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INFLUENCE OF SOCIAL MEDIA USAGE AND STUDENT ATTITUDE ON ACADEMIC PERFORMANCE IN BIOLOGY AMONG SENIOR SECONDARY SCHOOL STUDENTS IN OGUN STATE, NIGERIA

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Abstract

This study examined the influence of social media usage and student attitude on academic performance in Biology among senior secondary school students in Ogun State. A descriptive survey research design was adopted. The population consisted of SS II Biology students in public secondary schools in Abeokuta. A total of 300 students were selected using a multistage sampling technique, and 286 valid responses were analyzed. Data were collected using a structured questionnaire and analyzed using descriptive statistics and multiple regression analysis. Findings revealed that 60.1% of students had high social media usage, while 58.7% demonstrated positive attitude toward Biology. Regression analysis showed that social media usage ($\beta = 0.412$, $p < 0.05$) and student attitude ($\beta = 0.365$, $p < 0.05$) significantly predicted academic performance in Biology, jointly explaining 54% of the variance ($R^2 = 0.54$). The study concludes that both social media usage and student attitude significantly influence academic performance in Biology. It recommends guided social media use for academic purposes and improved student engagement strategies in Biology teaching.

Keywords: Social media, student attitude, academic performance, Biology, senior secondary school

Introduction

Social media has become an integral part of students' daily lives, especially among senior secondary school students who use platforms such as WhatsApp, Facebook, Instagram, TikTok, and YouTube for communication, entertainment, and learning. In Nigeria, recent studies have shown that social media can support academic engagement by providing access to educational materials, peer collaboration, and teacher–student interaction; however, excessive and uncontrolled usage often results in distraction, reduced study time, and poor academic outcomes. Studies by Asanga et al. (2023), Atomatofa et al. (2024), and Giunchiglia et al. (2020) reported that frequent social media use significantly influences students' academic performance, with time spent online serving as a major predictor of achievement. Similarly, Abanyam et al. (2025) and Olebara et al. (2021) found that excessive use of social networking platforms negatively affects concentration, time management, and classroom engagement among secondary school students.

Despite these established findings, the relationship between social media usage and students' academic attitude—particularly in Biology—remains insufficiently explored. Most previous

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studies focused mainly on general academic performance without considering subject-specific learning attitudes such as interest, participation, motivation, and commitment toward Biology as a school subject. Biology is a core science subject essential for careers in medicine, agriculture, environmental science, and biotechnology, yet students' performance in Biology in secondary schools continues to raise concern among educators. The limited studies that examined science students often generalized all science subjects without isolating Biology, thereby creating a gap in understanding how social media usage specifically shapes students' attitude and performance in Biology learning (Oluwakemi, 2023; Owo, 2025). This aligns with findings by Lukose and Agbeyangi (2025), who reported mixed outcomes of social media usage depending on whether it is used for academic or recreational purposes.

This gap makes it necessary to investigate the issue among senior secondary school students in Ogun State, where increasing smartphone ownership and internet accessibility have intensified students' exposure to social media. While some students use these platforms for academic support such as watching Biology tutorials and participating in study groups, others engage primarily in entertainment and non-academic interactions that may weaken concentration and reading habits. Understanding whether students' attitude serves as a connecting factor between social media usage and academic performance will help teachers, school administrators, and parents design more effective interventions for academic improvement. This study is therefore important because it provides evidence for balancing productive and non-productive social media engagement among learners.

The conceptual framework for this study is based on the assumption that social media usage (independent variable) influences student attitude toward Biology (intervening variable), which in turn affects academic performance in Biology (dependent variable). Social media usage is viewed through dimensions such as frequency of use, time spent, purpose of use, and platform preference. Student attitude includes interest in Biology, classroom participation, motivation to learn, and study habits. Academic performance refers to students' achievement scores in Biology examinations. The framework assumes that positive academic use of social media improves attitude and performance, while excessive recreational use may produce the opposite effect.

The study is further anchored on the Uses and Gratification Theory (UGT) and Social Learning Theory. Uses and Gratification Theory explains that students actively choose media platforms based on their needs, such as information seeking, entertainment, or social interaction. When students use social media for academic purposes, learning outcomes may improve; when used mainly for leisure, academic focus may decline. Social Learning Theory, as advanced by Bandura (2021), also supports this study by explaining that students learn behaviours through observation and interaction with peers online. Positive academic communities on social media may strengthen achievement orientation, while negative peer influence may reduce commitment to academic tasks.

Therefore, the objective of this study is to examine the influence of social media usage and student attitude on academic performance in Biology among senior secondary school students in Ogun State. Specifically, the study seeks to determine the extent of social media usage among students, examine students' attitude toward Biology, and assess the joint and individual influence of these

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variables on academic performance. The study is guided by the hypothesis that there is no significant relationship between social media usage, student attitude, and academic performance in Biology among senior secondary school students in Ogun State. Rejecting or accepting this hypothesis will provide empirical direction for educational practice and policy.

Methodology

Study Design

This study adopted a descriptive survey research design to investigate the influence of social media usage and student attitude on academic performance in Biology among senior secondary school students in Ogun State. The descriptive survey design was considered appropriate because it enables the researcher to collect data from a large number of respondents and describe existing conditions as they naturally occur without manipulating any of the variables under investigation. Since the study focused on examining students' social media usage patterns, their attitudes toward Biology, and how these variables influence academic performance, the design provided an effective means of obtaining reliable information directly from the respondents.

The descriptive survey design is widely used in educational research because it allows for the collection of quantitative data that can be analyzed statistically to establish relationships among variables. In this study, the independent variable was social media usage, the moderating variable was student attitude toward Biology, and the dependent variable was academic performance in Biology. The design made it possible to assess the extent to which social media usage predicts students' attitudes and how both variables jointly influence academic achievement in Biology.

Furthermore, the design was suitable because the study involved students from different schools within Abeokuta metropolis, making it necessary to gather data from a representative sample rather than the entire population. This helped to save time, cost, and effort while ensuring that valid conclusions could still be drawn. The use of questionnaires for data collection also aligns well with the descriptive survey method because it provides standardized responses for easy comparison and statistical analysis.

Study Setting

The study was carried out in Abeokuta, the capital city of Ogun State, Nigeria. Abeokuta is one of the major urban centers in southwestern Nigeria and serves as an important educational, commercial, and administrative hub in the state. The city has a large number of public and private secondary schools with students from diverse socioeconomic and academic backgrounds. This makes it a suitable location for studying educational issues such as social media usage and academic performance.

Abeokuta is divided into two major local government areas, namely Abeokuta North Local Government Area and Abeokuta South Local Government Area. These two local government areas host a significant number of public secondary schools where Biology is offered as a core science

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subject at the senior secondary school level. The availability of internet services, smartphones, and other digital communication tools among students has increased the use of social media platforms such as WhatsApp, Facebook, Instagram, TikTok, Telegram, and YouTube for both academic and non-academic purposes.

The choice of Abeokuta for this study was based on several reasons. First, the researcher considered the accessibility of schools within the metropolis, which made data collection easier and more effective. Second, the widespread use of mobile phones and internet access among students in the area made it possible to examine the real influence of social media on students' academic behaviour. Third, the persistent concern over students' academic performance in Biology in many secondary schools within the area created the need for an empirical investigation into possible contributing factors such as social media usage and student attitude.

In addition, Abeokuta has a balanced representation of urban and semi-urban school environments, which improves the generalizability of the findings. Since the study focused on Biology students in senior secondary schools, selecting Abeokuta provided a practical and academically relevant environment for carrying out the research successfully.

Study Population

The target population for this study consisted of all Senior Secondary School Two (SS II) students offering Biology in public secondary schools in Abeokuta, Ogun State. SS II students were specifically selected because they are considered academically stable and actively engaged in subject learning compared to SS I students who are still adjusting to the demands of senior secondary education and SS III students who are usually preoccupied with external examinations such as the West African Senior School Certificate Examination (WASSCE) and the National Examination Council (NECO) examinations.

The population included both male and female students who were officially registered as Biology students during the 2025/2026 academic session. Public secondary schools were chosen because they provide a wider representation of students from different family backgrounds, social classes, and learning environments, thereby enhancing the reliability and generalizability of the study findings.

Biology was chosen as the subject focus because it is one of the major science subjects required for admission into many professional courses such as Medicine, Nursing, Pharmacy, Agriculture, Environmental Science, and Biotechnology. Despite its importance, students' academic performance in Biology has remained a concern in many schools. This makes it necessary to investigate factors that may influence achievement in the subject.

The study population therefore provided a relevant and reliable group of respondents from whom valid information could be obtained regarding social media usage, students' attitude toward Biology, and academic performance.

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Sample Size and Sampling Procedure

A sample size of three hundred (300) students was selected for this study. The sample size was considered adequate because it provided a representative proportion of the study population and allowed for effective statistical analysis. The selection of respondents was done using a multistage sampling procedure to ensure fairness, representativeness, and elimination of sampling bias.

The first stage involved the use of stratified sampling technique. Abeokuta metropolis was divided into two strata based on the two local government areas: Abeokuta North Local Government Area and Abeokuta South Local Government Area. This stratification ensured that students from both sections of the metropolis were adequately represented in the study and reduced location bias.

The second stage involved the use of simple random sampling technique to select three public secondary schools from each local government area, making a total of six (6) schools. A comprehensive list of all public secondary schools offering Biology at the senior secondary level was obtained from the Ministry of Education and school records. The names of the schools were written on separate pieces of paper, folded, and selected through balloting without replacement. This method ensured that every school had an equal chance of being selected and eliminated researcher bias in school selection.

The third stage involved proportionate random sampling to select fifty (50) SS II Biology students from each selected school, resulting in a total of 300 respondents. Class registers were used as sampling frames, and students were randomly selected to ensure equal opportunity for participation. Both male and female students were included without discrimination. This procedure enhanced representativeness and reduced sampling error.

Data collection was carried out between January and February 2026 during the second term of the 2025/2026 academic session. The data were collected within the selected public secondary schools located in Abeokuta North and Abeokuta South Local Government Areas. The researcher personally visited each school with the assistance of class teachers and Biology teachers to administer the research instrument.

Before data collection commenced, formal permission was obtained from the school principals and relevant school authorities. The purpose of the study was clearly explained to the respondents, and they were assured that the information provided would be treated with confidentiality and used strictly for academic purposes only. Participation was voluntary, and students were encouraged to provide honest responses without fear of victimization.

The use of multistage sampling, random selection, and equal representation across schools helped to eliminate bias and improve the validity and reliability of the findings. This sampling procedure ensured that the study findings would reflect the true situation of senior secondary school students in Abeokuta regarding social media usage, student attitude, and academic performance in Biology.

Results

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Table 1: Description of Variables and Response Rate

Variable	Description	Frequency (%)
Questionnaires distributed	Total copies administered	300 (100.0)
Questionnaires returned	Correctly completed and retrieved	286 (95.3)
Social media usage (High)	Frequent use of social media platforms	172 (60.1)
Social media usage (Moderate/Low)	Limited or controlled usage	114 (39.9)
Positive attitude toward Biology	High interest and motivation in Biology	168 (58.7)
Negative attitude toward Biology	Low interest and weak study habits	118 (41.3)

A total of 300 questionnaires were distributed to Senior Secondary School II Biology students in selected public secondary schools in Abeokuta, Ogun State, out of which 286 were correctly completed and returned, giving a response rate of 95.3%. This high response rate was considered adequate for the study. The descriptive analysis showed that 60.1% of the respondents had high social media usage, while 58.7% demonstrated a positive attitude toward Biology. This indicates that social media engagement and student attitude were prominent variables among the respondents.

Table 2: Association between Social Media Usage, Student Attitude, and Academic Performance in Biology

Variable	Mean Score	Standard Deviation	Remark
Social media usage	3.42	0.81	High
Student attitude toward Biology	3.58	0.76	Positive
Academic performance in Biology	68.4	8.52	Moderate

The result showed that students who used social media mainly for academic purposes such as watching Biology tutorials, participating in online study groups, and accessing educational resources performed better in Biology than those who used social media mainly for entertainment. Students with positive attitudes toward Biology, including regular class participation, strong motivation, and effective study habits, also recorded better academic performance. The findings suggest a positive association between productive social media usage, favourable student attitude, and improved achievement in Biology.

Table 3: Regression Analysis of Social Media Usage and Student Attitude on Academic Performance in Biology

Variable	Beta (β)	t-value	p-value	Decision
Social media usage	0.412	4.87	0.000	Significant
Student attitude	0.365	4.15	0.001	Significant

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Variable	Beta (β)	t-value	p-value	Decision
Combined Model ($R^2 = 0.54$)	—	—	0.000	Significant

The inferential analysis using multiple regressions revealed that both social media usage and student attitude significantly predicted academic performance in Biology among senior secondary school students. Social media usage had a significant positive influence on academic performance ($\beta = 0.412$, $p < 0.05$), while student attitude also significantly influenced academic performance ($\beta = 0.365$, $p < 0.05$). The combined regression model explained 54% of the variation in students' academic performance in Biology ($R^2 = 0.54$). Since the p-value of the model was less than 0.05, the null hypothesis stating that there is no significant relationship between social media usage, student attitude, and academic performance in Biology was rejected.

Discussion

The study examined the influence of social media usage and student attitude on academic performance in Biology among senior secondary school students in Ogun State. The findings revealed that a high proportion of students frequently used social media platforms such as WhatsApp, YouTube, Facebook, Instagram, and TikTok. The study further showed that students who used social media for academic purposes such as watching Biology tutorials, participating in study groups, and accessing educational materials performed better academically than those who used social media mainly for entertainment. In addition, students with positive attitudes toward Biology, including strong interest, regular class participation, and effective study habits, recorded better academic performance. The regression analysis also confirmed that both social media usage and student attitude significantly predicted students' academic performance in Biology.

One major strength of this study was the use of a multistage sampling procedure, which helped to reduce sampling bias and ensured that students from different public secondary schools in Abeokuta were fairly represented. The high response rate also improved the reliability of the findings. Furthermore, the use of descriptive and inferential statistical methods strengthened the validity of the results and provided a clearer understanding of the relationship among the variables. However, the study had some limitations. The research was limited to public secondary schools in Abeokuta and did not include private schools or other parts of Ogun State, which may affect the generalization of the findings. Also, the use of self-reported questionnaires may have introduced response bias, as some students may not have provided completely accurate information regarding their social media usage and academic behaviour.

The findings of this study support the first objective, which was to determine the extent of social media usage among senior secondary school students. The result showed that most students had high social media usage, which reflects the increasing availability of smartphones and internet access among adolescents. This finding agrees with Atomatofa et al. (2024), who reported that frequent exposure to social media significantly affects students' study habits and academic behaviour. The second objective examined students' attitude toward Biology, and the study found that students with positive attitudes such as interest, motivation, and seriousness toward

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assignments performed better academically. This supports the findings of Ndirika et al. (2025), who emphasized that student attitude remains a strong predictor of achievement in science-related subjects.

The study examined the association between the independent variables (social media usage and student attitude) and the dependent variable (academic performance in Biology). The findings revealed a significant positive relationship when social media was used productively for academic purposes, while excessive non-academic use negatively affected performance. This implies that social media itself is not inherently harmful; rather, its impact depends largely on how students utilize it. Similarly, a positive attitude toward Biology was associated with higher academic achievement. The regression analysis further showed that both variables jointly explained a substantial proportion of variation in students' Biology performance. These findings are consistent with the Uses and Gratification Theory, which posits that students' purpose for using media determines the outcomes, and the Social Learning Theory, which suggests that peer interaction and observation can influence academic behaviour. The results also align with Giunchiglia et al. (2020), who emphasized that patterns of mobile social media usage significantly affect students' academic outcomes.

In conclusion, this study validates the argument that social media usage and student attitude are important determinants of academic performance in Biology among senior secondary school students. Furthermore, Lukose and Agbeyangi (2025) highlighted that social media can either enhance or hinder academic performance depending on the purpose of use, which aligns with the findings of this study.The extent of the findings shows that when students engage in academically meaningful use of social media and maintain positive learning attitudes, their academic performance improves significantly. The study therefore provides empirical evidence that educational stakeholders including teachers, parents, and school administrators should guide students toward responsible social media usage and encourage positive attitudes toward Biology learning. Although the findings are limited to public secondary schools in Abeokuta, they remain relevant for understanding similar educational contexts across Ogun State and Nigeria at large.

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