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Internet addiction and interest as predictors of mathematics academic achievement among secondary school students in Obio-Akpor local Government area of Rivers State Nigeria

Onukwufor Jonathan N[1], Amadioha Ambrose[2]
[1-2] Department of Educational Psychology Guidance and Counselling, University of Port Harcourt, Nigeria

Abstract
This study investigated internet addiction and interest in mathematics as predictors of academic achievement in mathematics among secondary school students in Obio-Akpor Local Government Area (LGA) of Rivers State. The population of the study comprised all the senior secondary school class two (SSS 2) students. Sample for the study comprised 180 students drawn through purposive sampling technique from four secondary schools in the L.G.A. Research design adopted for the study is correlational research design. Two instruments were used for the study. They are Internet Addiction Test (IAT) developed by Young (1998) [2], which has 20 items. The other instrument used was the mathematics interest inventory developed by the researchers and it is made up of 12 items. Academic achievement in mathematics was measured with the students SSS 2 mathematics scores which were converted to T standard scores. The reliability co-efficient for both the IAT and MII were 0.78 and 0.81. Multiple and linear regression were used to answer the research questions, while ANOVA associated with multiple regression and T-test associated with linear regression were used to test the hypotheses. Two research questions and two hypotheses were answered and tested in the study respectively. The findings of the study were as follows: there was no significant joint prediction of internet addiction, interest in mathematics on students academic achievement in mathematics. There was significant independent prediction of interest in mathematics on students academic achievement in mathematics. There was no significant independent prediction of internet addiction on students academic achievement in mathematics. It was recommended among others that: teachers should help secondary school students to develop interest in mathematics since this significantly predicts students academic achievement in mathematics.

Keywords: internet addiction, mathematics interest, academic achievement internet, intrinsic motivation

Introduction

In Nigerian Secondary Schools, there are essentially two compulsory subjects and they are English Language and Mathematic. The criterion variable in this study is students mathematics academic achievement. In order to gain admission to study any course in Nigerian universalities, a pass in mathematics is mandatory for any candidate to be admitted to study any course in the sciences, social sciences, management sciences, agriculture, engineering etc; such a person must have credit in mathematics. Apparently, mathematics as a discipline is the foundation for scientific and technological development of any country. According to Okafor-Okwuchukwu (2017) [13], mathematics is the foundation for the economic and technological development of any nation and that without mathematics, there cannot be any modern developed society.

Despite the indispensable nation of mathematics in daily human transactions and academic endeavour, yet student's performance in the subject continues to be unimpressive and disappointing. For instance, in 2015 only 381.68% of the students who sat for Senior Secondary Certificate Examination (SSCE) obtained credits in five subjects and above including English Language and mathematics (WAEC 2015). Also in 2014 according to Eguridu (2014) [16]. Only 31.28% obtained five credits and above including English Language and Mathematics. The performance of students for the two highlighted years are clear indications of students poor academic achievement in mathematics. The two years performance showed that less than 40% of the students who wrote 2014 and 2015 SSCE examinations obtained credit in mathematics. Thus, the academic achievement of majority of the students who wrote SSCE is below average.

According to Iwundu (2001) [11] academic achievement is the degree or level of success attained at the end of an academic endeavour. Academic achievement is the score or grade which a candidate or student obtains from any examination.

Internet is a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols (google.com). Apparent in this definition is that internet is a global computer facilitated method of information dissemination among individuals, organizations and government agencies. Internet therefore refers to the use of computer interconnectivity to obtain or send information to any part of the world. It is excessive use of internet that has been construed as internet addiction.

It was in 1995 that Ivan Goldenberg proposed the concept of internet addiction for the first time (Arbabisarjou, Gorgich, Barfroshan and Ghoreishinia 2016) [3]. Young cited in Weiten, Lloyd, Dunn and Hammer (2009) [14] described internet addiction as a syndrome which consists of spending an inordinate amount of time on the internet and inability to control online use. Cao and Su cited in Arbabisarjou *et al* (2016) [3] defined internet addiction as the inability to control internet usage, which ultimately leads to psychological, social, educational and job problems in people's lives. According to Terwase (2014) [19], internet addiction was a coinage of Goldberg to describe the

undesirable consequences resulting from excessive internet usage on individual lives. Terwase and Ibaishwa (2014) [19] have identified the negative consequences to include: declining school results or even dropout of school, increased family problems, low-self-esteem, anxiety and depression are among the psychological problems associated with internet addition. Sleep deprivation and inadequate physical activities cause physical health problems to the internet addicts.

In terms of the diagnosis of internet addiction, Young cited in Arbabisarjou, Gorgich, Barfroshan and Ghoneishinia (2016) [3] focused on three major disposing factors which comprise individual factors such as low-self esteem, depression and lack of communication skills, the psychosocial factors include: poor family support and poor communication between family members and internet factors which include long term use of the internet and easy access to the internet. Arbabisarjou *et al* (2016) [3] stated that most internet users were adolescents. Davis cited in Arbabishisarjour (2016) stated that people who have excessive use of internet face educational, career and interpersonal problems. According to Davis, Flett and Besser (2002) [18], 78.5% of internet users are college students. Some researchers have found internet addiction to be prevalent in some countries as follows: U.S.A. 4% among high school students (Liv, Desai Krishnan-Sarin, Caualio and Potenza (2011) [20]. In China adolescent's internet prevalence rate was 8% (Cao, Sun, Wan, Hao, and Tao 2011) [22], while in South Korea the prevalence was found to be 10.7% (Park, Kim and Cho 2006) [12]. Alabi (2013) [24] found internet addiction level of 1.6% among university undergraduates in private universities Nigeria. The reason adduced for low rate of internet addiction in Nigeria was due to low level of internet access in Nigeria.

In a study conducted in Iran by Arbabisarjou *et al* (2016) [3], internet addiction prevalence rate was found to be 12.5%. a negative correlation was found between internet addiction and academic achievement result. The study showed a significant relationship between internet addiction and academic achievement with the students gender.

Interest is the act of liking an object or a phenomenon. According to Ormrod (2008) [8] interest is a form of intrinsic motivation. Thus when we say that a student has interest in a particular subject or event, we mean that he finds the subject or event fascinating. It has been observed that learners who are interested in a particular topic or subject devote more attention to it and become more cognitively engaged in it. (McDaniel Waddiff, Finsab and Bourg 2000; [9] Hidi and Renniger 2006) [10]. According to Nwankwo (2007:178) [7] generally, individuals learn better when they have interest in what is to be learned. On the other hand, lack of interest in any kind of learning may affect it adversely. This means that in order for learning to occur in an individual, such a learner must show interest in what is being taught.

Statement of Problem

The persistent low academic performance of secondary school students in mathematics has continued to draw attention of researchers to the problem. If a student devotes much of his time towards internet activities, such a student may not have much time to devote towards solving mathematical problems both as school home work and private home studies. Thus, a situation where a student does not have time to do mathematical exercises at home due to excessive internet activities, such a student is unlikely to perform well in mathematics examinations. Similarly, if a student does not have interest in a subject, such a student may not pay attention to the teacher when he is teaching and this may culminate in low academic achievement, especially in a subject like mathematics which requires students maximal attention when the teacher is teaching. The problem of this study therefore is to ascertain the extent internet addiction and interest predict student's academic achievement in mathematics in Obio-Akpor Local Government Area of Rivers State Nigeria.

Research Questions

1. To what extent do internet addiction and interest jointly predict students' academic achievement in mathematics in Obio-Akpor local Government Area of Rivers State?
2. To what extent do internet addiction and interest independently predict students' academic achievement in Mathematics in Obio-Akpor Local Government Area of Rivers State?

Hypotheses

1. Internet addiction and interest do not jointly significantly predict students academic achievement in mathematics in Obio-Akpor local Government Area of Rivers State.
2. Internet addiction and interest do not independently significantly predict secondary school students academic achievement in mathematics in Obio-Akpor Local Government Area of Rivers State.

Methodology

The research design adopted for the study is correlational research design. Population of the study comprised all the senior secondary school class two students (SSS 2) in Obio-Akpor local Government Area of Rivers State. Sample for the study, comprised 180 students drawn through purposive sampling from four secondary school in the L.G.A. Forty-five students were drawn from each school. Two instruments were used for the study. They are Internet Addiction Test (IAT) developed by Young (1998) [2], which has 20 items. The next instrument was the mathematics interest inventory developed by the researchers and it is made up of 12 items. Academic achievement in mathematics which is the criterion variable was measured by the students SS 2 2018 annual mathematics scores which was converted to *T*. standard scores. The reliability co-efficient on both the IAT and the MII were 78 and 81 respectively. Multiple and linear regression were used to answer the research questions, while Anova associated with multiple regression and T-test associated with linear regression were used to test the hypotheses. Two research questions were answered; while two null hypotheses were tested. In scoring the instruments the internet addiction inventory was scored as follows: Not at all, = 1; Rarely = 2; occasionally = 3, often = 4, while always = 5. Thus the minimum score for the instrument is 20, while the maximum score is 100. The mathematics interest inventory was scored as follows: Strongly agree (SA) = 4; Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1.

Research Question One

To what extent do internet addiction and interest jointly predict students' academic achievement in mathematics in Obio-Akpor L.G. of Rivers State?

Table la: Multiple regression on the joint prediction of internet addiction and interest on students' academic achievement in mathematics

Model	R	R Square	Adjusted R Square
1	175a	.031	.020

Table la showed that the regression coefficient and regression squared values are 0.175 and 0.031. The coefficient of determination (R2) is 3.1% (100 x 0.031). This implies that internet addiction and interest jointly predict students' academic achievement in mathematics in Obio-Akpor L.G. of Rivers State by 3.1%.

Hypothesis One

Internet addiction and interest do not jointly significantly predict students' academic achievement in mathematics in Obio-Akpor L.G. of Rivers State

Table 1b: ANOVA associated with multiple regression on the joint prediction of internet addiction and interest on students' academic achievement in mathematics

Model	Sum of squats	df	Mean square	F	Sig.
1 Regression	904.714	2	452.357	2.792	.064a
Residual	28672.236	177	161.990		
Total	29576.950	179			

a. Predictors: (Constant), maths interest, internet addiction
b. Dependent Variable: maths score

Table lb revealed that the degrees of freedom are 2 and 177 with F value of 2.792 that is not statistically significant when subjected to an alpha level of 0.05. This is because the calculated probability value of 0.064 was greater than the critical probability value of 0.05 which implies no statistical significance. By implication, addiction and interest do not jointly significantly predict students' academic achievement in mathematics in Obio-Akpor L.G. of Rivers State.

Research Question Two

To what extent do internet addiction and interest independently predict secondary school students' academic achievement in mathematics in Obio-Akpor L.G.A of Rivers State?

Table 2a: linear regression analysis of the independent prediction of internet addiction and interest on secondary school students' academic achievement in mathematics

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
1 (Constant)	29.975	6.022	
Internet addiction	.037	.065	.043
Maths Interest	.304	.129	.179

Data on table 2a revealed that the beta values of internet addiction and maths interest are 0.043 and 0.179 respectively. The result that internet addiction and maths interest predicted secondary schools students' academic achievement by 4.3% and 17.9% respectively. It therefore implies that the extent to which maths interest predicted secondary schools students' academic achievement is greater than internet addiction.

Hypothesis Two

Internet addiction and interest do not significantly predict secondary school students' academic achievement in mathematics in Obio-Akpor L.G.A of Rivers State.

Table 2b: t-test associated with simple regression on the independent prediction of internet addiction and interest on students' academic achievement in mathematics

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	29.975	6.022		4.978	.000
Internet addiction	.037	.065	.043	.563	.574
Maths Interest	.304	.129	.179	2.362	.019

a. Dependent Variable: maths score

The t-test values associated with simple regression for internet addiction and maths interest were 0.563 and 2.362. The calculated probability value for internet addiction is above the critical probability value of 0.05 while that of maths interest was below the critical value. This implied that maths interest is a significant predictor of secondary school students' academic achievement in mathematics in ObioAkpor L.G.A of Rivers State whereas internet addictions was not.

Summary of Finding

1. Internet addiction and interest do not jointly significantly predict students academic achievement in mathematics.
2. Mathematic interest is a significant predictor of secondary school students academic achievement in mathematics.

Discussion

Internet Addiction Interest Joint Prediction of Students Academic Achievement (Joint Predication). The result obtained from table 1a showed that internet addiction and interest jointly predict students academic achievement in mathematics in Obio-Akpor Local Government Area of Rivers State by 3.1%. However, the statistical analyses of ANOVA association with multiple regressions which was used to test the hypotheses revealed that internet addiction and interest do not significantly predict secondary school students academic achievement in mathematics. This finding is quite unexpected by the researchers. The finding is inconsistent with the result of a study conducted in Iran by Arbabisarjou *et al* (2016) in which they found a negative correlation between internet addiction and academic achievement. The study is in agreement with Iyitoglu and Celikoz (2017) [4], who found no relationship between performance in mathematics and internet user. In a study conducted in Germany by Heinze, Reiss, Augsburg (2005) [6] captioned Mathematics Achievement and Interest in Mathematics from a differential perspective, it was found that interest in mathematics could be regarded as a predictor for mathematics achievement. This is consistent with findings of present study. Internet addiction and interest independent significantly predict internet addiction of students academic achievement in mathematics.

Table 2a revealed that internet addiction and mathematics interest predicated secondary school students academic achievement in mathematics by 4.3% and 17.9% respectively. This result therefore implies that interest in mathematics predicted secondary school students academic achievement in mathematics more than internet addiction. In table 2b the calculated probability value for internet

addiction was above the critical probability vale of 0.05, while that of mathematics internet was below the critical value. This indicated that mathematics interest is a significant predictor of students academic, achievement in mathematics. This result is not surprising to the researchers. The finding is not in consensus with Akhter (2013) [1] which found that internet addiction was significantly negatively correlated with academic achievement of university undergraduates. The finding of this study is consistent with Heinze, Reiss, Augsburg 2005) [6] who found that interest in Mathematics could be regarded as a predictor for mathematics achievement. The result also agrees with the findings of a study conducted at Istanbul Turkey with a sample of 1302 by Turel and Toraman (2015) [5] that internets addiction had an effect on the academic achievement of students.

However, the impact of internet addiction on academic achievement depends on its purposed. In a study conducted in Korea with a sample of 59,105 where the ages range between 12 – 18 years in 2013 and analyzed with multinominal logistic A regression, high school performance was positively associated with longer internet use for study. However, internet addiction is negatively associated with academic performance for general internet uses Kim, Kim, Park, Kim & Choi (2013) [12].

Recommendations

1. Parents should discourage excessive internet use by secondary school students for general purposes due to its low prediction of academic achievement in mathematics.
2. Teachers are to encourage more secondary school student's usage of internet facilities for academic achievement.
3. Mathematics teachers are to help secondary school students to develop interest in mathematics, since this enhances students academic achievement in mathematics.
4. Teachers are generally encouraged to stimulate the interest of their students in and subject they are teaching them so as to increase their academic performance in such subjects.

Conclusion

Based on the finding of this study it is concluded that internet addiction and interest in mathematics do not significantly jointly predict students academic achievement to mathematics in Obio-Akpor Local Government Area of Rivers State. Another important conclusion based on the findings of the study is that interest in mathematics as a subject, significantly predicted secondary school students academic achievement in mathematics in Obio-Akpor Local Government Area of Rivers State.

References

1. Akhter N. Relationship between internet addiction and academic performance among university undergraduates. Centre for counseling and Career Advisory, National University of Sciences and Technology, NUST HQ Campus Islamabad Pakistan, 2013, nmakhtar@yhoo.com.
2. Young KS Internet addiction: The emergence of a new clinical disorder. Cyber Psychological Behaviour. 1998; 1:237-244.
3. Arbabisarjou A, Gorgich EAC, Barfroshan, Ghorelshinia G. The Association of internet addiction with academic achievement, emotional intelligence and strategies to prevention of them from students perspectives. International Journal of Humanities and Cultural Studies. 2016; 3(1):1646-1656.
4. Iyitoglu O, Celikoz N. Exploring the impact of internet addiction on academic achievement. European Journal of Education Studies. 2017; 3(5):38-59.
5. Turel YK, Toraman M. The relationship between internet addiction and academic success of secondary school students. Anthropologist. 2015; 20(1,2):280-288.
6. Heinze A, Reiss Reiss K, Augsburg K. Mathematics achievement and interest in Mathematics from a differential perspective. ZDM. 2005; 376:212-219.
7. Nwankwo OC, Psychology of Learning*:* The human perspective, Port Harcourt: Pam Unique Publishers, 2007,
8. Ormrod JE. Educational psychology: Developing learners. Ohio: Pearson, Merick Practice Hall, 2008,
9. McDaniel MA, Waddill PJ, Finstad K, Bourg T. The effect of text-based interest on attention and recall. Journal of Educational Psychology. 2000; 92:492-502.
10. Hidi S, Renningor KA. The four-phase model of interest development. Educational Psychologist. 2006; 41:111-127.
11. Iwundu O. The impact of sleepiness levels on academic achievement for college students. Educational Measurement University Press, 2001,2-5. www.en.m.wikipeda.org.iwiki/.academic achievement.
12. Kim SO, Kim SM, Park B, Kim J, Cho HY. The associations between internet use time and school performance among Korean adolescents differ according to the purpose of internet use, 2017, https://www.ncbi.nlm. nih.gov./pmc/articles/pmc 5378357.
13. Okafor, Okwochukwuk H. Learning Styles and emotional intelligence as predictors of academic achievement in mathematics. Unpublished Master's Dissertation, University of Port Harcourt, 2017,
14. Weiten W, Lloyd MA, Duan CS, Hummer FY.Psychology applied to modern life*:* Adjustment of the 21st century (9th ed) Belmont: Wadsworth, 2009,
15. Goldenberg I.Twenty years of internet addiction. Indian Journal of Psychiatry. 1995, Retrieved from:https://www.ncbinlm.nih.goll/pmc/articles/PMCH 776584.
16. Eguridu C. Mass failure as W.A.E.C releases May/June Exam results, 2014. wwvanguard.com
17. Mohammed A. WAEC releases results, withholds 118, 101 results over exam malpractices: Premium Times, 2015.
18. Couis RA, Flett GL, Besser A. Validation of a new scale for measuring problematic internet use: Implications for pre-employment screening cyber psychology and behaviour. 2002; 594:331-345.
19. Terwase JM, Ibaishwa. Resilience shyness and loneliness as predictors of internet addiction among university undergraduate students in Benue State. Journal of Humanities and Social Sciences. (2014); 19(9):1-7.
20. Liu T C, Desai RA, Krishnan, Sarin S, Cavallo DA,

Potenza MN. Problematic internet use and health in adolescents: Data from a high school survey in Connecticut. Childhood and Adolescent Mental health. 2011; 72:836-845.
21. Young KS. Caught in the net: How to recognize the signs of internet addiction and a winning strategy for recovery. New York: Wiley, 1998,
22. Cao H, Sun Y, Wan Y, Hao J, Tao F. Problematic internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction, 2011, Retrieved from https://www.ncbi.nlmnih.gov/pubmed/21996659.
23. Park SK, Kim JY, Cho CB. Prevalence of internet addiction and correlations with family factors among South Korean adolescents. Adolescence. 2008; 43:895-909.
24. Alabi FA. Survey of facebook addiction level among selected Nigerian University undergraduates, 2013. Retrieved from: *https://scholar. google.com /scholar?q. Alabit 2013 + internet + addiction* + level + among