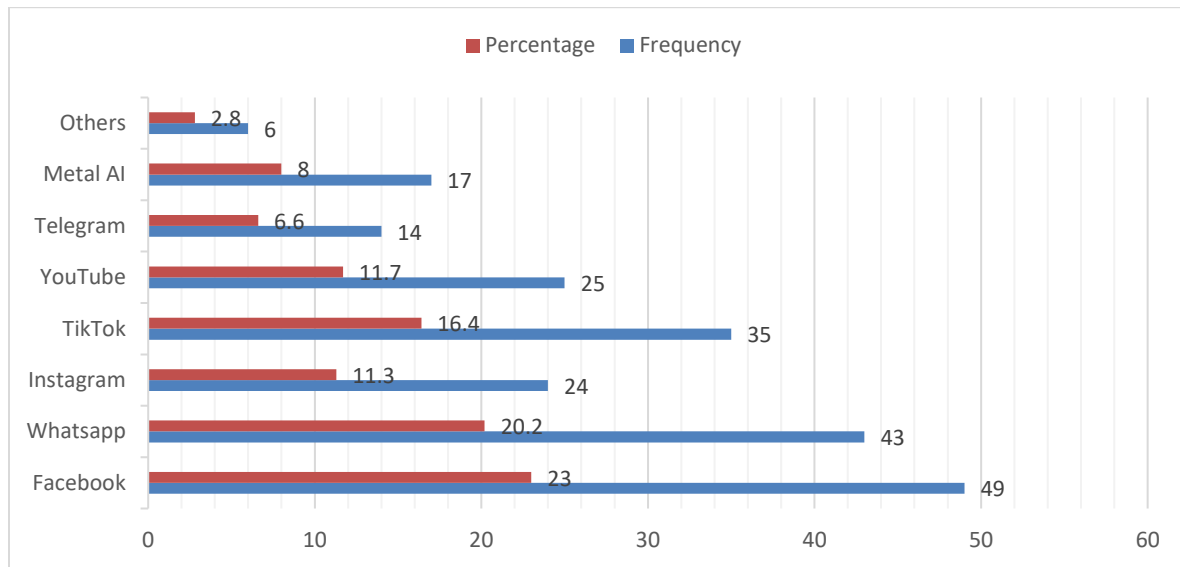


Figure 2: Cluster Column Chart Compare Values across commonly use Social Media Platforms

C. Social Media Usage Patterns

In Table 1, the grand mean score is 3.65, which implies that the respondents use social media at a high level. Looking at the table, the students majorly used social media to upload pictures and videos, chat with friends, make new friends, reach out to classmates and associates and also for fun and entertainment with those items have mean value range from 3.90 to 4.15. The findings of this study showed that students are using social media more on non-academic activities. The study revealed that students moderately use social media to reach out to their teachers, watch educational videos or content, and share educational content like assignments and homework. These findings corroborate with earlier findings by previous studies. For instance, Manasi (2019) and Basil et al. (2020) who found that students use social media to interact with friends, connect with classmates for online study and discussing other personal and national issues. Contrarily, Agwi and Ogwueleka (2018) found that a minority of students (26%) use social media for academic purposes.

Table 1: Mean and Standard Deviation and Social Media Usage Pattern of the Respondents.

SN	Items	Mean	Std. Deviation
1	the use of social media to upload pictures and videos	4.05	1.166
2	the use of social media to chat with friends	4.15	.906
3	the use of social media to make new friends	3.97	.982
4	the use of social media to share educational content like assignments and homework	3.25	1.347
5	the use of social media for fun and entertainment	3.90	1.170
6	the use of social media groups to reach out to classmates and associates	4.10	.923
7	the use of social media to engage with teachers	2.81	1.479
8	the use of social media to follow the latest trends and news	3.86	1.090

9	the use of social media to watch educational videos or content	3.61	1.339
10	the school encourage the use of social media for educational purposes	3.25	1.504
	Grand Mean	3.65	1.19

Table 2 expressed the regression equation with $R = 0.331$, $R^2 = 0.109$, $Adj. R^2 = 0.061$, $F\text{-Change} = 2.253$. It can also be observed that the correlation coefficients between the criterion variable academic achievement and the three predictors (social media usage, gender, and school-type) is 0.313 together with predictors that accounts for 10.9% of variance in academic achievement among the respondents. According to Cohen (1988), R^2 classification, the value of R^2 in this regression result is moderate. Also, the generalizability of this model in another set of samples from the same population is applicable because the R^2 dropped to the adjusted R^2 slightly from 0.109 to 0.061 recording only about 0.048 (4.8%).

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p-value
1	.331 ^a	.109	.061	14.423	2.253	0.092

a. Predictors: (Constant), School_Type, Gender, Social media usage

Table 3 revealed multiple linear regression analysis, showing that Social Media Usage has $\beta = -0.930$, $p = .727$. this implies no statistically significant relationship exists between social media usage and academic achievement with small negative effect size $\beta = -.049$ but not significant. This finding is supported by with earlier findings by previous studies. However, contradicted the finding of Ali *et al.*, (2021) which says that social media has effect on student academic achievements.

The study revealed that gender has $\beta = 0.150$, $p = .970$, indicates that gender shows no significant association with academic achievement of basic science students with negligible effect size ($\beta = .005$). However, the table shows that School Type has a coefficient of $\beta = -9.647$, $p = .034$. this implies that School type significantly predicts academic achievement of basic science students with moderate negative effect ($\beta = -.309$). This finding is supported by Adegoke *et al.* (2024) which says students from public schools use social media more frequently than private school students. Contrary, Mhlongo *et al.* (2023) and Mangarin, (2024), in their respective studies found that students attending private schools usually have greater access to digital literacy resources, dependable internet, and devices that can connect to the Internet. Additionally, it was found that gender does not determine social media usage. This finding is supported by Kalejaiye *et al.*, (2018) which says there is no significant difference between the usage of social media by male and female.

Table 3: Multiple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
(Constant)	76.847	11.250		6.831	.000
1 Social media usage	-.930	2.653	-.049	-.351	.727
Gender	.150	4.024	.005	.037	.970
School Type	-9.647	4.430	-.309	-2.178	.034

V. CONCLUSION

The study posits that Basic Science students use social media to a high level only to make new friends, chat with friends, upload their photos and videos, stay up to date with latest trends and news, reach out to their classmates and teachers, and search about their assignments and other educational materials. The uses of social media and gender have no influence on students' academic achievement among Basic Science students. However, the type of school attended by these students has an effect on their academic achievement in Basic Science. Therefore, while social media is not inherently harmful, its effect depends on students' usage behavior, digital literacy level, and the extent of adult supervision in school and at home. Basic Science Teachers should be uploading educational contents online in the form of blogs and articles and ask students to read them in their spare times, online. Digital literacy and responsible social media use should be promoted among the junior secondary school students. This will teach students how to balance academic and social media activities. Also, schools should promote the use of social media for academic collaboration for example, through class WhatsApp groups for assignments, virtual science clubs, and online discussion forums that encourage learning.

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