



SOCIAL NETWORKING AND STUDENTS' ACADEMIC ACHIEVEMENTS IN MATHEMATICS IN SENIOR SECONDARY SCHOOLS, IKOM EDUCATION ZONE, CROSS RIVER STATE, NIGERIA

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ABSTRACT

This study examined social Networking and Students' Academic achievement in Senior Secondary Schools in Ikom Education Zone, Cross River State, Nigeria. The Independence variables examine were: use of Facebook and YouTube while the dependent variable was students' academic achievement in Mathematics. To achieve the purpose of the study, two research questions and two hypotheses were formulated to guide the study. Literature was reviewed based on the variables. The research design adopted was survey research design. One hundred and sixty-five (165) SS II students who offered Mathematics in public secondary schools were randomly selected for the study. The instruments used for data collection was a 20 – items questionnaire titled "Social Networking and Students' Academic Achievement Questionnaire (SNASAAQ), and achievement test in Mathematics constructed by the researchers, Independent t-test was used as statistical tool for data analysis. Each of the hypotheses was tested at .05 level of significance. The findings of the study revealed that the use of Facebook and YouTube significantly influenced students' academic achievement by SS II students in Mathematics. Based on the findings, it was recommended among other things that government/school proprietors should provide in-service training for Mathematics teachers to enhance achievement especially on use of social networking.

KEYWORD: Networking, Social, Student, Achievement and Mathematics

INTRODUCTION

Mathematics as a subject seems to be a mother and a master of other subjects. It contains all rudiments needed and build solid grounds of reasoning for inference and discussion.

It is on this note that Mathematics become an important part of reforming our societal views and dispelling some common misconceptions about the subject. Ekwueme (2000) describe Mathematics as a subject that is involved in every

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facet of life, through the existence of humans here on earth.

There are several thought about mathematics in our society that discourages people from being engaged in it, and enthusiastic about it. This is why Ekwueme (2013) also went further to describe Mathematics as the study of the measurement, relationship, and property of quantities and sets. In the author's opinion Mathematics is all about patterns and structures. Teaching and learning processes in the 21st century have been transformed by information and communication technology. The way people interact and learn has changed remarkably from the conventional way to more innovative way. One of the numerous changes brought by this technology is social networking. Social networking deals with social interaction; where people connect and share with friends, ideas, feelings and acts. They also share their problems and find solutions to them. This trend has become more popular with the development of phones and social network. The young people from different races, ages, nationalities, backgrounds and education mostly, have been attracted to online social networking. They use them to make new friends, keep in touch with old friends, communicate and exchange information. Social networking sites are highly becoming instructional tools where teachers meet with their students to foster interactions; conveyance of course materials, time-tables, assignments, items related to students. Facebook, Twitter, Instagram, Yahoo messenger, WhatsApp, YouTube, Pinterest, Googlet: these platforms are widely common among people of the younger generation especially students.

In this part of the world, particularly in the Ikom Education Zone of Cross River State, students network through internet-based applications common of phones Facebook, Twitter, Yahoo messenger, WhatsApp, YouTube. Students in the area belong to at least one of these social networking platforms (Ndaku, 2013). This trend has evoked some concerns from parents, guardians and teachers about the negative uses and abuses of social networking sites, and their influences and the academic achievement of their wards (Oskouei, 2010). Numerous arguments on whether students' involvement in social networking affects their grade points are on. Oskouei (2010) on the other hand found that

students' engagement in social networking increases their academic achievement because it increase their learning in contents and context, and requested parents and teacher to streamline and encourage students' participation on social networking. Should these students be encouraged in social networking platforms? And to what extend does this affect their academic achievement? Are the core trust of this work.

Facebook and students' academic achievement in Mathematics

Facebook is an online social networking platform put together by Harvard students: Mark Zuckerberg, Dustin Moskovitz and Chris Hughes. Facebook which took its name from the spoken name given to students at the start of academic year by University Administration in US with the sole aim of helping them get to know each other better. Facebook was launch in February 24, 2004 (Haq & Chand, 2012). With the help of Facebook, users create personal profiles, add other users as friends, send and receive messages, post information and join common interest groups. Over the years, Facebook had help users share ideas and pictures with friends and families, kept in touch with classmates and colleagues, create new relationships. According to Ellison, Steinfield and Lamperi (2007), Facebook has become popular, especially among students, and is extensively used by colleges, and ranked as the most popular social network platform, and seventh most popular sites on the world wide web in terms of number of pages viewed. As at 2011, Facebook offered services in more than 75 languages to over 850 million active users, and 50 percent of them log in daily, and spend over 700 billion minutes per months (Haq & Chand, 2012).

Based on this perception, empirical studies have been conducted to examine the effect of Facebook usage on students' academic achievement. For instance Kereke and Lucky (2014), conducted a study on the impact of social media on the academic achievement of University students in Nigeria. The causal comparative research design was adopted. The four tertiary institution used for the study were: Nnamdi Azikiwae University, Awka, Delta State University, Abraka, Madonna University, Okija campus and Anambra State University. Findings showed that social media usage among students was not for academic purposes. They also found out that the following amount were often used by students-

Facebook 40(40.81%), WhatsApp 20(20.40%), 2go/Skype 14(14.28%) and while Myspace, Twitter, badoo, Blogs/web scholars, Google+/social marketing were not often used by undergraduates in the four university for their study. Asemah, Okpanichi and Edegoh (2013), as well examined the influence of social media on the academic achievement of undergraduate students of Kogi State University. The rationale behind the study was to find out whether the exposure of the students to social media had effect on their academic achievement. The instrument of data collection for the study was the questionnaire. A purposive sampling was used to select mass communication undergraduate students, while the simple random sampling was used to select 282. The findings showed that undergraduate students of Kogi State University, Anyiba, Nigeria, had access to Facebook and WhatsApp and that their exposure to social media was not very great. Findings also showed that Facebook was most used of social media by undergraduate students of Kogi State University. Based on the findings, the paper concluded that exposure to social media by the undergraduate students of Kogi State University had negative effect on their academic achievement. The study recommended that the students should pay minimal attention to social media and focus more on their academic activities. Kabre and Brown (2011) examined the impact of Facebook usage on the academic achievement and the quality of college students at a historically black University in the Southern part of United State. Data for this study were collected using a well-structured questionnaire. Data collected were analyzed using one-way analysis of variance. The result of the analysis showed that the use of Facebook by students had not enhanced their academic achievement. Rouis (2012) examined the impact of Facebook usage on Tunisian students' achievements. The sample was 161 Tunisian students. The study employed a descriptive statistical method as its method of data analysis. The result of the study showed that Facebook usage does not affect significantly students' academic achievement and their satisfaction with the family, whereas it decreases their actual satisfaction with friends. Haq and Chand (2012) investigated the impact of Facebook usage on academic achievement

among University students. A self-administered questionnaire was used for data collection from a sample of 384 students. The data collected were analyzed using Chi-square. The study reveals that 87.5% of the students had account on the Facebook and no gender differences found. Male and female on the average spend equal time on internet. The result showed that Facebook use in general, had adversely affected the academic achievement of students, but this adverse effect was observed greater for male students. The social interaction with existing friends was found to be the most common use of Facebook. Thuseethan and Kuhanesan (2014) examined the use of Facebook among Sri Lankan University students and the influence it had on their academic achievement. Information for this study was gathered through a web based questionnaire survey on 288 students. The analysis of result was done using descriptive statistics. The result of the study showed the use of Facebook led to low examination grades by students. Specially, the results showed that most of the heavy or frequent users received low grades, compared to light users. Negussie and Ketema (2014) examined the relationship between Facebook practice and academic achievement of students. The study carried out a cross-sectional survey from March 2012 to March 2013 in Jimma University and 490 postgraduate students participated in this research. The data were collected using a pre-test structured self-administered questionnaire. The result was analyzed using descriptive statistics followed correlation analysis. The result indicated that there was no significant relationship between usage time and frequency of login with students GPA. On sources of logging into Facebook, the result showed that there was a negatively moderate and significant relationship between mobile to visit Facebook and student GPA.

YouTube and Student's Academic achievement in Mathematics

YouTube has brought great revolution to the field of education. Education is closely related to YouTube. The help of YouTube through video sharing in social media network has developed and improved the quality of education. Through YouTube, students of a definite country get opportunity to learn anything that is related to education of other countries.

Barker (2009) in his work pointed the use of video in instruction to improve presentations, since more senses are related. The researcher further encouraged facilitators to add learning outcomes to their video, to help to grasp student attention, focus students concentration, generate class interest, capture students' imagination, improve students' attitude towards content and leaning thereby making learning more meaningful. More so, the use of YouTube videos has been found to capture students' attention, make learning more interesting and enhance the overall learning process. Well-selected YouTube videos have been found to help students engage more deeply in subject matter, and help in information retention. YouTube has also been shown to expand access to information, promote critical thinking, foster active flexible learning environment support analytical discourse and multiple approaches to reasoning and provides students with memory cues so as to support conceptualization through visualization and as such broaden students' understanding.

Adeoye and Ogunbanwo (2019) conducted a study on the Perceive influence of the Use of YouTube on the Achievement of Undergraduates in Phonetics and Phonology in Babcock University. The study was carried out among Babcock University students in the Departments of Education and Languages and Literary Studies. The population for the study included all 200, 300, and 400 level students in those departments; method of data collection was achieved through questionnaire design by the researchers; the sample size for the study was 283 students: 136 students from English Studies and 147 students from English Education. Data was analyzed using regression analysis and independent t-test. The result of the study was that majority of Babcock University had access to internet facilities, knowledge on how to use them and they also used YouTube to enhance their learning of Phonetics and Phonology. The study recommended that students should consult YouTube before attending classes, not after. The researcher also further recommended that teachers should encourage their students to use YouTube more often to increase their academic achievement.

Edache-Abah and Mumuni (2019) in their study on the Effect of YouTube on Achievement of Secondary School Students in Mathematics Concepts in Ikwerre Local Government Area of Rivers State. The population of the study was

2,221 SS2 Mathematics students in 13 secondary schools in Ikwerre Local Government Area of River State. A sample size of 109 students from two schools using purposive sampling technique were used. Instrument used was Mathematics achievement Test (BPT) which was validated by science education experts, a reliability coefficient of $r=0.95$ was calculated using Pearson's Product Moment Correlation Formula. The finding of the study showed that YouTube improves students' achievement; the finding also showed that the control group also performed better, there was no significant difference in the mean score of both male and female students, the study concluded that despite urge and need to blend traditional classroom teaching/learning with some online YouTube contents, students could still perform better when taught concepts in Mathematics using the enhanced conventional teaching method. It was recommended that educators should blend their teaching of curriculum content using YouTube.

STATEMENT OF PROBLEM

Online social networking platforms have become increasingly popular among students and have caused a shift in the way they interact, learn, connect and share with friends. At a time when academic achievement of students in secondary schools was disturbingly poor. There are great concerns that social networking may be negatively influencing the achievement of students. Also, students' engagement and involvement in social networking have evoked concerns from parents, guardians and teachers about its effect on their academic achievement (Ndaku, 2013). Students actively spend unusually long part of their study hours on social networks instead of investing such in their books. Many parents and teachers are of the opinion that students' addictiveness to social networking is distractive and may be adversely affecting their achievement

The main purpose of the study was to examine social networking and students' academic achievement in Mathematic in senior secondary schools students (SSII) in Ikom Education Zone, Cross River. Specifically, the study sought to examine the following;

1. Influence of Facebook on students' academic achievement in Mathematics.
2. Influence of Youtube on students' academic achievement in Mathematics.

Research questions

The following research questions were proposed to guide the study;

1. To what extent does Facebook influence students' academic achievement in Mathematics in Ikom Education Zone of Cross River State?
2. How does Youtube influence students' academic achievement in Mathematics in Ikom Education Zone of Cross River State?

Statement of hypotheses

1. There is no significant influence of Facebook on students' academic achievement in Mathematics in Ikom Education Zone of Cross River State.
2. There is no significant influence of Youtube on students' academic achievement in Mathematics in Ikom Education Zone of Cross River State.

METHODOLOGY

The survey design was adopted for the study. the survey design is a form of descriptive design which is aimed at collecting samples from the population in order to examine the dependent and independent variable. The survey research design was considered appropriate for this study because it helps the researcher to make inference from the

study population. The population of this study comprised all SSII students in Public secondary Schools in Ikom Education Zone, Cross River State. The sampling technique adopted was the simple random sampling technique. Simple random sampling was applied to select an almost equal number of urban and rural schools; this was done to control certain extraneous variables that may affect the outcome of the study. The technique employed by the researcher was the hat and draw (balloting) method. The researcher wrote the number of public secondary schools on the slip of papers, roll each slip into paper-ball, mixed those paper balls in a container (hat) and blindly drew the required number of schools in the same manner, the required samples were randomly drawn from the study.

The sample of the study consisted of 165 students randomly selected from four (4) sampled public secondary schools in Ikom Education Zone, using Yamane Formula and dividing it by the four randomly selected public schools. The students were selected without biased. Equal opportunities were also given to both sexes to be captured in the same population, selected from the Senior Secondary II classes (A-D). A breakdown of the figure showed that forty (40) student, were randomly selected from three of the sample schools and 45 students from one school as presented in Table one (1)

Sampled school

S/N	Name of Selected Secondary School	Sex		Sample
		MALE	FEMALE	
1	Government secondary school, Ugep	18	22	40
2	Government secondary school, Ikom	20	20	40
3	Government secondary school, Obubra	21	24	45
4	Government secondary school, Etung	16	24	40
Total		75	90	165

Instrumentation

The two instruments were used first: a 20-structured questionnaire tagged “Social Networking and Students’ Academic Achievement Questionnaire (SNASAAQ)” was designed by the researcher. Secondly, a 20 – item Mathematics Achievement Test (MAT) was designed and administered to determine students’ academic achievement. The MAT was multiple choice test questions with four response options (A - D). Respondents were expected to choose the correct answer from the different options given. A table of specification shown in Table 2 was constructed for items to guide the selection and adequate cover

the contents of educational objectives as specified by (Bloom (1956).

The questionnaire (SNASAAQ) was divided into two parts, namely: A and B; part A was designed to collect respondents personal data such as name of school/address, sex, age, class etc. Part B consisted of 20- item SNASAAQ on a four point scale, designed to measure personal difference variables of social networking and students’ academic achievement. Each item required the respondent to indicate the frequency of his /her opinion by ticking the item in the boxes provided. A four (4) points scale with four columns of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) was structure for respondents. to

Table of Specification for MAT

Content (100%)	Knowledge (40%)	Comprehension (35%)	Application (25%)	Total (100%)
(20%)	(2) 1, 4	(2) 14, 13	(1) 18	(5)
(30%)	(2) 7, 3	(2) 2, 8	(2) 5,9	(6)
(50%)	(3) 20, 19, 15	(3) 6, 10, 11	(3) 12, 16, 17	(9)
Total (100%)	7	7	6	20

Reliability of the Instrument

To determine the reliability of the instruments a trial test was conducted using a 20- structured questionnaire tagged, “Social Networking and Students’ Academic Achievement Questionnaire (SNASAAQ)”.The researcher administered the instrument to the selected subjects after which the administration was repeated after two weeks interval. The scores obtained from the first administration was correlated with the scores

obtained from the second administration using Kuder Richardson. This shows that there is no significant influence of Facebook on students’ academic achievement in Mathematics. Independent t- test analysis was employed to test data collected in respect to this hypothesis. This was because use of Facebook was measured categorically. The hypothesis was tested at 0.05 level of significant.

Independent t-test analysis of the influence of the use of Facebook on students’ academic achievement

Use of Facebook	N	(\bar{x})	SD	t-value
Often used	85	22.36	2.12	11.15
Not often used	80	18.86	1.91	

Significant at 0.05 level; df = 163; critical t-value of 1.960

The summary of results presented in Table 4 showed that the calculated t-value of 11.15 was greater than the tabulated t-value of 1.960 at 0.05 level of significance with 2 and 163 degrees of freedom. On this note, the null hypothesis was rejected, while the alternate hypothesis was upheld. This mean that, Facebook significantly

influenced students' academic achievement in Ikom Education Zone of Cross River State.

There is no significant influence of YouTube on students' academic achievement in Mathematics. Independent t- test analysis was employed to test data collected in respect to this hypothesis. This was because use of YouTube was measured categorically. The hypothesis was tested at 0.05 level of significant. The summary of result was as presented in table 1.

Independent t-test analysis of use of YouTube on students' academic achievement

Use of YouTube	N	(\bar{x})	SD	t-value
Used	85	21.62	2.02	
Non used	80	18.40	1.91	10.53

Significant at 0.05 level; D/F = 163; critical t-value of 1.960

The summary of results presented in Table V showed that the calculated t-value of 10.53 was greater than the tabulated t-value of 1.960 at 0.05 level of significance with 2 and 163 degrees of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was upheld. This mean that, there was a significant influence of the use of YouTube on students' academic achievement in Mathematics.

DISCUSSION OF FINDINGS

The first hypothesis stated that there was no significant influence of the use of Facebook on students' academic achievement in Mathematics. This null hypothesis was rejected because the calculated t-value was found to be greater than the critical t- or table value. The implication of this result was that there was a significant influence of the use of Facebook on students' academic achievement in Mathematics. The findings were in agreement with the earlier findings of Negussie and Ketema (2014) who examined the relationship between Facebook practices and academic achievement of students. The study carried out a cross-sectional survey from March 2012 to March 2013 in Jimma University and 490 postgraduate students participated in the research. Data were collected using a pre-tested structured self-administered questionnaire. The result was analyzed using descriptive statistics followed by correlation analysis.

The result indicated that there was no significant relationship between usage time, frequency of login to Facebook and students GPA. On sources of logging into Facebook, the result showed that there was a negatively moderate and significant relationship between mobility to visit Facebook and student GPA. In the same vein, Haq and Chand (2012) investigated the impact of Facebook usage on academic achievement among University students. A self-administered questionnaire was used for collecting data from a sample of 384 students. Data collected were analyzed using Chi-square. The study reveals that 87.5% of the students had account on the Facebook and no gender differences were found. Male and female on the average spent equal time on internet. The result showed that Facebook use in general, had adversely affected the academic achievement of students, but this adverse effect was observed to be greater for male students. The second hypothesis stated that there was no significant influence of the use of YouTube on students' academic achievement in Mathematics. This null hypothesis was however rejected on the ground that the calculated t-values obtained from the analysis of data were statistically greater than the critical t-value. The implication of this result was that there was a significant influence of the use of YouTube on students' academic achievement in Mathematics.

The finding of this hypothesis was in line with the earlier position of Edache-Abah and Mumuni (2019), who in their study investigated the Effect of YouTube on Achievement of Secondary School Students in Mathematics Concepts in Ikwerre Local Government Area of Rivers State. The population of the study was 2,221 SS2 Mathematics students in 13 secondary schools in Ikwerre Local Government Area of River State. A sample size of 109 students from two schools using purposive sampling technique was used. Instrument used was Mathematics Achievement Test (BPT) which was validated by science education experts, a reliability coefficient of $r=0.95$ was calculated using Pearson's Product Moment Correlation Formula. The finding of the study showed that YouTube improved students' achievement; the finding also showed that the control group also performed better; there was no significant difference in the mean score of both male and female students, the study concluded that despite urge and need to blend traditional classroom teaching/learning with some online YouTube contents, students could still perform better when taught concepts in Mathematics using enhanced conventional teaching method.

Also, in the same vein, Adeoye and Ogunbanwo (2019) conducted a study on Perceived influence of the Use of YouTube on the Achievement of Undergraduates in Phonetics and Phonology in Babcock University; they carried out this among Babcock University students in the departments of Education Languages and Literary Studies, using a population all 200, 300, and 400 level students. Method of data collection involved a questionnaire design by the researchers; the sample size for the study was 283 students: 136 students from English Studies and 147 students from English Education. Data were analyzed using regression analysis and independent t-test.

The result of the study was that majority of Babcock University had access to internet facilities, knowledge on how to use them and they also used YouTube to enhance their learning of Phonetics and Phonology. The study recommended that teachers should encourage their students to use YouTube more often to increase their academic achievement.

CONCLUSION

The findings had revealed the fact that the use of social networking such as Facebook and YouTube aroused the level of students' interest when taught concepts in Mathematics. Despite the urge to augment teaching/learning of concepts in Mathematics with some social networking tools such as Facebook and YouTube to arouse students' interest, learning of concepts could also be very interesting when teachers use the conventional instructional methods that get students involved and teachers to become efficient in delivering their lessons.

Based on the findings conclusions were made:

1. Use of Facebook significantly influenced students' academic achievement in Mathematics in the study area.
2. Use of YouTube on students' academic achievement in Mathematics in the study area.

RECOMMENDATIONS

In line with the findings, the following recommendations were made:

1. School proprietors and administrators should provide ICT facilities and social networking in schools to enhance teaching and learning.
2. Government/ school proprietors should provide in- service training for Mathematics teachers to enhance their teaching achievement especially on use of social networking.
3. School administrators should give room to their staff to attend seminar, workshop and conferences in order to learn how to use social networking and improve teaching using e-learning.
4. Teachers and students should be adequately trained in the use of educational technology for effective teaching and better understanding of concepts.

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