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# Internet Use and its Effect on Senior High School Students in Wa Municipality of Ghana

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**INTERNET USE AND ITS EFFECT ON SENIOR HIGH SCHOOL STUDENTS IN WA  
MUNICIPALITY OF GHANA**

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**Abstract**

The internet is a technology that has become an enormous part of people's daily lives. Over the last decades, internet connectivity has improved tremendously and is available everywhere such as homes, offices, travels and schools. Today, empirical studies report that access to information can influence the academic performance of students. However, studies on internet use among Senior High School Students are limited in the Wa Municipality making it uncertain whether Senior High School Students in the Wa Municipality use internet and the impact it makes in their academic performance. Hence, this study investigates the internet use and its impact on Senior High School students in the Wa Municipality. Primary data were obtained from a random selection of 314 Senior High School Students who are in their third year. The data were collected using a questionnaire and then analysed using descriptive statistics, chi-square and ANOVA. The results indicate that sources of internet to Senior High School Students include the School Information Communication Laboratory, mobile phones, household internet facilities, and public internet cafes. Besides, students' access to internet was found to have a positive influence on their academic performance. However, different uses of the internet among students do not influence their academic performance. The study concludes that availability of different internet sources to students does not grant all of them immediate access. It is therefore, recommended that Heads of Senior High School should liaise with policy makers and management of Ghana Education Service to provide internet infrastructure in schools. This is relevant because provision of internet infrastructure in schools is a key strategy to promoting academic performance.

**Keywords: Internet use, Academic performance, Senior High School Students.**

## 1.0 INTRODUCTION

The internet is the key information and communication technology that led to a worldwide revolutionary change in the information scenario (Siraj, *et al.*, 2015). The internet is a pool of knowledge and any country that fails to provide her youth access to the internet is unseating the country from her throne of dignity among other dignitaries (Olatokun, 2008). It is developed to serve as a platform for various activities for all age groups in society (Akin-Adaeamola, 2014). The internet is a technology that has become an enormous part of people's daily lives. Through its ability to act as a support medium in different functions for which people use it, the internet was introduced to academic institutions as a tool to enhance student's academic experience in the mid-1990s (Ngoumandjoka, 2012). Over the last decades, internet connectivity has improved tremendously and is available everywhere such as homes, offices, travels and schools (Ellore *et al.*, 2014).

Today, empirical studies (e.g Adedotun, 2015; Akende & Bamise, 2017) report that access to information can influence the academic performance of students. The use of credible internet resources is of greater importance for academic study, especially in high class courses which require an academic review of literature (Sahin *et al.*, 2010). Internet use for educational purpose is found by Kim (2011) to be the heart of adolescent academic achievement. The availability of internet is almost everywhere, most students have had access to internet on their cellphones (Ellore *et al.* 2014). This helps students to broaden their academic knowledge, research and assignments by accessing information worldwide and also enhances easy communication to the academic community (Siraj, *et al.*, 2015).

Yesilyurt *et al.* (2014) argued that access to a home computer and internet connection contributes to students' academic performance as well as self-learning skills. Taking into account access and usage of internet by secondary school students in Nigeria, Olatokun (2008) indicated that most students believed the internet to be far better and convenient than their school libraries. They saw it as a source for general knowledge, and hence it has helped them improve their reading habits and their academic performance. The internet is sometimes used as a supplementary learning material and has led to an improvement in students' academic performance (Siraj *et al.*, 2015).

In Ghana, graduate students see the library as a favorable environment for studies, and a source of relevant and realistic information for research. However, they prefer using the internet to the library because of the fact that the latter provides readily information at all times, faster access to information and large amount of information (Kumah, 2015). Access to internet services is of great significance to a developing country like Ghana (Ameyaw and Asante, 2016). Updated and current information is well organized on the internet for easy search, and has contributed significantly to students' academic laurels (Kumah, 2015). The use of the internet creates awareness of the importance of the world around students (Ogedebe, 2012).

Despite the significance of internet usage to students' academic performance, its negative impacts are various. Some students use the internet for non-academic purposes such as gaming and social networking, thus culminating in loss of study schedules (Singh *et al.*, 2013). Besides, students use the internet for leisure rather than educational purposes (Olatokun, 2008; Ngoumandjoka, 2012) and this can lead to fallen academic standards. The topmost uses of the

internet by secondary students is charting, downloading, watching videos online, playing online games, and online shopping (Akin-Adramola, 2014). This suggests that some secondary students do not receive proper guidance in the use of the internet in studying. The internet can be a bad tool for higher academic achievement if only its usage is not controlled (Mami and Hatami-Zad, 2014).

Recent studies (e.g. Mami and Hatami-Zad, 2014; Torres-Diaz *et al.*, 2016; Carter, 2016) have found that a balance use of the internet leads to greater academic success among students. University students have control over the use of internet which has greatly reflected in their academic performance (Sahin *et al.*, 2010). However, studies on internet use among Senior High School Students are limited in the Wa Municipality. This study is therefore on internet use and its effect on the performance of Senior High School Students in the Wa Municipality of Ghana.

### **Objectives of the Study**

The main objective of the study is to analyse the internet use and its effect on the performance of Senior High School students in the Wa Municipality of Ghana. The specific objectives include:

1. To identify the sources of internet use among Senior High School Students
2. To examine the effect of internet use on academic performance of Senior High School Students

## **2.0 LITERATURE REVIEW**

### **2.1 Internet Use**

The use of internet grants its users great awareness of the importance of the world around them. The internet is a platform for several types of information. It used by students including secondary students (Akin-Adaeamola, 2014). Internet usage will continue to grow as long as its users are not denied easy access (Olatokun, 2008). Recent statistics indicate that the internet gives people the option to access information sites as well as other sites such as social media sites, internet games, and cyber-sex (Siraj *et al.* 2015). A study by Ellore *et al.* (2014) on the influence of internet usage on academic performance and face to face communication revealed that as a result of the availability of internet, most students have had access to internet on their cellphones. This helps students to broaden their academic knowledge (Siraj, *et al.*, 2015). The use of computer and access to online resources according to Akende and Bamise (2017) are comparatively important to students.

Yesilyurt *et al.* (2014) showed that access to a home computer and internet connection contributes to students' academic performance as well as self-learning skills. Considering access and usage of the internet by secondary school students in Nigeria, Olatokun (2008) indicated that most students believed the internet to be far better and convenient than their school libraries. The study pointed out that students see the internet as a source for general knowledge, and it really helps them improve their reading habits leading to an improvement in their academic performance. Siraj *et al.* (2015) affirmed that students perceived the internet as a supplement for learning and thus contributes to higher academic feat. Ogedebe (2012) agreed that majority of students obtain relevant information such as academic materials from the internet. This suggests

that students use the internet to enhance their study. Sahin *et al.* (2010) examined the use of internet resources by university students during their course projects study. They argued that the use of trustworthy internet resources is of vital importance for academic study, especially in higher class courses which require an academic review of literature. Internet use for educational purpose is found by Kim (2011) to be the habit of adolescent academic achievement. A similar study conducted by Ruth and Adedotun (2015) posited that the source and access to information can influence the academic performance of secondary school students.

Notwithstanding the importance attached to internet use and academic performance, Olatokun (2008) in Nigeria maintains that secondary school students use the internet for leisure rather than educational purposes. According to Olatokun(2008) the students use the internet primarily for communication, entertainment and leisure (reading and sending e-mails, online chatting, instant messaging, playing games and downloading music videos, and reading newspapers). Similarly, Sahin *et al.* (2010) noted that while university students frequently use email and forum/chat-line in their daily life, they do not use them in their studies. Ngoumandjoka (2012) found that the internet is not mostly used for academic purpose rather for recreational activities. A similar work by Singh *et al.* (2013), brings to fore that students are more into the use of the internet but in reality they are using it mainly for non-academic purposes like mailing, gaming and social networking. This led to losses in their study schedules. This brings to the fore the controversy among empirical studies on the influence of internet use on the academic performance of students.

The activities done by secondary school students on the internet have been scaled by Akin-Adaeamola (2014). The study revealed that the topmost activity done by secondary school students is chatting, followed by downloading, watching videos online, surfing the web, using the internet to study for school work, looking for other websites such as sports websites, reading news online, games websites and lastly online shopping. Statistically 40% of students spend most of their time chatting on social media daily while 14.4% of students use the internet for academic purpose daily (Akin-Adaeamola, 2014). This agrees with the findings of Bragdon and Dowler (2016) that there is a particular interest given that college administrators, faculty, parents, colleges' students and others support the advantage of using technology in higher education, but the reality is that this technology is often being used for non-academic purposes.

Students' demographic variables are believed to have an influence on internet use and hence academic performance. Demographic analysis revealed that males had higher frequency of internet use in general than females (Akende and Bamise, 2017). Subsequent comparative analysis revealed that male college students spend more time on the internet compared to female college students (Ellore *et al.*, 2014). Rabiou *et al.* (2016) identified the mobile phone as one of the gadgets used in accessing the internet which impacts on academic performance. They found that phone usage significantly influence academic performance among male and female senior high school students. A case study on Labone Secondary Schools in Ghana shows that approximately girls use the internet once a week whilst boys use the internet once a day on average or several times daily (Akin-Adaramola, 2014). In contrast, Mami and Hatami-Zad (2014) found no significant difference between boys and girls with regards to internet addiction. On the part of Aitokhuehi *et al.* (2014), female computer literates tend to perform better than

male computer literate students. Kim (2011) examines the effect of internet use on academic achievement and behavioral adjustment among South Korean adolescents and found girls more likely to use the internet to watch online educational classes and blog more frequently and longer than boys. The study reported that boys mostly use the internet for playing games.

A correlation analysis on students' socio-economic background, access to internet and performance found no significant relationship between student's socio-economic background and access to internet (Adegoke, 2013). The study found that students from low economic background surf the net through their friends phone, their friends pay for them at cybercafés and at times they could afford to pay at the cybercafé for themselves. According to Osunade (2003), students are capable of paying for internet access. Adegoke's (2013) study revealed that socio-economic background contributes significantly to student's achievement while internet use has no significant contribution to student's achievement. Rather, when the two socio-economic background and internet use were combined, they had a significant contribution to students' achievement. Kim (2011) added that parent-child relationship (closeness and conflict) were found to be vital to youth adjustment, and plays a significant role in the association between adolescent internet use and academic and behavioral outcome.

Furthermore, controlled use of the internet can have positive influence on students' academic performance. Research has shown that the use of the internet has positive impact depending on the type and how it is being used (Torres-Diaz et al., 2016). In exploring the influence of internet usage on academic performance, Ellore *et al.* (2014) discovered that most university students have control over the use of internet. Kakkar (2014) opined that internet usage can be beneficial

to students in their academic set-ups and may not cause potential harm to their mental health if used in moderation. As the internet has become an integral part of today's life, Singh *et al.* (2013) observed that it should be used as a tool for communication and acquiring of knowledge rather than habit forming addiction. Colleges and universities are therefore urged to educate students about the possible negative impacts of high rate of recreational internet use on academic success (Bragdon and Dowler, 2016).

## **2.2 Time Spent on the iInternet**

It has been recently reported that adolescents today spend a significant amount of their time on the internet for multiple purposes (Olatokun, 2008; Krischne and Karpinski, 2009; Ogedebe, 2012; Singh *et al.*, 2013; Bragdon and Dowler, 2016). Evidence abound that excessive internet use has been associated with problems of maintaining daily routines, school performance, and family relationships (Rickert, 2001). A study conducted by Bragdon and Dowler (2016) on college students' technology use and academic performance indicated that upperclassmen spent significantly more time using technology for academic and work related purposes, whereas underclassmen spent more time using cell phones, online chatting and social networking. According to Olatokun (2008), a large proportion of secondary school students in Nigeria had been involved to some extent in using the internet in their everyday lives for about four to five years now. Ogedebe (2012) observed that Nigeria tertiary students prefer browsing the internet overnight to that of the day. Research shows that most students spent an average of 2570.6 (42.8 hours) per week engaging in some form of technology (Bragdon and Dowler, 2016).

Krischne and Karpinski (2009) carried out a study on Facebook and academic performance. Facebook users and non-users reported comparable average daily internet use and the highest category endorsed was between 1 and 2 hours per day. However, Facebook users were recording lower GPA and spending fewer hours per week studying on average than non-users. According to Singh *et al.* (2013), because of non-focused approach (mailing, gaming and social networking) as well as diversity of knowledge on the internet on particular topics, students tend to waste time on the internet. Similar activities (Chatting, e-mail and browsing websites) have been identified by Samuel (2010) in an attempt to evaluate internet usage among secondary school students in public schools in Lagos State. Evidence from Denizli on the effects of technological devices on student's academic success suggested that most students have been late in submitting their assignments because they spend more time on social media instead of doing their homework (Yesilyurt *et al.*, 2014). However, Singh *et al.* (2013) found that students with focused approach go deep in subject and primarily use internet for academic purpose. These students do not waste time because of proper management of time, focus of search areas and reducing the social networking sites to minimum. Despite great concerns over excessive internet use, Siraj *et al.* (2015) concluded that high internet usage brings better academic results as students get the opportunity to enter the information world.

### **2.3 Impact of Internet**

Ngoumandjoka (2012) categorized internet users into heavy and light users. In his view, academic work is the main reason students use the internet on campus. Students who were classified as heavy users were found to use the internet more for recreational purpose than the light internet users. His study further argued that the more the internet is used for academic work the more it is perceived to exert a positive influence on academic grades. A number of authors

(e.g Torres-Diaz *et al.*, 2016) equally agreed that internet usage has a positive impact on academic performance. They opined that students who tend to use the internet more on educational materials are less likely to fail their examinations. Therefore, the disadvantages of lack of access to internet surpass the advantages. Also people who perform interactive activities with peers and teachers or when they make a balance use of internet tools for their course work tend to have greater academic performance (Torres-Diaz *et al.*, 2016). In Nigeria, the impact of computer literacy on students' performance in secondary school has been explored by Aitokhuehi *et al.* (2014). They found that computer literate students performed better than non-computer literate students. Similar results have been obtained by Samuel (2010) when he evaluated the impact of internet usage among secondary school students in Nigeria. His study found internet usage to be low among public schools in Lagos compared to their counterparts in the developed world.

Internet has become a daily commodity in most people's lives. However, the addictive-like features of the internet make any individual who excessively use it a potential victim of its negative effects. Some of its negative effects include impaired sleeping patterns, social relationships break-ups, job losses, mental and physical health as well as poor academic performance (Ngoumandjoka, 2012). Psychological issues ranging from mood swings to altered behavior, withdrawn attitude and loneliness have been reported by Singh *et al.* (2013) to be the main effect of using the internet mainly for social networking and mailing. This is because they remain in some sort of virtual world of the net. Turel and Toraman (2015) found in their study that as academic performance of students deemed successfully increases, their internet addiction average decrease. This implies that, internet addiction has an effect on the academic

performance of students. Aitokhuehi *et al.* (2014) also noted that computer literate students who are not addicted to the use of computer facilities perform better than those who are addicted to its usage. Kakkar (2015) established a significant effect of internet addiction on students' performance and mental health. Categorically, he revealed that students who were in the severe and profound group of internet addiction were found to have detrimental effect on their academic performance and mental health rather than the students who use the internet moderately. Similarly results have been obtained by Austin *et al.* (2011) in their study that categorized internet users into light, moderate and intense users respectively. They discovered that students that use the internet at school and at home (moderate use) produce higher grades than those that do not use the internet. Also students that only use the internet at school (light users) obtained lower grades compared to those that did not use the internet.

Despite great concerns over excessive internet use, Siraj *et al.* (2015) concluded that high internet usage brings better academic results as students get the opportunity to enter the information world. It is reported that addiction to internet is a good protector for student's social skills and academic achievement (Mami and Hatami-Zad, 2014). A relationship between internet addiction and academic performance showed that the average internet addiction level of male students, vocational school students and verbal field students were determined to be higher than more academically successful students (Turel and Toraman, 2015). This supports the idea that control use of internet can have positive influence on student's academic performance (Torres-Diaz *et al.*, 2016; Ellore *et al.*, 2014; Kakkar, 2014). Moreover, it is necessary that students are taught how to use computer facilities to search for valid information relating to their academic work (Mami and Hatami-Zad, 2014; Aitokhuehi *et al.*, 2014). As a result, it is necessary that

government and stakeholders make available computer sets with internet facilities to all secondary schools for students and teachers to use in the teaching and learning process to enhance academic performance (Aitokhuehi *et al.*, 2014).

## **2.4 Challenges in Accessing the Internet**

Olatokun (2008) noted that the greatest obstacles to the full exploitation of the internet are inadequate access, inherent risks and problems such as pornography, scams among others. Though evidence showed that students have interest in internet resources than other sources, they have been challenged (Sahin *et al.*, 2010). Therefore, it is necessary that internet access is made available at all hours and instructors or lectures should refer students to educational websites for more relevant information (Osunnade, 2003). It has been found that internet access is low among senior high school students. Apart from access, it is disheartening to note that some students cannot even operate a computer despite the number of years spent in secondary school (Samual, 2010). According to Ruth and Adedotun (2015), information sources that are mostly available to Nigerian students are their teachers and lesson notes while library and internet facilities are the least available to them. Meanwhile, the internet can be used for knowledge acquisition by serving as an alternative to outdated books (Osunade, 2003). However, access to a computer and internet connection contributes to students' academic performance (Yesilyurt *et al.* 2014). There is a significant difference in the academic performance of students with internet access and those without internet access. Taking into account the positive and negative impacts of the internet, Yesilyurt *et al.* (2014) opined that the positive influence outweighs the negative impacts.

### **3.0 METHEDODOLOGY**

#### **3.1 Study Area**

Wa Municipality is one of the eleven District/Municipalities that make up the Upper West Region (UWR) of Ghana. The Wa Municipality shares administrative boundaries with Nadowli District to the north, Wa East District to the east and to the west and the south Wa-West District. It lies within latitudes 1°40'N to 2°45'N and longitudes 9°32'W to 10°20'W.

Wa Municipality has its capital as Wa, which also serves as the capital of Upper West Region. It has a land area of approximately 579.86 square kilometers, which is about 6.4% of the Region's land mass. The Municipality is empowered as the highest political and administrative body that is charged with the responsibility of facilitating the implementation of national policies (Ghana Statistical Service, 2014).

The educational sector in the Wa Municipality consists of basic schools, Senior High Schools and Tertiary institutions. The public Senior High Schools located in the municipality include: WA Senior High School, Jamiat Islamic Senior High School, WA Senior High Technical School, WA Technical Institute, Wa Islamic Senior High School, Northern Star Senior High School and T. I. Ahmadiyya Senior High School. Other private Senior High Schools include Tupaso Senior High School and Ideal College Senior High School (Wa Municipal Education Directorate, 2016). The Municipality also host the Nasirat Jahan Ahmadiyya College of Education, a Health training school, the Wa Polytechnic and the University for Development Studies (Wa Campus).

### 3.2 Methods of Study

A cross sectional survey design was employed to accomplish the research aim and specific objectives. Multistage sampling procedure was used in the selection of respondents. The first stage selected five (5) Senior High Schools and the second stage involved the selection of students as respondents. The selected schools were: Wa Senior High School, WA Senior High Technical School, Wa Technical Institute, Jamiat Islamic Girls Senior High School and Northern Star Senior High School.

Table 1 shows the sampling distribution of the respondents. It comprises of 1476 final year students who were preparing to write the 2018 West Africa Senior Secondary School Certificate Examination. The data were obtained from the Headmasters of these institutions. Using the study population of 1476 final year students from the five selected public Senior High Schools in the Wa Municipality, simple random sample s was used in selecting students. The sample size of 314 was calculated using the mathematical sample size determination formula by Millar and Brewer (2003). The sample size was therefore calculated as follows:

$$n = \frac{N}{1 + N(e)^2} = \frac{1496}{1 + 1476 (0.05)^2} = 314$$

Where: n = (314) Sample size, N = (1476) Sample frame, e = (0.05) error or confidence level.

Final year students were used in the survey because they were preparing to write the WASSCE, and may be searching for more information. Hence, the demand for internet services were more likely to be higher among them.

**Table 1: Name of Schools and Final Year Student Population**

No.	Name of School	Final Year Student	Sample Size
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<b>Population (2018)</b>			
<b>1</b>	Wa Senior High School	507	106
<b>2</b>	Wa Senior High Technical School	466	98
<b>3</b>	Jamiat Islamic Girls Senior High School	52	11
<b>4</b>	Wa Technical Institute	440	92
<b>5</b>	Northern Star Senior High School	31	7
<b>Total</b>		<b>1496</b>	<b>314</b>

Source: Field Survey, 2018

The study relied on mainly primary data gathered directly from the sample population. A semi-structured questionnaire was used to gather data from students. The respondents were identified and given copies of the questionnaires for administration. The questionnaires were self-administered since the respondents (student) were all literates. The entire administered questionnaires were retrieved and this resulted in 100% response rate. Methods of data analysis include coding and entering of data into Statistical Package for Social Sciences (SPSS) spread sheet where appropriate transformation was done. Descriptive statistics consisting of frequencies, means, standard deviations as well as ANOVA test were used in the analysis. The results were presented in tables.

#### **4.0 RESULTS AND DISCUSSIONS**

This section of the paper presents the empirical findings. Several variables have been analysed relating to internet use among Senior High School students. The main issues considered included a description of the background characteristics of the respondents, access to internet and how internet use influences students' academic performance.

#### **4.1 Background Information of Respondents**

The study revealed the background characteristics of the respondents. The main variables under consideration include gender, stage/year group, programme of study, residential status, school base, sex, age and current cumulated termly score. The distribution of these variables is shown in Table 2. Out of the 314 respondents investigated, 68.5% were males and the remaining 31.5% were females.

The students study different academic programmes such as Agriculture, General Arts, Science, Business, Home Economics, and Technical. It was discovered that 0.6% study agriculture, 32.2% study General Arts, 16.6% study Science, 33.8% study Business, 16.2% study Home Economics and 0.6% study Technical. The results also revealed that majority (99.4%) of the respondents are boarding students and hence live on their respective campuses while only two (2) respondents representing 0.6% are day students and hence stay at home while attending school.

The students were found to have a minimum age of 16 years and a maximum of 28 years. The mean age is 18.08 and this recorded a standard deviation of 1.97. The maximum age suggests that there are some students who are much matured and probably are considered late in their academic development.

Another background variable considered is the average score. This is the sum of all the individual subjects score in the current term (trimester) divided by the number of subjects. The lower limit of this score should be 0 for a student who has score 0% in all his /her subjects and the upper limit should be 100 for a student who has scored 100% in all his subjects. The

descriptive statistics of the average score of students revealed a minimum score of 38 and a maximum average score of 88. The mean score is 62.94 with a standard deviation of 9.5.

**Table 2: Background information of Respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>			
<b>Gender</b>					
Male	215	68.5			
Female	99	31.5			
<b>Total</b>	<b>314</b>	<b>100</b>			
<b>Programme of Study</b>					
Agriculture	2	0.6			
General Arts	101	32.2			
Science	52	16.6			
Business	106	33.8			
Home Economics	51	16.2			
Technical	2	0.6			
<b>Total</b>	<b>314</b>	<b>100</b>			
<b>Residential Status</b>					
Boarding	312	99.4			
Day	2	0.6			
<b>Total</b>	<b>314</b>	<b>100</b>			
<b>School base on sex</b>					
Single sex	14	4.5			
Mixed	300	95.5			
<b>Total</b>	<b>314</b>	<b>100</b>			
<b>Descriptive Statistics</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Age	314	16	28	18.08	1.978
Current average score	314	38	88	62.94	9.507

Source: Field Survey (2018)

## 4.2 Access to Internet

The results of the study include an analysis of students' access to internet. First, availability of different sources of internet to them has been analysed and secondly, the frequency of use of

different internet sources. Table 3 displays the main internet sources that are available to the respondents. From the table, 84.1% of the respondents indicated that there is Information and Communication Technology (ICT) Laboratory in their school while 58% maintain that there is internet facility in their school. The results also indicate that only 14.3% of the respondents have enough internet facilities in their schools. It was also discovered that 26.1% of the respondents directly pay for internet use in their schools. Further evidence in Table 3 revealed that students with mobile phones represent 50.5% of the sample and those whose mobile phones are having internet facilities represents 49.7%. Besides, the table revealed that 55.4% of the respondents are having access to public Internet Cafes.

**Table 3: Students Access to Internet**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
Availability of ICT Laboratory in school	264	84.1
Availability of Internet facility in school	182	58.0
Availability of enough facilities to access internet	45	14.3
Direct payment for internet use in school	82	26.1
Having a mobile phone	159	50.6
Your mobile phone having an internet	156	49.7
Having access to public internet	174	55.4

Source: Field Survey (2018)

The results suggest that many of the students have ICT laboratories in their schools. This is true since only the newly established schools such as Northern Star Senior High School and Jamiat Islamic Girls Senior High School are the institutions with inadequate access to ICT laboratories. Students of such schools rely on ICT laboratories outside their school campuses. However, the fact that only 58% of them indicating the availability of internet facilities suggests that the laboratories are not functioning. Besides, many students do not have access to internet and this

means that they will not be able to rely effectively on the internet for their academic work. This confirms the results of Olatokun (2008) in Nigeria that inadequate access to internet is a challenge among students. An alternative to the school internet facility is the use of personal mobile phones and public Internet Café which 49.7% and 55.4% of them are having access to. The results imply that students with mobile phones are having internet facilities in them which may grant them access to the internet. This is in support of the results of Ellore *et al.* (2014) that cellphones have improved students' access to internet facilities. This means that the use of mobile phones in accessing internet is a global phenomenon.

The survey results also include an analysis of the frequency of internet use. The respondents were asked to indicate their frequency of internet access from the various sources available to them. From Table 4, 19.7% use the internet from their School ICT Laboratories daily, 35% use it weekly and 5.7% use it monthly. For using mobile phone to access the internet, 29% use it daily, 10% use it weekly and 12.1% use it once in a month. In terms of household internet facility, the results point out that 11.5% use internet daily, 17.2% use it weekly, and 5.5% use it monthly. Finally, the results also revealed that 18.5% use Public Internet Café daily, 13.7% use it weekly and 21% use it once in a month.

**Table 4: Frequency of Internet Use**

Source of internet	Frequency of internet use				Total
	Daily	Weekly	Monthly	Not at all	
School ICT Laboratory	62 (19.7)	110 (35.0)	18 (5.7)	124 (39.5)	314 (100)
Mobile phone	91 (29.0)	32 (10.2)	38 (12.1)	153 (48.7)	314 (100)
Household Internet facility	36 (11.5)	54 (17.2)	17 (5.5)	207 (65.9)	314 (100)
Public Internet Cafe	58 (18.5)	43 (13.7)	66 (21.0)	147 (46.8)	314 (100)

Source: Field Survey (2018) *Figures in parenthesis are in percentages*

The findings suggest that daily internet use is more through the use of mobile phones. For those who use the internet weekly, they resort to the use of their School ICT Laboratories. These findings are similar to the empirical results of Bragdon and Dowler (2016) who argue that students with access to mobile phone internet spent more time in using the internet. Olatokun (2008) added that such students use the internet every day just as it has been confirmed by the results of this study.

#### **4.3 Internet Use and Academic Performance**

The findings of the study include an analysis of the influence of internet access on academic performance of the student. The null hypothesis of no influence of access to various sources of internet on the academic performance was formulated and validated using a parametric statistics. The procedure involves comparing the means (average score) of different categories of students based on their internet access. The statistics generated include percentages, means, standard deviations, F-statistics and its significance (P-value) and the results are shown in Table 5 below.

From Table 5, the 39% of the students who have access to their school ICT Laboratory has a mean average score of 61.10 (lower than the sample average of 62.9) with a standard deviation of 8.9. However, those without access to school ICT Laboratory have a mean score of 64.18 (higher than the sample average of 62.9) with a standard deviation of 9.6. The F-statistics is 8.09 which is significant at 1%. This provides enough evidence to reject the null hypothesis of no influence of access to School ICT Laboratory on academic performance. Hence students with no access to school ICT Laboratory perform better than their counterparts with the facilities.

It has also been discovered that students with internet facility on their mobile phones have an average score of 64.26 against those without access who have a score of 61.4. The standard deviations suggest that the scores are more varied among those with mobile internet (10.19) than those without (8.4). The results of the tests of hypothesis revealed an F-statistics value of 6.9 which is significant at 1%. This means that the null hypothesis of no difference in the mean scores should be rejected in favour of the claim that access to mobile internet has an influence on average scores of students.

Access to household internet facility was also anticipated to have an influence on students' performance. From Table 5, only 14% of the respondents have access to household internet facilities. This category of students recorded a mean score of 65.88 and this is higher than the sample mean score (62.94). The standard deviations do not show much variation within the categories. However, the F-statistics is 6.9 and this is significant at 1% which means that the null hypothesis of no difference in the mean scores of students with access to household internet facility from those no access should be rejected. Hence student with access to household internet has higher average score.

Finally, access to public internet facilities such as Internet Café was considered in the analysis of the influence of internet use on students' academic performance. The results in Table 5 point out that the 34.8% of students with access to public internet sources have a mean score of 64.8 and this is more than the sample average. Besides, the 65.2% of those with access to these sources have a mean score 61.9 and this is lower than the sample average. The F-value of 6.244 is significant at 1% and this provides enough evidence to reject the null hypothesis of no difference

in the mean scores. Hence the fact that student with access to public internet facilities has higher mean score is not due to chance but has depicted the actual case of the effect of internet use.

**Table 5: Internet Access and Academic Performance**

Sources of internet	N	Percent	Mean	Std. Dev.	F	P-Value
<b>School ICT Lab</b>						
Yes	126	39.0	61.10	8.959		
No	188	61.0	64.18	9.685		
Total	314	100.0	62.94	9.507	8.099	0.005
<b>Internet on mobile phone</b>						
Yes	166	54.0	64.26	10.196		
No	148	46.0	61.46	8.462		
Total	314	100.0	62.94	9.507	6.913	0.009
<b>Household internet facility</b>						
Yes	42	14.0	65.88	9.152		
No	272	86.0	62.49	9.496		
Total	314	100.0	62.94	9.507	4.696	0.031
<b>Public internet cafe at home</b>						
Yes	106	34.8	64.80	8.415		
No	208	65.2	61.99	9.903		
Total	314	100.0	62.94	9.507	6.244	0.013

Source: Field Survey (2018)

There are implications emanating from the results on internet access and academic performance. First, many schools have ICT laboratories which are not functional. This is the case in this study where 84.1% of the students confirmed the availability of ICT laboratories meanwhile only 58% indicated that their schools have internet facilities. This means that such laboratories are not equipped with internet facilities such as the case of Jamiat Islamic Girls Senior High School, and Northern Star Senior High School. Other evidence from Table 5 implies that access to internet facilities promote academic performance of Senior High School Students since students with

internet access recorded performance above average compared with those without internet access. Access to variety of information could be responsible for the higher performance of students with access to internet facilities. The findings support the results of several other empirical studies (Ngoumandjoka, 2012; Torres-Diaz *et al.*, 2016; Aitokhuehi *et al.* 2014; Kakkar, 2015) on the positive impact of the internet on academic performance.

The results of the study include an analysis of how different uses of internet influence students average score. The different uses considered include use of internet for social media, searching for academic information, and searching for news. The analysis was done using descriptive statistics and the ANOVA test using the F-statistics and the results are shown in Table 6. From the table, the 46.6% of the students who use the internet for social media has a mean score of 63.9 and this has a standard deviation of 9.9. Besides, those who do not use the internet for social media has a mean score of 62.4 and this has a standard deviation of 9.1. The test value of 0.9 is not significant even at 10% and this means that the null hypothesis of no difference in means cannot be rejected. Similar findings have been reported in the table on the use of internet for searching academic information as well as using it to listen to news because F-statistics is not significant in either case. This means that different uses of internet do not influence academic performance of the students.

**Table 6: Internet Use and Academic Performance**

<b>Uses of internet</b>	<b>N</b>	<b>Percent</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>F</b>	<b>P-Value</b>
<b>For social media</b>						
Yes	145	46.6	63.49	9.963		
No	169	53.4	62.47	9.101		

Total	314	100.0	62.94	9.507	0.902	0.343
<b>Search for academic information</b>						
Yes	221	70.2	62.81	9.254		
No	93	29.8	63.25	10.128		
Total	314	100.0	62.94	9.507	0.138	0.710
<b>For news</b>						
Yes	124	39.9	63.60	9.639		
No	190	60.1	62.51	9.421		
Total	314	100.0	62.94	9.507	0.979	0.323

Source: Field Survey (2018)

The results suggest that different uses of the internet do not influence academic performance significantly. This suggest that whether the student uses the internet for social media, for searching academic information or for reading news all contribute to their academic performance. From the view of Olatokun (2008), the different use is a source of general knowledge and hence improves reading skills, while Siraj *et al.* (2015) argue that the internet is sometimes used as supplementary leaning materials from different sources that contribute to academic performance among students. These justification probably explain the result that different uses have no significant influence on student academic performance.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The availability of different internet sources to students does not grant all of them immediate access. The various Senior High Schools are not resourceful enough to grant internet access to students. Despite the alternatives to school- based internet, access to internet among Senior High School Students is still limited. Besides, access to internet sources is promoting academic performance among students since those with access showed more improvement in academic performance than those without access. However, different uses of internet do not influence

academic performance. This suggests that students with access to internet facilities have been using them in ways that will promote their academic achievement.

This study is calling on the Ghana Education Service, especially, the Regional and Municipal Education Directorate in the Upper West and Wa Municipality respectively to consider students access to internet as a significant determinant of academic performance. It is therefore, recommended that Heads of Senior High Schools should liaise with management and other supporting institutions to provide internet infrastructure. This is relevant because provision of internet infrastructure in schools is a key strategy to promoting academic performance. Besides, any development partner that has students' academic performance as a priority should collaborate with parents to facilitate students' access to internet when they are out of school.

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