

EFFECT OF SOCIAL MEDIA ON ACADEMIC PERFORMANCE AMONG UNIVERSITY MATHEMATICS EDUCATION STUDENTS IN KANO STATE, NIGERIA

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Abstract:

This research adopted a descriptive survey design to determine the effect of social media on academic performance among university mathematics education students in three universities. The universities are Kano University of Science and Technology Wudil, Yusuf Maitama Sule University Kano, and Bayero University Kano, all in Kano State, Nigeria. To achieve the purpose of the study, three (3) null hypotheses were formulated to guide the study. The population of the study was 1,750 undergraduate students of the Department of Computing and Mathematics Education in the 2019/2020 academic session. A stratified simple random sampling technique was used to select a sample size of 350 students, using the Taro Yemane (1984) formula. A modified four-point Likert-scale type questionnaire was used to gather data. Before use, the questionnaire was validated and also subjected to a reliability test which yielded an index of 0.83 using Pearson's product moment correlation statistics. Results showed that a large number of students in the Universities are addicted to social media. Findings show that the use of Facebook, WhatsApp and Instagram platforms would likely affects the academic performance of the University students in Kano State. It was recommended that social media should be used for promoting educational purposes, social networking sites should be broadened and new platforms created to enhance academic activities and improve students' academic performance. It is also suggested that a one-credit course on the use of social media should be included during the orientation/induction programmes, awareness campaign and handbooks of the fresh students in the universities.

Keywords: *Social media effect, academic performance, Facebook, WhatsApp, Instagram, Mathematics education*

INTRODUCTION

Communication is very essential for transferring and accessing information. Communication touches all spheres of human activities at all levels. The world of today is a global village as a result of information and communication technology (ICT), and social media often function as the connecting factor (Rahman, 2014). ICT is helping people to be better informed by accessing information about almost anything at anytime and anywhere. Social media exist so as to provide communication among people regardless of the distance and other physical barriers (Stenger, 2013). Use of media makes it easy for individuals to share information, files, pictures, videos, create blogs, send messages and conduct real time conversations (Boyd, 2007).

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.

Technological advancement especially in the area of information and communication technology has brought to the door step of many homes the use of computers - (desktops, laptops, notebooks & palmtop), GSM phones, smart phones, I-pads, Androids, tablets. Accessing the internet is now relatively easier than before. This relative ease has made it possible for even teenagers to spend much of their valuable time “social networking”. Internet world statistics report (June 2015) rank Nigeria as seventh (7th) in the world in internet usage with 92,699,924 users. The Nigerian Communication Commission (NCC) report (May 2015) as reported in News Watch Times (May 11 2015) put subscribers that browse on Nigeria’s Telecommunication Networks (NTN) at 83 million as at February 2015

Nigeria with an estimated population of 181,562,056 has 92,699,924 internet users (internet world statistics 2015) and is ranked seventh (7th) in the world; behind China, India, United States of America, Brazil, Japan and Russia. Countries ranked after Nigeria are Indonesia, Germany, United Kingdom, Mexico, France and so on. However, in terms of internet users penetration of population Korea leads with 92.3%, followed by United Kingdom (91.6%), Japan (90.6%), Germany (88.4%) and United States of America (87.4%). It is worthy to note that Nigeria is the only country in Africa that is among the top twenty (20) top internet users in the world.

Social networking is very attractive to students especially those in senior secondary school because it is used to socialize with their peers and help build cultures around them (Boyd, 2007). No wonder the fact that some students go to the extent of getting themselves involved in social network activities especially chatting and posting of pictures and sending of comments in the class even when a teacher is teaching them. Others do not stay in their classes,

they hide somewhere inside their schools' compound to chat and probably look for friends on the network (Flad 2010). This has become part of the modern teenage life style in our society to the extent that it is even done in places of worship.

Mathematics is one of the most important core subjects offered at the primary and secondary school levels of Nigeria educational system to be taught mostly by university graduate. It is of great usefulness to every human being and to the economic growth of any nation.

Background of the Study

Kaplan and Haenlein (2010) defined social media as a group of internet based applications that build on the ideological and technological foundations of user generated content. In line with this, Salter (2012) stated that social media introduced significant and pervasive challenges to communication between organizations, communities and individuals. The availability of high-speed Internet broadband connection with massive use of desktop, computer, laptops, e-readers, text messaging, Facebook, YouTube and smart phones enables millions of people to actively engage in media, text messaging, content sharing, on-line learning and much more.

Ezenwafor (2012) observed that since technology is ruling the world in all disciplines and activities, it ranks high in innovation, development and in use of the technologies which require adequate integration of ICT in students' communication. Social media are platforms where everyone can add or edit information. It is a web where digital tools allow users to create, change and publish dynamic contents. Social media are an aspect of the Internet that provides a lot of sites for socialization. Today, there are more than 20 popular social media websites. These include but not limited to : Facebook, WhatsApp, YouTube, Instagram, Digg, Delicious, Stumble upon, Bizsugar, Vine, Periscope, Quora, Snap chart, Redid it, Flickr, Tumblr, Pinterest, Google, LinkedIn, Twitter, Viber (Anthony, 2016). There is much interest from schools and Universities in the potentials of public social networking services and social media such as blogs to affects or supplement formal educational activities and enhance learning objectives (Fogg, 2010; Bell, 2013). Social media service users between lecturers and students can improve interaction, incentive and engagement with education (McBride, 2009). This is evident by the participation and sharing of messages in their WhatsApp platform. It also allows lecturers to share with their peers operating all around the globe in order to plan approaches for support and motivation. Social media help lecturers to link with their students about assignments, upcoming events, useful connections and samples of work outside the classroom. Students can also use them to connect classmates about questions regarding class assignments, examinations and projects. Wordu H., Uchenna G. & Alabo M. (2020).

In Nigeria, one of the most popular and commonly used social media sites is Facebook (Nigeria social media statistics for March 2020). Facebook is a social networking website that was initially designed for college students but is now open to anyone from 13 years of age. Facebook users can build and customize their own profiles with photos, video, and information about

themselves. Friends can browse the profiles of other friends and write messages on their pages (Techterm.com, 2008). Paxson (2010) opined that Facebook is used to keep users connected with those around them and to be up-to-date in the global news. It is one of the new media networks which use mix of interpersonal and mass communication capabilities that has not existed before now. Facebook also places emphasis on interactivity, mobility and it is used by students in Universities.

Another one is WhatsApp which came second in the list of most popular used social media platforms in Nigeria. WhatsApp Messenger, like some other social media has been around for a while but recent updates and upgrades have improved the functionality of the platform since it's joined the families of social networking. The main purpose behind this application is to replace SMS with a cross platform mobile messenger that works on an Internet data plan. If one has unlimited text, it is still beneficial as it is a convenient way to skip international fees that carriers may charge. It is currently available for iPhone, Android, Windows Phone, Nokia Symbian 60 and S40 and Blackberry. It is common because there is no cost to message friends and family other than the Internet data plan that users already have on their phones. Academic performance gives us a view of how a student has performed in his or her course of studying and giving the period of engagement. It involves the assessment of students' learning progress in task that is required of them (Andreas and Haenlein, 2010).

Next to WhatsApp is Instagram which came third in the list of most popular used social media platforms in Nigeria. The main purpose behind this application is to send pictures, short videos and follow favourite's friends, public figures, News media and actors/actress profiles to like and or comments on their posts with a cross platform mobile messenger that works on an Internet data plan. It is also available for iPhone, Android, Windows Phone, Nokia Symbian 60 and S40 and Blackberry.

In Universities, the cumulative grade point average (CGPA) is used to give a sum total of a student's academic performance. Academic performance is seen as the sum total of a student's ability and performance (Morrell, 1987). The CGPA is used as an index in grading students giving 4.00 or 5.00 as the highest point of score while the lowest 0.00. With so many social networking sites and their attractive adverts on the Internet, students are tempted to abandon their assignments, homework and reading times in preference for chatting online with friends. However, one can identify social media addicts by pointing out at those who spent more time in their phones browsing or networking. The implication is that these students attendance for chatting on social media become habitual and addictive (Apuke, 2016). This group of students neglects other important responsibilities, commitments in favour of Facebook.

According to Kist (2012), these victims spend a lot of time thinking about Facebook or planning how to use it. They feel an urge to use Facebook more and more. It is also observed that they use Facebook in order to forget about their personal problems. They always become restless or troubled if they are prohibited from using Facebook. They also use Facebook, WhatsApp and

Instagram platforms so much that the addiction has had a negative impact on their relationships. This observation has become a threat to students' studies and performance and therefore call for investigation.

Statement of the Problem

The educational system in Nigeria is faced with so many challenges which have certainly brought about a rapid decline in the quality of education. Students' addiction towards social networks, their frequency of exposure to social network and its effect on their academic performance remain a centre stage of discussions in recent times. For instance, Habes M, Alghizzawi M, Khalaf RS, Salloum SA, Ghani MA (2018) revealed that a large number of University students use social media with more focus on Facebook, which in turn negatively affected their academic results. Oye (2012) posited that most of the younger students use social networking sites mainly for socializing activities, rather than for academic purpose. It is a common sight to see a student chatting in sensitive and formal organized places like church, mosque and lecture venues even on the high way. This phenomenon has become very worrisome and the effect of this threat has not been given the attention it deserved. It is therefore of great importance to explore some of the trending issues facing students' academic performance as a result of their use of social media. To what extent has this phenomenon affects students performance is a question that needs to be answered.

Thus, the problem of this study is to find out the Effect of Social Media on Academic Performance among University Mathematics Education Students in Kano State.

Purpose Of the Study

The purpose of this study was to assess the Effect of Social Media on Academic Performance among University Mathematics Education Students in Kano State. The universities are Kano University of Science and Technology Wudil, Yusuf Maitama Sule University Kano, and Bayero University Kano, all in Kano State, Nigeria. The following objectives guided the study:

- i. To examine the effect of the use of Facebook networking platform on University students' academic performance.
- ii. To examine the effect of the use of WhatsApp networking platform on University students' academic performance.
- iii. To examine the effect of the use of Instagram networking platform on University students' academic performance.
- iv. To determine the difference between male and female students' in their use of Facebook, WhatsApp and Instagram networking platforms.

Research Questions:

The following questions were raised for the study and answered:

- i. What is the effect of using Facebook networking platform on University students' academic performance?
- ii. What is the effect of using WhatsApp networking platform on University students' academic performance?
- iii. What is the effect of using Instagram networking platform on University students' academic performance?
- iv. Is there any difference between male and female students' in their use of Facebook WhatsApp and Instagram networking platforms?

Hypotheses:

The following null hypotheses were formulated for testing;

- Ho₁: There is no significant difference between the mean ratings of the effect of use of Facebook networking platform on their academic performance of students.
- Ho₂: There is no significant difference between the mean ratings of the effect of use of WhatsApp networking platform on academic performance of students.
- Ho₃: There is no significant difference between the mean ratings of the effect of use of Instagram networking platform on academic performance of students.
- Ho₄: There is no significant difference between the mean ratings of the male and female students' usage of Facebook, WhatsApp and Instagram networking platforms on their academic performance.

Conceptual Framework

This work is anchored, in parts, around Nada, (2015) model. This model hinges on the evaluation of instructional materials where the evaluator(s) follow the ADDIE phases which are Analysis, Design, Development, Implementation and Evaluation. Briefly, these phases stand for:

- a. Analysis-The researcher here is interested in basically the following: analysis of the learners, prepare an instructional analysis, create instructional goals and analyses learning objectives.
- b. Design-The researcher evolves and focuses on designing assessment for topic, selecting a form of the course as well as coming up with own instructional strategy.
- c. Development-the instructional designer integrate the engineering with the educational settings
- d. Implementation- in this phase plans are put into action. This where the instructors are trained, learners are prepared, learning environment is organized
- e. Evaluation- Here all the phase are assessed to ensure that meets the needs of the learners.

This study emphasized the need to assess whether or not social media platforms affect Mathematics undergraduate students' academic performance in Kano universities. This seems to fit into the "evaluation phase" of the ADDIE model. Wordu H. et al. (2020). In their study of

Influence of social media on university students academic performance in Rivers State, Nigeria. Social media have negative effect on student such as; distracting them from their academic work, they also have benefits and can be used appropriately.

This study therefore sought to find out the effect of social media on university mathematics students' academic performance in Kano state Nigeria

Methodology

This study used a survey research method to investigate the level of utilization of ICT tools. Prior to the work, two research assistants were briefed on how to distribute and collect the questionnaires. The research instrument used has sixteen (16) questions and based on Likert four point scales apart from Section A which contains four (4) questions relating to basic information on the respondents.

Research design

The study adopted the descriptive survey design. In a survey research, information are obtained from the respondents and are used to describe the population. This is a survey research because information was obtained from respondents to describe them with regards to the effect of social media on their academic performance.

Population

To achieve the objective of the study, data were collected from a sample of 350 (calculated using Taro Yemane 1984 formula), drawn from a target population of 1750 students of the department of Computing and Mathematics Education of 2019/2020 academy session of the three public universities in Kano State, Nigeria. The Universities are: Kano University of Science and Technology Wudil, Yusuf Maitama Sule University Kano, and Bayero University Kano, all in Kano State, Nigeria.

Sample

Stratified sampling is a probability sampling technique where the researcher(s) divides the population into strata and thereafter selects the final subjects from strata proportionately.

The sampling technique adopted for this study was stratified random sampling because of the sub group nature of population of the study. So, that the data would not overlap and no member has more chance of being selected than any other member of the population.

Research instrument

The instrument used for data gathering was a structured questionnaire. The questionnaire format is a four point Likert scale categorized into Strongly Agree(SD) = 4- points, Agree(A) = 3-point, Disagree(D) = 2-points and Strongly Disagree(SD) = 1-point. The questionnaire was validated by experts in ICT and statistics.

Validity

The instrument used for data collection was researchers-designed questionnaire and was validated by three (3) mathematics educators, two (2) ICT experts and an English language expert all from Kano state Nigeria.

Reliability

The questionnaire was also subjected for a test of reliability, using test-retest method and the two sets of data yielded a coefficient of 0.83 using Pearson's Product Moment Correlation statistics. The data collected were analyzed, using SPSS version 20.0 for descriptive statistics.

Data Analysis Technique

To interpret the outcome of the study, items with mean score of 2.5, and above indicated agreement while any item with a mean score below 2.50 showed a disagreement.

The Chi Square statistic is commonly used for testing relationships between categorical variables. The null hypothesis of the Chi-Square test is that no relationship exists on the categorical variables in the population; they are independent.

The three hypotheses were tested using the Chi-square (X^2) statistic at 5% Alpha level.

RESULTS

Hypothesis 1: The use of Facebook does not significantly affect students' academic performance. The result in Table 1 shows that the calculated (X^2) value of 265.01 is greater than the critical (X^2) value of 7.81 at 5% level of significance. The null hypothesis which states that the use of Facebook does not significantly affect students' academic performance is hereby rejected. Hence we conclude that the use of Facebook do affects student's academic performance.

Table 1: Chi-square (X^2) Analysis of the Effect of the Use of Facebook on Students' Academic Performance (N = 350).

Variables	N	df	X^2 -Crit.	X^2 -Cal.	Decision
Use of Facebook and students' academic performance	350	57	7.81	265.01	Rejected

P<0.05

Hypothesis 2: The use of WhatsApp does not significantly affect students' academic performance. The result in Table 2 shows that the calculated (X^2) value of 302.17 is greater than the critical (X^2) value of 75.62 at 5% level of significance. Therefore, the null hypothesis which states that the use of WhatsApp does not significantly affect students' academic performance is hereby rejected. Hence the study conclude that the use of WhatsApp do affect students' academic performance.

Table 2: Chi-square (X^2) analysis of the effect of the use of WhatsApp on students' academic Performance (N = 350).

Variables	N	df	X^2 -Crit.	X^2 -Cal.	Decision
Use of WhatsApp and students' academic performance	350	57	75.62	302.17	Rejected

P<0.05

Hypothesis 3: The use of Instagram does not significantly affect students' academic performance. The result in Table 2 shows that the calculated (X^2) value of 413.28 is greater than the critical (X^2) value of 86.26 at 5% level of significance. Therefore, the null hypothesis which states that the use of Instagram does not significantly affect students' academic performance is hereby rejected. Hence the study conclude that the use of Instagram do affect students' academic performance.

Table 3: Chi-square (X^2) analysis of the effect of the use of Instagram on students' academic Performance (N = 350).

Variables	N	df	X^2 -Crit.	X^2 -Cal.	Decision
Use of Instagram and students' academic performance	350	57	86.26	413.28	Rejected

P<0.05

Hypothesis 4: There is no significant difference between male and female students' usage of Facebook, WhatsApp and Instagram. The result in Table 3 shows that the calculated (X^2) value of 288.29 is greater than the critical (X^2) value of 40.11 at 5% level of significance. The null hypothesis which states that there is no significant difference between male and female students' usage of Facebook, WhatsApp and Instagram is hereby rejected. Hence we conclude that the use of Facebook, WhatsApp and Instagram do affects student's academic performance.

Table 4: Chi-square (X^2) analysis of male and female students' usage of Facebook, WhatsApp and Instagram (N = 350).

Variables	N	df	X^2 -Crit.	X^2 -Cal.	Decision
Male and female students Usage of Facebook, WhatsApp and Instagram.	350	57	40.11	288.29	Rejected

P<0.05

DISCUSSION

The result of research question 1 which was analyzed and presented in Table 1 shows the extent to which the used of Facebook affects academic performance of students in the Universities in Kano State. The result shows that the used of Facebook, WhatsApp and Instagram does affects students academic performance. Information provided on the questionnaire reveals that social media enable students participate in academic fora, disseminate and acquire knowledge pertaining to their studies.

Students also use Facebook in various ways to accomplish a wide range of social responsibilities and just for fun too. Other students see it as a distraction.

Yeboah and Ewur (2014) collaborate this in their claim that the use of WhatsApp increases the provisions and access to learning materials, anywhere, anytime and in various formats, and also has the potential to enhance students' capabilities.

The result of research in Table 3 shows that difference exists between male and female students' usage of Facebook, WhatsApp and Instagram. Information in the analysis of the questionnaire show that female students tend to use social networks to foster social connections more, while the males would likely use social networks for non-academic purposes, and counseling which enables students to use these sites beneficially as it unveils their reality to them. This is in line with the findings of (Lin and Subrahmanyam, 2007) which noted that students have shown that boys have been online more than girls in previous decades because of earlier forms of technology such as video or computer games.

Further analysis on the testing of the hypotheses showed that the use of Facebook can affects academic performance of students in Kano State, and the use of WhatsApp can also affects students' academic performance which means that there is a significant difference between male and female students' usage of Facebook, WhatsApp and Instagram.

CONCLUSION

The result from the findings of this study showed that, though Social media have negative effect on student such as; distracting them from their academic work, they also have benefits and can be used appropriately. For instance, students can form online communities in order to plan for a project, have group discussions about class material, or use the Social networking sites (SNS) as a way to keep in contact when a student who has been absent needs to be updated on current academic information.

RECOMMENDATIONS

In the light of the findings of this study, the following recommendations are made:

1. School counselors should be able to educate students on the negative and positive effect of Social media on their academic performance.
2. Through counseling intervention programs, students should be able to understand themselves better and how to manage their study time and prevent distractions from social media.
3. Social Networking Sites should be expanded and new pages created to enhance academic activities and avoid setbacks in the students' academic performance.
4. The use of social media and study time management should be integrated into general studies courses taught in universities.

5. Students' groups and unions should organize an awareness campaigns on study time management in campuses
6. Time management topics should be written in students handbooks.

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