

*Full Length Research Paper*

# **Effect of social media on undergraduate students' achievement and interest in chemistry in the North-central geo-political zone of Nigeria**

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**This paper gives a report of the effect of social media on undergraduate students' achievement and interest in chemistry in the north-central geo-political zone of Nigeria. The research design adopted was a cross-sectional survey. The population of this study comprised all undergraduate chemistry students from the universities in the north-central geopolitical zone of Nigeria. 240 undergraduate chemistry students constituted the sample for the study and 80 students each were randomly selected from all the four levels of the three sampled Universities namely; Nasarawa State University Keffi, University of Abuja, and Federal University of Agriculture, Makurdi. Structured questionnaire tagged: Effect of social media on achievement and interest in chemistry (ESMAIC) was the only instrument used for data collection. The questionnaire used was validated by experts and pilot tested to establish a reliability coefficient of 0.88. The finding of this study reveals that 60.8% of the respondents engage on social media mainly for educational related purposes while 52.9% of them agreed that social media has helped in increasing their grade point average (GPA). The interest of 67.5% respondents was boosted when employing social media for learning, and Facebook is most frequently used among the network sites by students. Addiction, distraction, poor time management and health problems are some of the disadvantages of continuous engagement with social media. Results also show that many students did not agree that social media is not an effective tool for studying and some are still hesitant on adopting modern technology while some are not very proficient on its usage. It is therefore recommended that students should be educated on how to maximize the potential of the different social network sites for their academic benefits among others.**

**Key words:** Social media, interest, achievement, undergraduate chemistry students.

## **INTRODUCTION**

Communication is very essential for transferring and accessing information. Communication touches all spheres of human activities at all levels. The world is now a global village because of modern technology, and

social media often functions as the connecting factor.

Modern technology is helping people to be better informed by accessing information about anything at anytime and anywhere. Social media exist so as to

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provide communication among people regardless of the distance, making it easy for people to share information, files, pictures, videos, create blogs, send messages and conduct real time conversations (Boyd, 2008).

According to Wikipedia, social media is often referred to as computer-mediated technologies that allow creating and sharing of ideas, career interest and other forms of expression through virtual networks (<https://en.m.wikipedia.org>) It is a social structure made up of individuals or organizations called nodes which are connected by one or more specific types of interdependency, such as friendship, kinship, common interest, dislike, knowledge or prestige, relationship, beliefs, financial exchange etc. (Boyd, 2008; Chutter, 2009). The favorite realm of these media sites are facebook, whatsapp and twitter. These social forums are playing a large and influential role in decision making in global economy, social and educational ventures.

The driving factors for adoption of social media are progressively ubiquitous access, convenience, functionality and flexibility of social technologies. Social technologies provided on the internet are usually free or require marginal investment, eliminating a potential barrier to adoption. Since social media has come to stay as a result of the advancement in technology, its impact on students' achievement at all levels of learning has been one of the concerns of academicians (Enriquez, 2010; Fatokun, 2009). With so many social networking sites displayed on the internet, students are tempted to abandon their assignment and reading schedule in preference to chatting online with friends as well as some who are now addicted to the online rave of the moment with facebook, whatsapp, twitter and so on.

Undergraduate students are a unique population occupying the middle group between childhood and adulthood. They have been at the fore front of social change since the end of World War II (Ranaweera, 2015). They were among the first to use the social media for communication, recreation, file sharing, and the first to have regular broadband internet access. Social media was used first and became widespread in universities in the 1990s, and in many ways it is a direct outcome of university based research. Facebook, and many other social media were created by university students and the vast majority of those students (social media users) were considered as pioneers. Increased use of social media has become an international phenomenon for the past several years. What started out as a hobby for some computer literate has become a social norm and way of life for people all over the world. Teenagers and university students have embraced social media as a way to connect with their peers, share information, reinvent their personalities and showcase their social lives (Boyd and Ellison, 2007).

Social media use in universities has many advantages, these include enhancing relationship, improving motivation, offering personalized course material and

developing collaboration abilities. This means social media have the ability of improving students' participation in class particularly where introverted students are involved. Students can function in online groups learning with less or no anxiety of needing to raise questions before peers at school. A direct relationship exists between social media usage and academic performance of university undergraduate students (Bamigboye and Olusesan, 2017).

On the contrary, attention has been shifted from visible to invisible friends, while important ventures like studying, reading printed materials and writing are affected in the process. This phenomenon has become a source of worry to many who believe in knowledge and skill acquisition. Moreover, the darker side within technological evolution has resulted in dilemmas, such as the set back of real life values especially among students who form the majority of users interacting through the use of social networking sites. It is also a common sight to see a youth chatting in sensitive and highly organized places like the church, mosque, and even in lecture venues. Some are carried away that even as they walk along the highway, they keep chatting.

Sound and quality education yields productive students which promote their respective educational institutions and subsequently prove them to be strong contributors to the well-being of their nations. Academic excellence or achievement is the key for an individual's placement be it in the academic institution or professionally. Due to this, many are concerned with the ways they can easily acquire knowledge through enhanced learning for heightened life attainments and employability in their career, social media serves as an inevitable consonant for achieving this and sustaining interest if properly utilized.

Chu (2011) examined students' profiles to determine why and to what extent they were keen on posting their entire identity, sharing pictures, videos and indicating their religious affiliations, marital status and political orientations on the internet. He discovered that students interact with others, exchange information about their interests, raise discussions about few topics, and follow news about specific topics on different social media. Students now use the internet for most of their daily activities and information gathering as opposed to older generations who used resources like textbooks, TV or newspaper.

Social media is a distance incentive, they bridge the distance between the lecture hall and student accommodation space. Social media allow students from different schools or even different countries to come together over the internet and work on common projects. They can transmit research materials and disseminate papers and analysis to those working on that activity to buttress this stance (West, 2012).

Binta (2013) stressed that student users are affected and this impact is determined by the type of internet usage. They are positively affected by the informative use

of social media while the recreational uses often have damaging impact on them. Bamigboye and Olusesan (2017) affirmed that social media is equally advantageous to both male and female students and the extent of usage depend solely on the type and benefit derived from it. But if used mainly for the purpose of leisure, Leyer-Jackson and Wilson (2018) maintained that there will be detrimental effect, as there will interferences with their academic activities.

Current university students grew up in the technology era and social media is now just part of students' daily routine. Habes et al. (2018) asserted that the most used social media is facebook, and that despite spending time on social media, students are still efficient enough in their studies. This means that social media have both positive and negative impacts on the students' academic performance.

However, with all the laudable potentials of social media to university education, there are contrary feelings in some quarters of its negative influence on students' pursuit of academic excellence (Yeboah and Ewur, 2014). Researches show that heavy users of facebook received lower grades compared to the light users. In a study conducted by Adamu (2011) on impact of third screen, that is, the GSM handset on academic performance of Ahmadu Bello University students, it was found that most students use their social media through GSM handset during lectures. Jegede (2015) noted that youths cannot go for 2-3 hr without checking and updating their profiles on social media even at the detriment of other activities such as education or career pursuit.

Enriquez (2010) equally revealed that students who multitask between social networking and homework are likely to have 20% lower grades than those who do not have a social networking site on the background of their personal computer while studying or doing homework. Mensah and Nizam (2016) while looking at the time spent on facebook and its effect on academic performance made similar remark. In the study conducted by Asemah et al. (2013) on the effects of social media on academic performance of the undergraduate students of Kogi State University showed that social media have negative influence on the academic performance of students. This is because instead of their books, they spend more time chatting and making friends via social media which negatively affects their academic performances. The current study is therefore set out to investigate the influence and the overall effect of social media on the academic performance of undergraduate chemistry students in some Nigeria universities.

## Research questions

The following research questions guided this study.

1. How do chemistry students use facebook, whatsapp

and twitter for academic purposes?

2. Which of the social media is frequently used among the three mentioned above by chemistry students?
3. What are the positive influences of social media on academic performance of chemistry students?
4. What is the influence of students' engagement in social media on their time management?
5. What are the negative effects of students' engagement in social media on their academic performance?
6. Are chemistry students effectively utilizing and benefiting from social media?

## METHODOLOGY

### Research design

Research design adopted for this study was a cross-sectional descriptive survey. This choice was made in order to collect data from uniform subject at different places and locations within a uniform time. The design was also explanatory in nature.

### Population

The population of this study comprised all undergraduate chemistry students from the state and federal universities in the North-central geopolitical zone of Nigeria.

### Sample and Sampling Techniques

A multistage random sampling was employed to obtain 240 undergraduate chemistry students which constituted the sample for the study. FCT, Nasarawa and Benue states were randomly selected from north-central geopolitical zone of Nigeria. A university each was randomly selected from the three sampled state namely; Nasarawa State University Keffi, University of Abuja, and Federal University of Agriculture, Makurdi. 80 undergraduate chemistry students were randomly drawn from all the four levels of each of the three sampled Universities.

### Instrumentation

Questionnaire was the instrument used for data collection. The structured questionnaire was tagged: Effect of Social Media on Achievement and Interest in Chemistry (ESMAIC). Part A was concerned with personal information of the respondents. Part B was concerned with what chemistry students use social media for, and the most frequently visited site by them. Part C dealt with the positive influence of social media on academic performance of chemistry students, while Part D dealt with the negative influence of social media on sampled students. The questionnaire used was validated by experts for clarity, precision and comprehension. A pilot test was conducted to establish the reliability of the instrument and the reliability coefficient obtained was 0.884.

### Method of data collection

Questionnaires were administered to sampled chemistry students and were retrieved immediately. They were collated and data obtained based on the responses from the students were analyzed in frequency count and percentages to answer the earlier raised questions.

**Table 1.** Purpose for which students engage in social media.

S/N	Items	SA	A	D	SD
		No. (%)	No. (%)	No. (%)	No. (%)
1	Downloading music and videos	110 (45.83)	61 (24.42)	45 (18.75)	24 (10)
2	Creating polls and quizzes	20 (20.5)	29 (11.4)	72 (27.3)	119 (40.9)
3	Submitting assignments to course lecturers or collecting course materials	154 (64.17)	55 (22.92)	20 (8.33)	11 (4.58)
4	Communication with mates	211 (87.92)	20 (8.33)	05 (2.08)	04 (1.67)
5	Retrieving articles from websites	171 (71.25)	59 (24.58)	10 (4.17)	00 (0)
6	Posting photographs	153 (63.75)	62 (25.83)	20 (8.33)	05 (2.08)
7	Chatting	169 (70.42)	68 (28.33)	03 (1.25)	00 (0)
8	Past Examination material download	48 (20)	37 (15.42)	101 (42.08)	54 (8.5)
9	Others	108 (45)	50 (20.83)	42 (17.5)	40 (16.67)

**Table 2.** Broad purposes for which students engage in social media.

No.	Question	Educational related groups		Entertainment groups
1	Which of the following groups are you more active on social media	No	146	94
		%	60.8	39.2

**Table 3.** Percentages of most frequently used social media.

Question		Facebook	Twitter	Linkedin	Whatsapp	Total
Which one do you use most often?	No	116	13	0	111	240
	%	48.3	5.4	0	46.3	100

## RESULTS

The results were presented in tables below. Table 1 and 2 provided answer to the first research question. Table 3 gave answer to research question 2, while Table 4 supplied answer to research question 3. Tables 5, 6, and 7 provided answers to research question 4, 5 and 6 respectively.

The results in Table 1 show that 70% of the respondents use social media for downloading/uploading music/videos, while 87, 31.9, 96, 86, 98.7 and 65.8% of respondents use social media for submitting articles to course lecturers, creating polls and quizzes, communicating with teachers/mates, posting photos, chatting and other activities respectively. From Table 2, we conclude that undergraduates use social media primarily for chatting.

From Table 2, 60.8% of the respondents engage on social media mainly for educational related purposes and 39.2% engage mainly for entertainment reasons. This shows that students are more active on educational groups/sites than others.

### Research question 2

Which social media is frequently used by chemistry students among these three; WhatsApp, Facebook, Twitter?

The Table 3 shows that the most frequently used social media by the respondents is Facebook because a total of 48.3% indicated this as their favorite.

### Research question 3

What are the positive influences of social media on academic performance of chemistry students?

From Table 4, 68.3% of the respondents have been not accessing social media groups or friends during lectures while 31.7% have accessed. 82.1% of the respondent indicated that interactions on social media have improved the way they speak or write daily while 17.9% disagreed. 77.5% of the respondents agreed that social media has helped in improving their knowledge of chemistry during their search while 22.5% disagreed.

53.8% responded that social media has positively

**Table 4.** Results of positive influence of social media on academic performance of chemistry undergraduate students.

S/N	Influence of social media on academic performance of undergraduate students	Yes No. (%)	No No. (%)	Total No. (%)
1	Do you normally contact your social media groups or friends to assess information while lecture is going on?	76 (31.7)	164 (68.3)	240 (100)
2	Has social media improved your daily grammatical expression?	197 (82.1)	43 (17.9)	240 (100)
3	Is there any positive influence of social networking on your knowledge expansion in chemistry?	186 (77.5)	54 (22.5)	240 (100)
4	Has any of the social network sites contributed positively to your study pattern and learning styles of chemical concepts?	129 (53.8)	111 (46.2)	240 (100)
5	My consistent use of social media to boost my knowledge of chemistry has led to increase in my GPA over time	127(52.9)	113 (47.08)	240 (100)
6	Do you have enhanced understanding, better assimilation and higher retention of difficult chemical concepts learnt through modern technology?	138 (57.5)	102 (42.5)	240 (100)
7	Has social media aided or improved your overall academic performance?	127 (52.9)	113 (47.1)	240 (100)
8	Is social media really an effective tool for knowledge creation and dissemination?	186 (77.5)	54 (22.5)	240 (100)
9	Do you engage in group discussion on any of the social network sites?	22 (9.17)	218 (90.83)	240 (100)
10	Has your interest in Chemistry improve through exploration of social media for learning?	162 (67.5)	78 (32.5)	240 (100)

**Table 5.** Result of time spent on social media as indicator of undergraduate chemistry students' academic performance.

Question	Less than one hour	1-3 h	3-6 h	More than 6 h	Total
How much time do you spend on social media daily?	No. (%) 46 (19.2)	No. (%) 109 (45.4)	No. (%) 71 (29.6)	No. (%) 14 (5.8)	No. (%) 240 (100)

**Table 6.** Results of negative influence of social media on academic performance of chemistry undergraduate students.

S/N	Items	SA %	A %	D %	SD %
1	I am becoming more addicted to social media than my books	154 64.17	66 27.5	09 3.75	11 4.58
2	On line social network sites are great source of distraction for me while studying	147 61.25	53 22.08	22 9.17	18 7.5
3	I am having difficulties in managing my time properly for effective study because of my engagement with social media	162 67.5	44 18.33	28 11.67	06 2.5
4	My course grade score not improving as expected despite my adoption of social media to enhance my performance	107 44.58	32 13.33	57 23.75	44 18.33
5	I have developed some health challenges because of constant use of social media	29 12.08	24 10	161 67.08	26 10.83

affected their chemistry study pattern, while 46.2% declined. 52.9% of the respondents agreed that social media has helped in increasing their GPA, while 47.1% disagreed. The interest of 67.5% respondents when employing social media for learning was boosted.

#### Research question 4

What is the influence of students' engagement in social media on their time management?

The Table above shows that highest percentage of the

**Table 7.** Responses on chemistry students' utilization and derivation of maximum benefit from social media.

S/N	Items	SA %	A %	D %	SD %
1	I have not requested for any academic assistance from any of my social media outlet for the past two months	140 58.33	65 27.08	31 12.92	04 1.67
2	Social media is not an effective tool for studying by me	98 40.83	103 42.92	26 10.83	13 5.42
3	I am not very proficient in sourcing for useful materials through modern technology to enhance my learning	52 21.67	68 28.33	60 25	60 25
4	I am complacent or rather hesitant to new approaches of learning or studying through the aid of social media,	15 6.25	48 20	77 32.08	100 41.67
5	Surfing the net or interacting with others on social media to glean educative ideas is a big waste of time	35 14.58	54 22.5	71 29.58	80 33.33
6	I do not have any social media group that discusses about chemistry	112 46.67	61 25.42	35 14.58	32 13.33

respondents spends about 1-3 hr on social media daily. Considering this, it is possible to infer that time spent by students on some of these sites unproductively will negatively affect their academic performance.

### Research question 5

Are chemistry students effectively utilizing and benefiting from social media?

From Table 7, 85.41% of the respondent have not consulted social media outlet for the past two months for academic assistance, while 83.75% did not agree that social media is an effective tool for studying especially for them. 50% of the sampled students stated that they are not very proficient in sourcing for useful materials through modern technology for their knowledge enhancement. Despite the high use and yield from social media among the youth especially those at the higher institution, half of the sampled university students were still novice,

Only 26.25% of the respondents were complacent about studying through the aid of social media and 37.08% of them believed that surfing through the net or interacting with others on social media to glean educative ideas is a big waste of time. 72.09% of the respondents do not have any social media group that discusses on chemistry.

## DISCUSSION

Findings from this study show that chemistry undergraduate students use social media primarily for chatting and educational purposes. They use facebook more often than they use twitter and whatsapp. This is in agreement with Habes et al. (2018) and Salvation and Adzharuddin (2014) which showed that the most used

social media is facebook. Results also indicate that social media has slight positive influence on the students' academic performances since 60.8% of them often engage in educational activities and most of them attested to the fact that their involvement in social networking had improved their knowledge of chemistry, grammatical expression and aided understanding of difficult chemical concept learnt. This is consistent with the view of Bamigboye and Olusesan (2017) who attested that students are positively affected by the informative use of the social media.

However, despite the positive influence of social media, it was discovered that there are some negative impacts. This is in consonant with the study conducted by Asemah et al. (2013) and Enriquez (2010) which revealed that students who multitask between social media and academic work are likely to have lower grade than those who do not. Students' addiction, time mismanagement and health hazard were found to be some of the negative influence of excessive use of social media and this equally confirms the report of Mensah and Nizam (2016) on some Malaysian students.

Some students are still hesitant on adopting modern technology in this era, while half of the sampled students are not yet proficient on how to maximally utilize modern technology for academic use. This report is in line with the view of Leyer-Jackson and Wilson (2018) that user should be properly educated on how to benefit maximally from social media.

## Conclusion

The findings from this research show that social media has positive influence on the academic performance of students if appropriately used. For example, students can form online communities in order to plan for a project,

discuss about educational topics or contact a mate who has been absent to update him or her on current academic information. Though social media has lots of positive influences on academic performance of chemistry students, it also has many negative impacts if not properly utilized.

## RECOMMENDATIONS

The researchers made the following recommendations based on the findings;

1. Chemistry students should be educated on how to maximize the potential of the different social network sites for their academic benefits.
2. Teachers should ensure that they use social media as a tool for improving learning and promoting the academic performance of students in the university.
3. Students should create a balance between academic and non-academic activities on social media by focusing mainly on the academic relevance of most sites instead of engaging in unprofitable surfing.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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