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INFLUENCE OF SOCIAL MEDIA USAGE ON PHYSICS EDUCATION STUDENTS' ACHIEVEMENT IN THE UNIVERSITY OF JOS, NIGERIA

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ABSTRACT

Social media has transformed how students access information, collaborate, and learn. Physics education students have leverage platforms like WhatsApp, Facebook and Twitter among others for resource sharing, peer discussion, and knowledge creation. The study examines the influence of social media usage on physics education students' achievement in the University of Jos, Nigeria. It focused on students' access to educational contents, collaborative learning and potential distractions. The design of the study was a cross-sectional survey research design. Four research questions were raised to guide the study. Two tools were used to gather data for the study; comprehensive and well-structured questionnaire titled a Social Media Usage Questionnaire (SMUQ) and a Physics Education Students' CGPA. The sample of the study consisted of 97 Physics Education students selected from the population of students in 100L to 400L. The research questions were answered using simple percentages, means and standard deviation. The findings of the study revealed that the Physics Education students' patterns of social media use were associated with measurable differences in their academic achievement scores. Social media was found to facilitate students' resource access and collaboration while its excessive use for non-academic purposes correlated with diminished academic performance. These findings give awareness of the role of social media on physics education students and provide insights for educators and policymakers.

Keywords: Social-Media Usage, Academic Achievement, Physics Education Students

Introduction

Social media platforms have revolutionized communication and information exchange worldwide with 72% young adults reported on its daily use (Auxier & Anderson, 2021). Social media refers to a variety of online platforms and digital communication channels that enable virtual interaction and online engagement among users worldwide. These platforms serve as internet communities where individuals and businesses can connect, share content, and interact with each other in real time. Examples of social media platforms include Facebook, Twitter (now X), Instagram, TikTok, LinkedIn, Snapchat, YouTube, Pinterest, Reddit, WhatsApp, Telegram, Discord, Threads, and WeChat (Statista, 2025; DataReportal, 2025). Each platform has unique features for sharing text, images, videos, and live broadcasts, catering to different audiences and purposes. The use of these tools in among higher education students enable them to access lectures, simulations, and scholarly articles and to collaborate asynchronously; and receive peer and instructor feedback in real time (Manca & Ranieri, 2016; Al-Rahmi, Yahaya, Al-Rahmi & Kamin, 2020).

Physics undergraduates in the University of Jos engage in the frequent use of WhatsApp and Facebook groups to discuss problem sets, to share video tutorials, and coordinate study sessions. Studies of (Astatke & Demissie, 2022; Greenhow, Lewin & Willet, 2022) have shown that structured social-media interventions can increase motivation and deepen conceptual understanding in STEM disciplines.

The influence of social media on academic achievement is a topic of ongoing debate in academic journals and case studies, particularly in Nigeria and other regions where student social media use is rising. While some studies suggest that social media can have a positive impact on academic performance by providing access to educational resources and facilitating collaboration (Al-Rahmi, Yahaya, Al-Rahmi & Kamin, 2020; Astatke & Demissie, 2022), others argue that excessive social media use can lead to distractions and decreased academic performance (Giunchiglia, Zylka & Molinari, 2022; Masood, Luqman & Feng, 2023). This study aims to investigate the impact of social media on the academic achievement of physics education students at the University of Jos, with a focus on identifying the benefits and drawbacks of social media usage for academic purposes.

The researchers visited and collected base line data from the University of Jos which revealed that no empirical study had directly measured the impact of social media usage on Physics Education students' achievement (grades). Anecdotal evidence indicated the students' widespread reliance on WhatsApp for class announcements and resource sharing, such as passing information on institutional policies and teaching practices. The research "Influence of social media usage on physics education students' achievement in university of Jos, Nigeria" quantifies the trends in the Physics Education students' usage of social media and how it correlates with their academic achievement.

Two complementary theories underpin the present study: the Self-Control Theory and Future Time Perspective Theory. Self-control theory proposes that individuals with low self-

control are more likely to engage in criminal behaviour due to their inability to restrain themselves from impulses and immediate gratifications, despite potential negative consequences. According to Gottfredson and Hirschi (1990), self-control is developed early in childhood and remains relatively stable throughout life, influenced significantly by parenting styles before the age of ten. This theory therefore posits that Physics Students with higher self-regulation can manage distractions, such as non-academic social media usage and focus on goal-directed activities which will in turn boost their academic achievement. Future Time Perspective (FTP) theory proposes that an individual's perception of their future influences their present behaviour, motivation, and decision-making. According to this theory, people with a strong future time perspective tend to prioritize long-term goals, plan for the future, and make decisions that align with their future aspirations (Zimbardo & Boyd, 1999). With this theory, students with positive future outlook would prioritize academic tasks over immediate gratifications like leisure browsing on social platforms but does who would not will experience diminishing academic performance. The frameworks suggest that effective social-media use for learning depends on both individuals' self-regulation and clear orientation toward academic goals.

Orji, Eke, Zudonu, Ihua-Maduenyi, Eze, Elejere, Cyril and Orji (2022) surveyed 250 Science Education undergraduates in Nigeria to determine how daily time spent on social media affects academic achievement. Using ANOVA and mean score comparisons, they reported that students who limited their social media usage to five hours or less per day achieved significantly higher mean scores than those exceeding this threshold. The study underscored WhatsApp's dual role as both a distractor at high usage levels and a collaborative tool when integrated thoughtfully into coursework.

Smith and Anderson (2018) performed a comprehensive review examining how social media platforms influences students' overall academic performance. In their findings, while tools like Facebook and Twitter can facilitate peer-to-peer learning and quick information sharing, excessive use often correlates with diminished study time and lower grades. Their analysis highlighted a subtle relationship whereby moderate, academically focused engagement yields benefits, but unfettered browsing leads to distraction and poorer outcomes.

Okon, Ntibi, Uda, Orede, and Aliegu (2024) explored the effect of Facebook, WhatsApp, YouTube, Twitter, and Instagram on Senior Secondary School students' physics achievement in Calabar Municipality. Through a survey design and ANOVA analyses, they found that WhatsApp engagement had a moderately positive impact on physics scores, whereas Facebook, Twitter, YouTube, and Instagram showed no significant effects. They recommended integrating guided social-media activities into physics lessons to steer student behavior toward academically productive uses. Paul and Paul (2024) employed SPSS to analyze survey data from 300 college students across multiple disciplines, including physics majors. Their findings demonstrated a statistically significant negative correlation between time spent on entertainment-oriented social media and GPA, alongside a smaller yet positive correlation between educational-group usage (e.g., study WhatsApp groups) and academic performance. They concluded that institutional

policies should encourage structured, academically focused social-media interactions while mitigating off-task usage.

Despite the increasing popularity of social media usage among students, the researchers observed a growing concern that excessive social media usage may negatively impact academic achievement. However, the specific impact of social media on the academic achievement of Physics Education students in the Department of Science and Technology Education at the University of Jos remains unclear. This study necessitates an empirical investigation to determine whether it is beneficial, detrimental, or both.

Research Questions

The following research questions were raised to guide the study:

1. What are the common social media platforms the Physics Education students use in their day-to-day learning activities?
2. What are the most engaged social media activity by Physics Education students?
3. What is the extent of the Physics Education students' use of social media networks?
4. What is the Physics Education student's academic achievement based on their use of social media network?

METHODOLOGY

A cross-sectional survey research design was employed for the study. The population of the study was 232 full time Physics Education student of the University of Jos, 2023/2024 academic session. Students from 100-400 level were 22, 46, 53 and 111 respectively. A sample of 100 Physics Education students were selected via the proportional stratified sampling to ensure representation across cohorts (Creswell & Creswell, 2018) using a sampling fraction (S.F) thus: 100/232. Each of the four strata contributed 25/58 of its size to the sample. Hence, 10 students were selected from 100 level, 20 from 200 level, 23 from 300 level and 47 from 400 level. Having determined the number of units to select from each stratum, the actual selection was done by simple random sampling of respondents using an online number generation. The instruments used to gather data for the study was a comprehensive and well-structured questionnaire, titled "Students Social Media Usage Questionnaire" (SSMUQ) and the Students' Physics Academic Performance. The validity of the questionnaire was carefully established through the scrutiny of experts in Physics Education and Research, Measurement and Evaluation experts all from the Faculty of Education, University of Jos. The experts were to judge for clarity of the items, language and comprehensiveness of items of the SSMUQ in other to ensure that all relevant areas of interest were covered such that accurate and reliable data could be collected. The reliability coefficient of SSMUQ was estimated using the Cronbach's alpha method and a reliability coefficient value of 0.82 was obtained which indicated that the instrument was reliable. Descriptive statistics of frequency counts and simple percentages were used to summarize the Physics Education students' social media usage patterns. Pearson correlation was employed in testing relationships between time spent on social media and students' self-reported academic performance.

RESULTS

The results were presented based on the three research questions raised and one null hypothesis formulated for the study.

Research Question One

What are the common social media platforms the Physics Education students use in their day-to-day learning activities?

Table 1: Frequency of the Physics Students' Use of Social-Media Platform

Social Media Platform	Frequency (n=97)	Percent (%)
WhatsApp	53	53
Facebook	41	41
Others	6	6

The results in Table 1 reveals that 53% of the students with a frequency of 51 mostly made use of WhatsApp, 41 (41.2%) of the students engaged in the use of Facebook while only 6 (6%) of the respondents indicated that they were frequent users of other social media networks. The results indicated that WhatsApp was the most popular social media network among the Physics Education students with 53% followed by Facebook with 41% use while other sites together had only 6% patronage.

Research Question Two

What are the most engaged social media activities by Physics Education students?

Table 2: Physics Students' Activities on Social-Media and Achievement (academic vs. leisure)

Primary Activity	Frequency	Percent (%)
Entertainment	32	33.0
Academic activities	18	18.6
Sports	18	18.6
Chatting	9	9.3
Others	20	20.6

Table 2 revealed that 32 respondents which is 33% spent most of their time on entertainment. Eighteen students which is 18.6% engaged both in sports and academic activities

respectively while 9 students that is, 9.3% engaged in chatting and 20 which is 20.6 % of the students engaged in other activities on the social media.

Research Question Three

What is the extent of the Physics Education students' use of social media networks?

Table 3: Extent of Physics Education Students' Use of Social Media Networks

S/N	ITEMS	SA	A	U	D	SD	Mean	Decision
1	I spend more time on social media than reading my books	40	46	10	1	-	4.29	Accepted
2	I rely on social media to do my assignments without consulting other sources	35	42	3	12	5	3.93	Accepted
3	My exposure to social media has effect on my academic achievement	43	42	8	3	1	4.27	Accepted
4	The influence of social media on my academic achievement is negative	37	41	16	3	-	4.15	Accepted
5	Students who spend more time on social media are likely to perform poorly in their academic activities than those who do not	45	43	6	3	-	4.34	Accepted
							Cumulative mean = 4.20	

From Table 4, the calculated mean score for item 1 is 4.29 which is greater than the mean criterion (3.00). Therefore, we accept item 1 that the Physics Education students spend more time on social media than reading their books. The calculated mean score for item 2 on students relying more on social media to do their assignments without consulting other sources was 3.93 which is greater than the mean criterion 3.00 hence, statement is accepted. Again, the mean score for item 3 on whether students' exposure to social media has effects on their academic achievement was 4.27 is greater than the mean criterion 3.00 and the statement is accepted. For item 4, the mean score on whether the influence of social media on students' academic achievement was negative was 4.15 which is also greater than the criterion mean of 3.00, therefore the statement is accepted. The calculated mean score for item 5 on students who spend more time on social media were likely to perform poorly in their academic activities than those who do not was 4.34 greater than the criterion mean of 3.00 and the statement is accepted also.

Research Question Four

What is the Physics Education student's academic achievement based on their use of social media network?

Table 3: The Physics Education Students' Achievement based on Their Use of Social Media Network

Social Media Site	Physics Performance (ACGP)
WhatsApp	2^2
Facebook	2^2
Others	2^1

The results in Table 3 showed that the average cumulative grade point of students who made use of both WhatsApp and Facebook networks was second class lower division (2^2) while that of students who spent most of their time on other sites was second class upper division (2^1). The results may suggest that both the WhatsApp and Facebook sites were used mostly for social and entertainment activities than for academic activities. Thus, students who use these sites spent less time on academic activities than students who go to other sites like the internet, google and the likes.

Discussion

Findings based on research question one revealed that 53 of the respondents which is 53% were mostly exposed to WhatsApp, 41 which is 41% were engaged in Facebook while 6% of the respondents were frequent users of other social media networks. This finding agrees with Orji, Eze and Nwanko (2022) who found a high usage of WhatsApp amongst science education students which they reported had dual roles as both a distractor at high usage levels and a collaborative tool when integrated thoughtfully into coursework.

Findings based on research question two revealed that the students predominantly engaged in leisure activities indicating 33% involvement, with 18.6% each engaging in both sports and academic activities, 9.3% engaged in chatting while 20.6 were said to engage in other activities. This finding is in agreement with the findings of Paul and Paul (2024) found a statistically significant negative correlation between time spent on entertainment-oriented social media and CGPA of students.

Findings based on research question three showed that the students spent more time on social activities than their academic activities like reading, carrying out assignments and consulting which makes them uninterested in their academics. This results into their low performance in physics and other courses which they offer. The finding also agrees with Paul and Paul (2024) who found that use of social media network sites had negative influence on students' academic performance.

Research question four revealed that the mean scores of all the items were higher than the criterion mean. This implies that unguided usage of social media is associated with diminished academic achievement which is in line with the finding of Smith and Anderson (2018) who reported that while tools like Facebook and Twitter can facilitate peer-to-peer learning and quick information sharing, the excessive use often correlated with diminished study time and lower grades.

Furthermore, the hypothesis showed that there was a significant influence of social media usage on the academic achievement of Physics Education students in University of Jos, which means that Physics Education students' patterns of social media use were associated with measurable differences in their physics' academic achievement. The finding is in consonant with Orji, Eze and Nwanko (2022) who reported that students who limited their social media usage to five hours or less per day achieved significantly higher mean than students who exceeded this threshold. Thus, Physics Education students with stronger self-regulation in the use of social media; purposefully for lectures, discussions and resource sharing would have significant leap in their academic achievement.

Conclusion

The study concluded that the Physics Education students use mostly the WhatsApp and Facebook social media platforms in their daily academic activities, they unguided on the use of these platforms which negatively influence academic achievement. The distinct patterns of social media engagement among the students significantly correlated with measurable variations in their academic performance, underscoring the influence of digital behavior on learning outcomes.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The Department of Science and Technology of the University of Jos should provide orientation and organise workshops and seminars on digital self-regulation for students emphasizing time management and self-control.
2. The Faculty of Education of University of Jos should moderate and discipline-specific WhatsApp and Facebook study groups, and encourage instead the use of credible YouTube educational content to reinforce physics learning.
3. Policymakers should consider age-based restrictions for students on non-academic social media use to reduce distraction and promote academic engagement.
4. Regulating bodies should embed digital literacy and responsible technology use in the school curriculum to foster sustainable academic habits.
5. The University of Jos management should engage in strategic partnerships with educational technology providers to develop tailored digital learning tools and simulations.
6. University of Jos should establish monitoring frameworks to evaluate students' digital behavior and the academic impacts of implemented interventions.
7. Future studies should adopt experimental designs to assess intervention efficacy and explore cross-disciplinary applicability.

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