

EXPLORING PRESERVICE MATHEMATICS AND SOCIAL STUDIES TEACHERS' INTERNET ADDICTION AS CONNECTED WITH GENDER AND GRADE POINT AVERAGE

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Abstract: No doubt the internet has become a globally recognized conduit for information trading and schmoozing. However, there is a rising case of internet addiction among young adults of which preservice mathematics and social studies teachers are implicated. This study investigated the correlation between preservice mathematics and social studies teachers' internet addiction and their grade point average (GPA). Likewise, the study examined the influence of gender on internet addiction. A descriptive survey research design was implemented in the study with 300 preservice mathematics and social studies teachers and primary data collected with Internet Addiction Test (IAT, Cronbach alpha coefficient=0.92) were analysed using mean, standard deviation, independent samples t-test, Pearson product moment correlation coefficient and simple linear regression analysis. The results showed that preservice mathematics and social studies teachers' internet addiction had statistically significant negative relationship with their GPA. More so, internet addiction contributed significantly to the prediction of preservice mathematics and social studies teachers' GPA. Gender contributed significantly to the prediction of preservice mathematics and social studies teachers' internet addiction. In addition, there was a significant influence of gender on preservice mathematics and social studies teachers' internet addiction with males showing higher internet addiction than their female counterparts. In line with the above findings, it was recommended that preservice mathematics and social studies teachers should lower their usage of internet and follow examples of good usage of internet technology to improve their scholastic achievement in the university.

Keywords: preservice teachers, Internet addiction, grade point average, gender, social studies, mathematics

1. Introduction

No doubt the internet has become a globally recognized conduit for information trading and schmoozing. Currently, the internet has witnessed an unprecedented progress and expansion in its size and records of operators globally. The advantages inherent in the adoption of the internet have been globally investigated and consist of chatting with friends, creating retreat plans, funds management, helping with schooling requirements etc. In spite of the fruitful impacts of the internet, evidence suggests a rising undesirable and damaging influence of its usage (Shao, Zheng, Wang, Liu, Chen and Yao, 2018). Internet addiction has a fledging history and is a novel area of investigation. Internet addiction is described as a person's failure to regulate and manage their utilization of the internet that ultimately leads to their emotional, societal, educational and job challenges (Akpunne, Akinnawo, Alakija and Kumuyi, 2020; Shao et al., 2018; Akhter, 2013; Almasi, Machumu and Zhu, 2017). Recent investigation has revealed that undue utilization of the internet negatively impacts a person well-being, family lifespan and educational achievement (Akhter, 2013). Evidence suggests that Internet addiction is a source of academic problems among students and they include reduced study habits, weighty decline in grade point average (GPA), truancy, incessant danger of academic probation, and failure to integrate well in extracurricular undertakings (Akhter, 2013). In addition, preservice teachers who are internet addicts frequently grieve from acute emotional distress, such as despair; sadness; worry; compulsiveness; sensing of life devoid of the internet would be mind-numbing, blank, and miserable; and sensing of lonesomeness and public seclusion. Users of Internet

are a heterogeneous group. Accordingly, evidence suggests that (Kikwa, 2011; Mafe and Blass, 2006), internet addicts are young adults between the age of 19 and 24 years old. Clearly undergraduate students such as preservice teachers are labelled high-risk cluster of excessive internet use (Kikwa, 2011; Akpunne et al., 2020). The probable explanations might be accessible and unrestricted time, lack of supervision from teachers and parents and occasionally not to be beclouded with hard school humdrum (Almasi, Machumu and Zhu, 2017).

Addicts might reason that expending time without an Internet connection is worthless, and they may experience risky belligerence and cantankerousness when they are disadvantaged of the Internet. However, university students such as preservice teachers stand the chance of benefitting from internet access and ubiquity. Such benefits include: increased communication with contemporaries and lecturers, increased admittance to libraries and school catalogues, and improved learning times and learning behaviours (Almasi, Machumu, and Zhu, 2017; Sayyah and Khanafereh, 2019). In spite of these paybacks of internet utilization, scholars have upheld that university students are at greater danger of being addicted to the internet.

The present study tried to explore the association amid internet addiction and preservice mathematics and social studies teachers' grade point average in Nigeria. Previous investigations have shown that internet addiction has an adverse influence on performance of students in school work (Almasi, Machumu and Zhu, 2017; Akhter, 2013). In line with previous studies, it was conjectured that internet addiction would have an adverse effect on the grade point average of preservice mathematics and social studies teachers. Many investigations have been carried out on gender disparities in internet usage and addiction (Akhter, 2013; Kannan, Karthik, Pal and Menon, 2019; Rigelsky, Megyesiova, Ivankova, Al Khouri and Sejvl, 2021; Shao, Zheng, Wang, Liu, Chen and Yao, 2018; Sayyah and Khanafereh, 2019) and these studies have shown that males tended to be more addicted to the internet than their female counterparts. In line with this finding, it was conjectured that male preservice mathematics and social studies teachers would record significantly higher internet addiction than their female counterparts.

The Internet which came into existence in the early nineties in Nigeria has witnessed an unprecedented growth in its number of users. While researches have been conducted in other climes on the impact of internet addiction on students' behaviour (Akhter, 2013; Almasi, Machumu and Zhu, 2017), few research of such nature exists in Nigeria. In Tanzania, Almasi, Machumu and Zhu (2017) examined internet use among secondary school students and its effects on their learning. Akhter (2013) found a significant negative correlation between undergraduate students' internet addiction and their academic performance. The present study was conducted with the aim of exploring the construct of internet addiction in relation to gender and performance of preservice mathematics and social studies teachers in Nigeria and the findings thereof would in due course be an addition to the lean body of literature in Nigeria. This study particularly targeted preservice mathematics and social studies teachers because they were undergraduates who had been proclaimed to be the heavier users of the internet (Akhter, 2013; Akpunne et al., 2020).

The following objectives were formulated for this study. First, to explore the association between internet addiction and GPA of preservice mathematics and social studies teachers. Second, to determine the contribution of internet addiction to the prediction of preservice mathematics and social studies teachers' GPA. Third, to investigate the contribution of gender to the prediction of preservice mathematics and social studies teachers' internet addiction. Fourth, to determine the influence of gender on preservice mathematics and social studies teachers' internet addiction. In meeting the above objectives, the underlisted null hypothesis were articulated:

1. There is no significant association between internet addiction and GPA of preservice mathematics and social studies teachers.
2. There is no significant contribution of internet addiction to the prediction of preservice mathematics and social studies teachers' GPA

3. There is no significant contribution of gender to the prediction of preservice mathematics and social studies teachers' internet addiction.

4. There is no significant influence of gender on preservice mathematics and social studies teachers' internet addiction.

2. Methods

A descriptive survey research design was adopted for the study. 300 senior preservice teachers (150 from mathematics education and 150 from social studies education) were purposively sampled for the study from three universities in south-west Nigeria. The sample was made up of 150 males and 150 females and the age of the respondent ranged from 19-31 years ($\text{Mean}_{\text{age}}=22.48$ years $\text{SD}=1.45$ years). The instrument used for primary data collection included the Internet Addiction Test (IAT) developed by Young (1998). The IAT which consisted of 20 items anchored on a five-point Likert scale from strongly agree to strongly disagree has been adopted and validated for use with the Nigerian sample (Akpunne, Akinnawo, Alakija and Kumuyi, 2020). The IAT has been declared useful in identifying persons as slightly, temperately, and sternly users of the Internet. The minimum score on the IAT is 20 while the maximum score is 100. Score between 20 and 49 is regarded as normal, score between 50 and 79 is regarded as problematic, and score between 80 and 100 is regarded as highly problematic. The secondary data relating to the academic performance of the preservice mathematics and social studies teachers as measured by the grade point average in previous semester of their senior year were retrieved from their records in the three universities used for the study.

Approvals were sought from the heads of the concerned departments in the three universities. Informed consent forms were filled and returned by the respondents and thereafter the IAT was administered on the participants. Prior to the administration of the IAT, the respondents were given preliminary information regarding the nature and purpose of the investigation. They were assured that no one would be penalized for not participating or for pulling out of the exercise. Their confidentiality was assured and that data collected were mainly for research purpose and no credit would be earned for participating in the study. The IAT took an average of 20 minutes to complete. The primary data collected through the IAT and the secondary data relating to the GPA were coded on the SPSS version 25. The coded data were analysed using mean, standard deviation, independent samples t-test, Pearson product moment correlation analysis and simple linear regression analysis. All statistical tests were carried out at 5% level of significance.

3. Results

Null Hypothesis One: There is no significant association between internet addiction and GPA of preservice mathematics and social studies teachers.

In Table 1, mean, standard deviation and correlation coefficient between preservice mathematics and social studies teachers' GPA and internet addiction were displayed. The results showed that internet addiction had a significant and negative correlation with preservice mathematics and social studies teachers' GPA ($r = -.356$, $p < .000$). As contained in Table 1, the preservice mathematics and social studies teachers had a high internet addiction which was problematic ($M=65.25$, $SD=12.72$) and the Internet addiction test showed satisfactory Cronbach alpha reliability coefficient ($\alpha=0.92$).

Table 1. Descriptive statistics, Cronbach's Alpha, and Correlation Matrix among constructs

Construct	M	SD	α	GPA	p
Internet addiction	65.25	12.72	0.92	-.356*	0.000
GPA	2.23	0.86	---	---	

Null Hypothesis Two: There is no significant contribution of internet addiction to the prediction of preservice mathematics and social studies teachers' GPA

In Table 2, simple linear regression analysis of internet addiction as a predictor of preservice mathematics and social studies teachers' GPA was displayed. The results revealed that internet addiction was a significant predictor of preservice mathematics and social studies teachers' GPA. In fact, Internet addiction as an independent variable (or predictor) accounted for 35.6% change in the GPA of preservice mathematics and social studies teachers with the beta value ($\beta = -.356$, $t = -5.80$, $p < .05$).

Table 2. Simple linear regression analysis of internet addiction as a predictor of GPA (N=300)

Model	B	SE	β	t	p
Constant	6.48	.244			
Internet addiction	-.012	0.006	-.356	-5.80	.003

$R^2 = .356$; $\Delta R^2 = .356$; $F = 8.45$; $P < .05$

Null Hypothesis Three: There is no significant contribution of gender to the prediction of preservice mathematics and social studies teachers' internet addiction.

In Table 3, simple linear regression analysis of gender as a predictor of preservice mathematics and social studies teachers' internet addiction was displayed. The results revealed that gender was a significant predictor of preservice mathematics and social studies teachers' internet addiction. In fact, gender as an independent variable (or predictor) accounted for 42.4% change in the internet addiction of preservice mathematics and social studies teachers with the beta value ($\beta = -.038$, $t = -7.24$, $p < .05$).

Table 3. Simple linear regression analysis of gender as a predictor of internet addiction (N=300)

Model	B	SE	β	t	p
Constant	0.882	.244			
Internet addiction	-.562	.132	-.038	-7.24	.001

$R^2 = .424$; $\Delta R^2 = .424$; $F = 10.22$; $P < .05$

Null Hypothesis Four: There is no significant influence of gender on preservice mathematics and social studies teachers' internet addiction.

Table 4 showed the independent samples t-test analysis of gender disparity in internet addiction. The results revealed that male preservice mathematics and social studies teachers recorded higher mean score ($M = 85.25$; $SD = 12.82$) than their female counterparts who recorded a mean score of ($M = 45.25$; $SD = 12.62$). Hence, male preservice mathematics and social studies teachers were more problematically addicted to the internet than their female counterparts whose internet addiction level could be said to be normal. The independent samples t-test showed that there was a significant gender influence on internet addiction ($t = 97.13$; $p < 0.001$) with males being more problematically addicted to the internet than their female counterparts.

Table 4. Gender difference in internet addiction among preservice mathematics and social studies teachers

Construct	N	M	SD	t	p
Male	150	85.25	12.82	97.13	0.000
Female	150	45.25	12.62		

4. Discussion

One major aim of the present study was to explore the association between internet addiction and GPA of preservice mathematics and social studies teachers. Prior to executing this task, the reliability coefficient of the IAT was computed using the Cronbach alpha and the result gave a reliability of 0.92 and this was considered high and satisfactory enough for the study to use the IAT instrument for data collection in the study. Using the null hypothesis, it was theoretically conjectured that internet

addiction would not be significantly associated with preservice mathematics and social studies teachers' GPA. The result proved otherwise with the earlier specified hypothesis as there was a statistically significant and negative association between internet addiction and preservice mathematics and social studies teachers' GPA. This result was in line with the result of Akhter (2013) who showed that university students' internet addiction was negatively correlated with their performance.

Studies have shown that heavy users of internet tended to miss classes and recorded lower grades in school work (Akpunne et al., 2020; Young, 1998; Akhter, 2013). The negative correlation between internet addiction and GPA in the present study could be ascribed to the fact that preservice mathematics and social studies teachers might find it pretty difficult to study hard for examinations and tests due to excessive dependent on internet for none academic purposes. Such preservice teachers might find it difficult to seriously engage themselves in school work and lack of school engagement might lead to poor study habit which might results into poor academic performance. Excessive dependent on internet for none academic purposes has been found to distract students from engaging with their study (Mahumbwe, 2012; Almasi, Machumu and Zhu, 2017; Young, 1998). Students who are heavy users of the internet will find it difficult to spend time on their studies as their time is preoccupied with online activities to the detriment of school work (Almasi, Machumu and Zhu, 2017). Preservice teachers who are internet addicts will lack the ability to concentrate on their school work because they would be lured into surfing the net in the night to the detriment of studying for school (Akhter, 2013).

Another result in the present study revealed that internet addiction was an important negative predictor of preservice mathematics and social studies teachers' GPA. This result was in tandem with previous studies (Akhter, 2013). More so in the present study, gender was seen as an important predictor of internet addiction among the preservice mathematics and social studies teachers. Also, there was a significant influence of gender on preservice mathematics and social studies teachers' internet addiction with males showing problematically high internet addiction than their female counterparts who showed normal internet addiction. This result was in tandem with the results of previous studies (Akhter, 2013; Kannan et al., 2019; Rigelsky et al., 2021; Shao et al., 2018; Sayyah and Khanafereh, 2019) who in their separate studies revealed that gender differences existed in internet addiction in favour males and that gender contributed significantly to the prediction of internet addiction among young adults. These results are predicated on the fact that globally more males than females utilize the Internet. More so like the eastern culture (Kikwa, 2011; Akhter, 2013), female gender in Nigeria is under strict supervision from their parents than their male counterparts and this might have prevented the female gender from being addicted to the internet as there are house chores for them to engage in after school hours.

5. Conclusion

The present study is not without limitations. This study only purposively selected preservice mathematics and social studies teachers from three universities in south west Nigeria and so the results might be difficult to make a generalization to the other five geo-political zones in Nigeria and other preservice teachers not used in the study. More so, this study was limited to quantitative study of internet addiction among preservice teachers. More robust findings would have been derived if mix method research design had been used in which the quantitative research would be supported with qualitative research paradigm. In conclusion, the study recommended that preservice mathematics and social studies teachers should lower their usage of internet and follow examples of good usage of internet technology to improve their scholastic achievement in their in the university.

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