



Impacts of ICT and Social Media Platforms on Academic Performance of Students in the Field of Geography: An Analysis of Some Selected Tertiary Institutions in Kaduna State, Nigeria

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ABSTRACT

The rapid diffusion of Information and Communication Technology (ICT) and social media platforms has fundamentally reshaped teaching and learning processes in higher education, including the discipline of Geography, which depends heavily on maps, spatial data, remote sensing imagery and field-based information that are increasingly accessed and shared through digital channels. This study examined the impacts of ICT and social media platforms on the academic performance of Geography students in selected tertiary institutions in Kaduna State, Nigeria. The study adopted a descriptive survey research design. A sample of 360 undergraduate Geography students was drawn from three purposively selected tertiary institutions, namely Kaduna State University, Federal University of Education Zaria, and Nigerian Army University Kaduna Campus, using a multi-stage sampling technique. A structured questionnaire was the main instrument of data collection, complemented by key informant interviews with lecturers. Data were analysed using descriptive statistics and inferential statistics (Pearson Product Moment Correlation and Chi-square test of association) with the aid of the Statistical Package for Social Sciences (SPSS version 25). Findings revealed that 91.4% of respondents owned at least one internet-enabled device, WhatsApp (87.2%), YouTube (74.6%) and Google Earth/Google Classroom (61.9%) were the most utilised platforms for academic purposes, and a statistically significant positive relationship existed between the frequencies of ICT/social media use for academic purposes. However, excessive non-academic use of social media was found to be significantly and negatively associated with academic performance. The study concludes that ICT and social media platforms hold considerable potential for enhancing the teaching and learning of Geography when purposefully and moderately deployed. It is recommended that tertiary institutions in Kaduna State should integrate approved educational technology and social media tools into the Geography curriculum, provide reliable campus internet infrastructure, institutes digital literacy and time management orientation programmes for students.

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INTRODUCTION

Information and Communication Technology (ICT) has become an indispensable component of contemporary higher education, transforming the manner in which knowledge is

produced, stored, retrieved and disseminated. In the twenty-first century, the traditional chalk-and-talk approach to teaching is being progressively complemented, and in some cases replaced, by digital tools such as computers, smartphones,

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tablets, the internet, and a wide array of social media platforms including WhatsApp, Facebook, Telegram, YouTube, Instagram and X (formerly Twitter). These technologies have permeated nearly every sphere of human endeavour, and the education sector, particularly tertiary institutions, has not been left out of this digital transformation.

Geography, as a discipline that straddles the natural and social sciences, is uniquely positioned to benefit from ICT because of its heavy reliance on spatial data, cartographic representation and remote sensing imagery, Geographic Information Systems (GIS), climatic data and field-based information. Applications such as Google Earth, Google Maps, ArcGIS Online, and various weather and climate data portals have made it possible for Geography students to visualise and analyse spatial phenomena beyond what is possible with traditional printed maps and textbooks alone. Similarly, social media platforms have created informal but powerful academic communities where students share lecture notes, past questions, tutorial videos and geographical case studies.

Despite these benefits, there is a growing body of concern among educators and parents that the same technologies that hold promise for enhancing learning may equally constitute a source of distraction, with students spending inordinate amounts of time on entertainment, gossip and non-academic engagements on social media at the expense of study time. In the context of Kaduna State, Nigeria, where tertiary institutions have witnessed a considerable rise in smartphone ownership and internet penetration among students over the past decade, it becomes imperative to empirically investigate the actual impact, whether positive or negative, of ICT and social media usage on the academic performance of students studying Geography.

STATEMENT OF THE PROBLEM

Geography lecturers in tertiary institutions across Kaduna State have continued to observe a paradox: students are more digitally connected than ever before, yet a segment of

them still record poor performance in core Geography courses such as Cartography, Statistical Methods in Geography, Climatology and Regional Geography.

While some students leverage ICT and social media to access supplementary learning materials, satellite imagery and academic discussion groups, others appear to devote a disproportionate share of their time to non-academic social media engagement, resulting in poor time management, reduced concentration span, and in some cases, examination malpractice facilitated by digital devices. There is therefore a need to interrogate, using empirical evidence, the extent to which ICT and social media platforms actually influence the academic performance of Geography students, and to disentangle the academic-enhancing uses of these technologies from their academic-eroding uses. It is this gap in localised, discipline-specific evidence that the present study seeks to fill.

Objectives of the Study

The broad objective of this study is to assess the impacts of ICT and social media platforms on the academic performance of Geography students in selected tertiary institutions in Kaduna State. The specific objectives are to:

1. examine the level of ICT and social media access and ownership among Geography students in the study area;
2. identify the specific ICT tools and social media platforms most commonly used by Geography students for academic purposes;
3. determine the relationship between the frequency of academic-related ICT/social media use and students' academic performance (CGPA); and
4. assess the relationship between excessive non-academic social media use and academic performance of Geography students.



Research Questions

1. What is the level of ICT and social media access and ownership among Geography students in the selected tertiary institutions?
2. Which ICT tools and social media platforms are most commonly used by Geography students for academic purposes?
3. What is the relationship between the frequency of academic-related ICT/social media use and students' CGPA?
4. What is the relationship between excessive non-academic social media use and the academic performance of Geography students?

Research Hypotheses

- H01: There is no statistically significant relationship between the frequency of academic-related ICT/social media use and the CGPA of Geography students.
- H02: There is no statistically significant relationship between excessive non-academic social media use and the CGPA of Geography students.

Significance of the Study

This study is significant in that it provides empirical, discipline-specific evidence on how ICT and social media shape learning outcomes in Geography, a field that is itself technologically driven through GIS and remote sensing. The findings will assist curriculum planners, lecturers, and education policymakers in Kaduna State and similar contexts in Nigeria to design interventions that maximise the academic benefits of digital technology while minimising its distractive tendencies. It will also add to the growing body of literature on ICT-mediated learning in Sub-Saharan African higher education.

Conceptual Clarification of ICT

Information and Communication Technology (ICT) refers to the diverse set of technological tools and resources used to create, disseminate, store and manage information, encompassing hardware such as computers, tablets and smartphones, as well as software, the internet, and telecommunication networks. In an

educational context, ICT includes learning management systems, online databases, presentation software, GIS applications, and multimedia content used to support teaching and learning. Scholars generally agree that ICT has the potential to make learning more student-centred, interactive and accessible, particularly when properly integrated into the curriculum rather than used as an add-on.

Social Media Platforms and Higher Education

Social media platforms are internet-based applications that allow users to create, share and exchange information, ideas and content in virtual communities and networks. Platforms such as WhatsApp, Facebook, Telegram, YouTube, Instagram and X have evolved from purely social tools into quasi-academic spaces where students form course-specific groups for the sharing of lecture materials, past examination questions, assignment reminders and peer tutoring sessions. A number of studies have documented both the collaborative learning benefits of these platforms and their potential to foster procrastination, distraction and reduced face-to-face social interaction among students.

ICT, Social Media and Geography Education

Geography is a spatial science that has historically embraced technological innovation, from the use of aerial photographs and topographic sheets to contemporary Geographic Information Systems (GIS), Global Positioning System (GPS) devices, and satellite remote sensing. The integration of ICT tools such as Google Earth, ArcGIS Online, QGIS and online climate data repositories has enabled Geography students to undertake virtual fieldwork, visualise land use change, and analyse spatial-temporal patterns with a level of precision that was previously unattainable using only printed maps. Social media, on its part, has facilitated the sharing of geo-tagged images, field trip documentation and collaborative mapping projects among students of Geography.



Empirical Review

Several empirical studies within Nigeria and beyond have investigated the ICT-academic performance nexus, generally reporting mixed findings. Studies focusing on purposeful, academically-directed ICT and social media use tend to report a positive association with performance indicators such as CGPA, class participation and assignment scores, largely attributable to improved access to learning resources, peer collaboration and timely dissemination of academic information.

Conversely, studies that focus on the volume and pattern of non-academic social media engagement, such as time spent on entertainment content, chatting and browsing unrelated to coursework, tend to report a negative association with academic performance, attributable to reduced study time, poor concentration, sleep disruption and, in some cases, academic dishonesty facilitated by digital devices during examinations. This body of literature suggests that the impact of ICT and social media on academic performance is not uniformly positive or negative, but is contingent on the purpose and pattern of use, a nuance that the present study specifically investigates within the context of Geography education in Kaduna State.

The Framework

This study is anchored on the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory. The Technology Acceptance Model posits that the actual use of a technology is determined by behavioural intention, which is in turn shaped by the user's perceived

usefulness and perceived ease of use of that technology. Applied to this study, Geography students are more likely to adopt ICT and social media tools for academic purposes when they perceive such tools as useful for improving their understanding of spatial concepts and easy to incorporate into their study routines.

The Diffusion of Innovation Theory complements this by explaining how the adoption of ICT and social media has spread progressively among students over time, from a few early-adopter students to the near-universal ownership of internet-enabled devices observed among the current generation of undergraduates. Together, these theories provide a useful lens for understanding both the adoption pattern and the performance outcomes associated with ICT and social media use among the study population.

The Study Area

Kaduna State is located in the North-Western geopolitical zone of Nigeria, lying approximately between latitudes 9°2'N and 11°32'N, and longitudes 6°5'E and 8°38'E. The state is host to a considerable number of tertiary institutions offering Geography and related Environmental Sciences programmes, including federal, state and private universities and colleges of education. The concentration of higher institutions, coupled with relatively high internet penetration and smartphone ownership among the youth population of the state, makes Kaduna State a suitable area for investigating the impact of ICT and social media on the academic performance of Geography students.

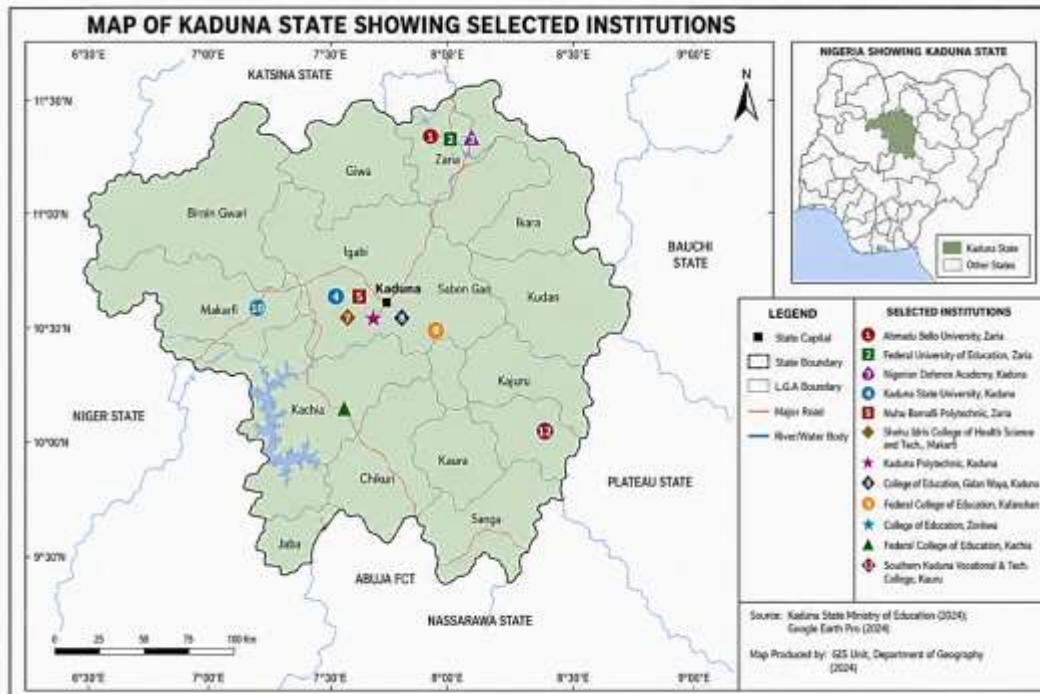


Figure 1: Map of Kaduna State Showing Selected Tertiary Institutions for the Study
Source: Adapted from Kaduna State administrative map and institutional location data; GIS compilation, 2026.

Research Design

The study adopted a descriptive survey research design, which is considered appropriate for collecting quantifiable data on the perceptions, usage patterns and academic performance of a relatively large population of respondents within a specific timeframe.

Population, Sample Size and Sampling Technique

The target population comprised undergraduate students offering Geography and related programmes (such as Geography and Regional Planning, and Geography Education) in tertiary institutions in Kaduna State. Three institutions were purposively selected to represent the diversity of tertiary institutions in the state: Kaduna State University (KASU), Federal University of Education, Zaria, and a College of Education offering Geography Education. A multi-stage sampling technique was employed. In the first stage, the three institutions were purposively

selected; in the second stage, 300, 400 and 500 (or equivalent penultimate and final year) level Geography students were selected because they had spent sufficient time in the institution to reflect on their ICT/social media usage pattern and had an established CGPA; and in the third stage, respondents were selected using simple random sampling. A total sample size of 360 students (120 from each institution) was determined using the Taro Yamane formula at a 5% margin of error, from an estimated combined population of 1,650 eligible students.

Instrument for Data Collection

A structured questionnaire titled "ICT, Social Media and Academic Performance Questionnaire (ISMAPQ)" was the principal instrument used for data collection. The questionnaire was divided into four sections: Section A elicited demographic information; Section B assessed ICT and social media access and ownership; Section C, structured on a 4-point



Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree), assessed patterns and purposes of ICT/social media use; and Section D obtained respondents' self-reported CGPA. The instrument was validated by experts in Geography Education and Measurement and Evaluation, and a pilot test conducted among 30 students outside the sample yielded a Cronbach's Alpha reliability coefficient of 0.81, indicating that the instrument was reliable. In addition, informal key informant interviews were conducted with six Geography lecturers across the three institutions to provide qualitative context for the quantitative findings.

Method of Data Analysis

Data collected were coded and analysed using the Statistical Package for Social Sciences (SPSS), version 25. Descriptive

statistics, including frequency counts, percentages and mean scores, were used to answer the research questions, while Pearson Product Moment Correlation Coefficient was used to test the two null hypotheses at the 0.05 level of significance.

RESULTS

Response Rate and Demographic Characteristics

Out of the 360 copies of the questionnaire administered, 342 were correctly filled, returned and found usable for analysis, representing a response rate of 95.0%. Table 1 presents the demographic characteristics of the respondents.

Table 1: Demographic Characteristics of Respondents (n = 342)

Variable	Category	Frequency	Percentage (%)
Sex	Male	201	58.8
	Female	141	41.2
Age	16 – 20 years	94	27.5
	21 – 25 years	178	52.0
	Above 25 years	70	20.5
Level	300 Level	142	41.5
	400 Level	133	38.9
	500 Level	67	19.6
Institution	KASU	116	33.9
	FUE Zaria	119	34.8
	College of Education	107	31.3

ICT and Social Media Access and Ownership

Table 2 shows that ICT device ownership and internet access are widespread among Geography students in the sampled

institutions, with 91.4% of respondents owning at least one internet-enabled device, predominantly a smartphone.

Table 2: ICT and Social Media Access and Ownership (n = 342)

Item	Frequency	Percentage (%)
Owns a smartphone	312	91.2
Owns a laptop/desktop computer	156	45.6
Has personal internet access (data subscription)	298	87.1
Relies mainly on campus/cybercafe internet	44	12.9
Owns at least one internet-enabled device	313	91.4

ICT Tools and Social Media Platforms Used for Academic Purposes

As shown in Table 3, WhatsApp was the most widely used platform for academic purposes,

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followed by YouTube and Google Classroom/Google Earth. This finding aligns with the informal, group-based academic culture common among Nigerian undergraduates, where

course representatives create WhatsApp groups for the dissemination of lecture notes, assignments and examination timetables.

Table 3: ICT Tools/Social Media Platforms Used for Academic Purposes (Multiple Responses)

Platform/Tool	Frequency	Percentage (%)
WhatsApp	298	87.2
YouTube	255	74.6
Google Earth / Google Classroom	212	61.9
Telegram	141	41.2
Facebook	126	36.8
ArcGIS Online / QGIS	78	22.8
X (Twitter)	63	18.4
Instagram	58	17.0

ICT/Social Media Use and Academic Performance

Table 4 presents the mean responses on the perceived academic benefits of ICT and social media use, measured on a 4-point Likert

scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). A criterion mean of 2.50 was adopted, such that items with a mean score of 2.50 and above were considered agreed upon by respondents.

Table 4: Perceived Academic Benefits of ICT/Social Media Use (n = 342)

Statement	Mean	Decision
ICT/social media helps me access supplementary Geography learning materials	3.42	Agreed
I use social media academic groups to clarify difficult Geography topics	3.21	Agreed
Google Earth/GIS applications improve my understanding of spatial concepts	3.05	Agreed
I spend more time on entertainment content than academic content on social media	2.88	Agreed
Excessive social media use reduces the time I devote to reading	3.11	Agreed
ICT/social media use has improved my overall academic performance	2.97	Agreed

Test of Hypotheses

Hypothesis One:

The Pearson Product Moment Correlation analysis between frequency of academic-related ICT/social media use and students' CGPA yielded a correlation coefficient of $r = 0.412$, $p = 0.001$ ($p < 0.05$). The null hypothesis (H01) was therefore rejected, indicating a statistically significant, moderate positive relationship between academic-related ICT/social media use and students' academic performance.

Hypothesis Two:

The correlation analysis between excessive non-academic social media use and students' CGPA yielded a correlation coefficient of $r = -0.318$, $p = 0.004$ ($p < 0.05$). The null hypothesis (H02) was therefore also rejected, indicating a statistically significant, moderate negative relationship between excessive non-academic social media use and academic performance.

Table 5: Summary of Correlation Analysis

Variables Correlated	R-value	p-value	Decision
Academic ICT/social media use × CGPA	0.412	0.001	Significant (Reject H01)
Non-academic social media use × CGPA	-0.318	0.004	Significant (Reject H02)

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DISCUSSION OF FINDINGS

The findings of this study reveal a near-universal ownership of internet-enabled devices among Geography students in the sampled tertiary institutions in Kaduna State, corroborating the broader trend of rising smartphone penetration among Nigerian undergraduates. The dominance of WhatsApp as an academic communication tool underscores its informal but functional role as a quasi-learning management system in institutions where formal e-learning platforms are still developing or underutilised.

The significant positive relationship found between academic-related ICT/social media use and CGPA lends support to the Technology Acceptance Model, suggesting that when Geography students perceive digital tools such as Google Earth, GIS applications and academic WhatsApp groups as useful for understanding spatial concepts, they are more likely to engage with these tools in ways that translate into improved academic outcomes. This finding aligns with the broader empirical literature reviewed, which generally reports positive associations between purposeful ICT use and academic performance.

Conversely, the significant negative relationship between excessive non-academic social media use and CGPA confirms the concerns raised by lecturers during the key informant interviews, several of whom noted that students are frequently seen browsing entertainment content, rather than course-related material, even during lecture hours. This corroborates the strand of literature that associates uncontrolled, non-academic social media engagement with reduced study time, poor concentration and declining academic performance. Taken together, these findings suggest that the impact of ICT and social media on the academic performance of Geography students in Kaduna State is double-edged, dependent largely on the purpose, pattern and self-regulation of use rather than on the mere availability or ownership of the technology.

CONCLUSION

This study has established that ICT and social media platforms exert a dual and statistically significant influence on the academic performance of Geography students in selected tertiary institutions in Kaduna State, Nigeria. While device ownership and internet access are nearly universal among the sampled students, the direction of impact on academic performance depends on how these technologies are used. Purposeful, academically-directed engagement with ICT tools and social media, particularly WhatsApp academic groups, YouTube educational content, and GIS/Google Earth applications, is associated with improved CGPA, whereas excessive non-academic social media engagement is associated with declining academic performance. These findings underscore the need for a deliberate, guided approach to ICT and social media integration in Geography education, rather than either uncritical embrace or outright discouragement of these technologies.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Tertiary institutions in Kaduna State should formally integrate approved ICT tools, such as Google Earth, QGIS and institutional e-learning platforms, into the Geography curriculum, rather than leaving ICT-based learning to informal, student-driven WhatsApp groups alone.
2. Institutions should improve campus internet infrastructure and provide subsidised data access to reduce the digital divide among students who currently depend on personal data subscriptions.
3. Geography departments should organise periodic digital literacy and time-management workshops to help students distinguish between, and balance, academic and non-academic use of social media.
4. Lecturers should actively participate in and moderate academic



WhatsApp/Telegram groups to ensure that these platforms remain focused on course-related content.

5. Further research should be conducted using longitudinal designs to track changes in ICT/social media usage patterns and academic performance over the full duration of students' study programmes.

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