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Internet Use among Students in Tertiary Institutions in the Sunyani Municipality, Ghana

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Abstract

The place of the Internet in an era that has been described as information and communication age cannot be overemphasized. This is because many people have today seen the competitive edge that easy access to current and accurate data and information gives to its users.

The paper aimed to find out how tertiary students in the Sunyani Municipality have been harnessing the potentials of the Internet technology. The purpose is to find out how the Internet is being utilized by students in the tertiary institutions in Sunyani Municipality and the problems that students might be encountering in its use.

The survey strategy was chosen for the research and a random sampling technique was used to select 600 students from three tertiary institutions in the Sunyani Municipality, of the Brong-Region of Ghana.

The study showed among others that, many students in the Municipality had learnt how to use the Internet from their teachers and were more likely to use

the Internet Cafés as access point. Many of them also believed the cost of access was expensive. The paper also showed that more tertiary students are using the Internet technology to look for information for assignments. The Internet has also led to improved communications among tertiary students. Google and Facebook were the most preferred search engine and social network respectively.

Poor Internet speed, inadequate number of computers in computer laboratories, and inadequate user skills were observed as the leading constraints to Internet use. Since a significant number of tertiary students are using the Internet, addressing the hindrances to its use will enhance teaching, research and learning.

Introduction

There have been several technologies since the days when the abacus: an ancient device for solving arithmetical problems was invented. Some of the new technologies since then, have had phenomenal impact on human activities in areas such as communication, teaching and learning.

The Internet, a major learning and teaching tool today, is one of the new and emerging technologies that has had phenomenal and tremendous impact on how human activities are conducted. This position is shared by Otchere (2006) who stated that the Internet has improved life globally due to its ability to facilitate instant distribution and access to information. In 2005 for instance, Patel asserted that at onset of the 21st century, over 50 per cent of online Americans had used their own sources on the Internet as way of finding out what was going on in the world. Quoting from *Music Piracy Report 2002,* Patel also stated that the Internet was considered a top source of information on election news, and used alongside broadcasting, paper-based news-media, newspapers and magazines among 20% of Americans. This is possible because the Internet has the capacity to make large libraries of electronic information and databases available to users within minutes at the click of a button, something that is not possible with the traditional information sources such as a library. Patel (2005) also stated that the search engine of Google alone contains about 4 billion web pages which could form a stack of paper more than 220 miles high if printed.

Sellers (1994) defined the Internet as a collection of more than ten thousand interconnected computer networks around the world that makes it possible to share information almost instantly by Sellers. But that definition would today pass as understatement as millions of networks globally are now connected to the Internet. Osei (2011) assertion that it is global network of computers connecting millions of computers made up hardware and software infrastructure interlinking several computers worldwide is a more apt description today.

It has several features but according to Stair (1997) the World Wide Web (WWW) is perhaps the most exciting part of the Internet. He defined it as a huge and rapidly expanding collection of electronic documents that can

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combine text, still and moving images, sounds and automatic links to documents. Osei (2011) has also rightly observed that with the use web browsers such as Netscape Navigator, Internet Explorer and Mozilla Firefox there has been a rapid explosion in the use of the Web since its development by the US Department of Defense as a distributed system.

Indeed, globally, the Internet has become one of the leading tools for research, teaching and learning. A decade ago, Mabawonku (2001) predicted that in the post-Internet age, reference librarians may become irrelevant as sole providers of information as the information that was once provided at the reference desk has been transferred to an Internet home page. Furthermore, Waldman (2003) also stated that a study conducted by Valentine (1993) among undergraduates, revealed that they (undergraduates) looked for the fastest way to satisfactory results when conducting research, hence the decision to use electronic information sources first. The Internet therefore comes in handy because it has limitless range of facilities and offers access to update research reports and knowledge globally (Ojedokun, 2001).

Growth of the Internet in Africa and Ghana

According to Internet World Stats (2012) Africans formed only a paltry 6.2% of Internet users in the world as of December 31, 2011. The available statistics suggest that Internet users in Africa grew astronomically from 4,514, 400 to 139, 875, 242 between 2000 and 2011. The increase indicates that more people in Africa have over the last decade embraced the new means of communicating information. Though the relative increase of Internet users in Africa is seen not to be encouraging, the annual average increase in Internet users of 36.63% indicates larger number of users in the future.

As at December 31, 2011 Internet users in Ghana was estimated to be 2,085,501. The figure represents a major increase as compared to the 3,000 estimate of Internet users in Ghana in the year 2000. The current estimate corroborates the assertion by Abbey (2011) who indicated that available data shows that over two million Ghanaians now have access to the Internet. Costs of accessing the Internet in Ghana have over the years been reducing perhaps because of the increasing number of service providers and users. Osiakwan, Foster and Santiago (2006) have also pointed out that low-cost Internet access is now available at Internet cafes in most of Accra's neighborhoods. They also added that the regional capitals [including Sunyani, the Brong Ahafo regional capital] also have a growing number of Internet cafes and community access centers to the Internet. Okine (2011) also reports that in its quest to increase access to the Internet especially in rural areas of Ghana to identifiable groups of Internet users such as students and teachers at affordable cost. Vodafone Ghana—Internet provider—has introduced a new device called *Vodafone Webbox.* The device is a keyboard with a Subscriber Identification Module (SIM) card that can be plugged into a television set to access the Internet from any part of the country.

Advances in wireless and satellite technologies have also made it possible to connect many institutions otherwise impossible due lack the cabling technology. Abbey (2011) also reported that Amar Deep Hari, Chief Executive Officer of IPMC Ghana puts the number of Ghanaians using Facebook, a social network website available through the Internet at 80,000.

The Internet, the school and the student

The opportunities created by the Internet in terms of access to data and information has among others shortened the time that it takes students to submit assignments, undertake research, etc., and respond to queries from their lecturers. With the advent of the Internet, teachers have additional tool for access to information and data that could broaden their horizons and improve their output.

In fact, Sellers (1994) pointed out that the Internet has the ability to increase the classroom resources by making other resources in the form of information, data, images and even computer software from places otherwise inaccessible to the classroom available to teachers and students who have the necessary infrastructure to tap it. The availability of these resources he opined, could enhance individual and group projects, collaboration and idea sharing not found in schools without Internet access. On Monday, February 7, 2011 *The Ghanaian Times* also reported that the out-dooring of an electronic library to cater for textbooks and literary needs of students was a revolution that has benefits to universities and polytechnics in the country [Ghana] including those in secondary schools. The reason being that it was going to assist them in their academic and research works with access to over 500,000 academic textbooks upon payment of a subscription fee per semester by each student who would like to use the electronic library

Universities have also contributed to the growth of the Internet as more of them have gotten wired to the net (Perry, Perry and Hosack-Curlin, 1998). A study among students of University of Botswana conducted by Ojedokun in 2001 showed that out of the 1500 respondents, 31.1% of have experience of the Internet search for less than six months, 12.8%: 7-12 months, 12.2%:13-18months, 6.1%: 19-24months, and 13.5%: over 24 months.

The same study further showed that 37.8% of the respondents used the e-mail to communicate with friends and relatives, 13.5% with students, 7.4% with lecturers and 16.9% non-use of e-mail. In the case of use of the web (www) 20.9% used it for entertainment and sports, 19.6% for news, 15.5% for academic materials and 15.5% non-use of the web.

There are a number of Internet/Cyber cafes in the Sunyani Municipality beside Internet facilities installed by authorities of the higher institutions of learning where students could access the Internet. However, Abissath (2005), has asserted that a number of African youth who make use of cyber cafes go to pornographic sites instead of e-libraries for online learning. But Alemna and Adanu (2005) have also observed that widespread use of the Internet in

various universities and colleges has contributed to increased curiosity about what types of online activities the users engage in.

Purpose of the study

The Internet, as has already been noted, is a major global tool today with capacity to provide data and information for teaching, learning and research. The purpose of this research is therefore to find out how the Internet is being utilized by students in the tertiary institutions in Sunyani Municipality and the problems that students might be encountering in its use.

Objectives
Specific objectives include:

- Finding out the students knowledge on how to use the Internet;
- Determining the regularity and duration of students use of the Internet;
- Identifying the purpose for which tertiary students use the Internet;
- Identifying access points to Internet; and
- Finding out the benefits and constraints of Internet use to tertiary students.

Methodology

The students of three higher institutions of learning in the Sunyani Municipality (Brong-Ahafo Region, Ghana) namely; Catholic University College, College of Renewable Natural Resources (KNUST, Sunyani) and Sunyani Polytechnic constituted the population of this study.

The study adopted the survey strategy for the research. Bell (1999) has discussed a number of "well-established styles" available to researchers including the survey technique. As a data collection strategy, it was chosen above the other 'styles' because surveys have the advantage of covering large samples of people and is ideal for obtaining data representative of populations too large to be dealt with by other methods. (Monette, Sullivan and DeJong, 1998).

A total of 600 questionnaires (200 per institution) were randomly distributed between April and June 2011 on the campuses of the three higher institutions of learning in the Sunyani Municipality to students. They responded to both closed and opened-ended questions on their use of the Internet. The tertiary students form Respondent Group One.

In addition to observation of Internet facilities available to tertiary students in the Sunyani Municipality, the researchers interviewed librarians, managers of computer laboratories on the campuses and managers of Internet cafés.

 Statistical Package for Social Sciences (SPSS) software was used to analyze the data collected from the survey. Statistical tables and other figures were developed from the software.

The Findings and Discussions

   a. Responses from Librarians in the selected tertiary institutions

Although 'the book' has remained the most visible and traditional medium for storing and making information available in many libraries, it has not stopped libraries from integrating modern technologies and tools such as the Internet into its setting.   The librarians in the three institutions were therefore interviewed on Internet use on their various campuses.

All the three campuses had Internet connectivity in their libraries and this was open to all registered students. The CUCG, Polytechnic and KNUST (Sunyani Campus)   libraries have twenty, nine and three computers in their respective libraries which were connected to the Internet. All the libraries have had the Internet facility for not less than three years.

It was realized that the CUCG and the Sunyani Polytechnic libraries have full-time IT staff who address minor IT challenges in addition to assisting students in information search through the Internet. The KNUST (Sunyani) Campus relies on the IT staff in their computer laboratory to attend to its machines in times of technical challenges.

It was observed that only CUCG subscribes to online databases to supplement other information resources in the library. It was found that students are charged for Internet use through the central billing system and are there not charged for accessing the Internet in their respective libraries.

Furthermore, because of the ''controlled environment'' in which the students access the Internet, there were no reports of abuse of the facility except the tendency for students to introduce computer viruses due to the use of external USB (pen-drives) on the machines.

b. **Reponses from managers of computer laboratories in the selected
    Tertiary institutions.**

In many circles, 'the computer' is also to the information and communication technologies age what the 'the book' is to the library. This is because 'the computer' is the 'traditional medium' through which many people experienced the information and communication technologies age. Computer laboratories were set up on campuses of schools and institutions of higher learning to, among others, train students and instructors in computer use skills with the aim of enhancing their capacities to compliment the traditional sources of information with ICT tools in teaching, learning and research.

The computer labs also served as places where students could access the Internet since significant number of the computers were connected to the Internet. However, the lab managers stated that the Internet speed in

laboratories was slow due to the low bandwidth and the relatively large number of computers. They also added that their laboratories were running on dedicated lines but the bandwidth size was dependent on how much an institution was willing to spend on Internet connectivity.

It also came to light that computer laboratories have been in operation on each of the three campuses for more than five (5) years. The least of them had a minimum of forty computers in its computer laboratory with the highest having over two hundred computers in its computer laboratory. In cases of technical challenges, they are either resolved in-house or outsourced depending on the nature of the problem.

The study found that all of the computer labs with the exception of one are offering wireless Internet services. None of them expressed satisfaction with services being provided by the Internet Service Providers (ISPs). One institution offers 24 hours of Internet service whilst the other two run a maximum of eight hours per day. With regard to Internet user policies, all of them indicated that they have some guidelines that spell out the 'do and don'ts' whilst in the lab.

c. **Responses from the operators of cyber cafes in Sunyani Municipality**

Libraries and computer laboratories are not the only places that tertiary students access the Internet. In fact findings from the research (see Table 5) have shown that the Internet Café is the most frequently used point of access to the Internet among students in the Municipality. Operators of ten Internet cafes were sampled and interviewed on Internet use.

When asked about the type of Internet connection being used, all the ten (10) respondents said they were using shared lines due to its cheapness in terms of cost compared to leased (dedicated) lines. On the question of how long they have been in business, four (4) out of ten said they have been operating for less than three (3) years whilst another three (3) have existed for the past four (4) years. Also another three (3) have been in business for more than five (5) years. The number of computers in the Internet cafés ranged from 5 to 20. Seven out of ten (10) operators have technical men who instantly attend to issues usage challenges such as basic troubleshooting and seek assistance of nearby technical firm's to resolve problems beyond their control. It was found that only two (2) out of the ten (10) offer wireless services to users. All the Internet operators expressed satisfaction with the bandwidth they are paying for and indicated that the Internet speed in their cafés was good.

In the case charges for Internet use, the average price of fifty Ghana pesewas (0.50p) is charged for the first thirty (30) minutes. The café operators mentioned that they do not encourage people to visit pornographic sites in their cafés but occasionally they have had to ask some users close websites which portray huge pornographic images. This give some credence to the assertion by Abissath (2005) that some number of African youth use Internet café's as points of viewing pornographic contents.

d. Discussion of valid responses from the students

Details of student respondents
Table 1 below shows the composition of the respondents from the various institutions. The study registered a response rate of about 84.3% .In terms the gender distribution, the males were 306 while the females were 187 (representing 60.5% and 37% respectively).The respondents were between the ages of 18 and 55 years. Majority of the respondents were within the category of the 18-25 (representing about 72% of the total respondents). The students who formed the respondents included first, second, third and forth years with majority of them being in the second year of tertiary education (representing 25.4%, 37.9%, 29.0% and 7.7% respectively).   The study recorded a relatively low response rate among the university students than the polytechnic students. The students were pursuing education to obtain various certificates with majority aiming at university degrees.

Table 1: **Composition of respondents**

Institution	Catholic University	KNUST	Sunyani Polytechnic	**Total**
Frequency	165	61	276	502
Percentages(%)	32.9	12.1	55.0	100

Table 2: **Academic Pursuit**

Programme	Degree	HND	Diploma	Others	**Total**
Frequency	214	176	82	19	491
Percentages(%)	43.6	35.8	16.7	3.8	100

Table 3: **Academic Level**

Academic Year	First	Second	Third	Fourth	**Total**
Frequency	126	188	144	38	496
Percentages(%)	25.4	37.9	29.0	7.7	100

Results and Discussion of Data

Internet Knowledge and Use

A greater number of tertiary students seem to have knowledge about how to use Internet services. This is because 92.9 % or 470 of the respondents indicated that they know how to use Internet services while about 5.9% stated that they do not know how to use the Internet. Reasons given for not knowing how to use the Internet were given as less time with others stating that they had no access to Internet in their various pre-tertiary schools. Most of the students indicated that their knowledge about the use of the Internet was developed through training by teachers (from the pre-tertiary school), colleague students, and computer classes or self-taught. The points of

accessing the Internet by students have mostly been through School Computer Labs, School Libraries, Internet Café', Home-based broadband Internet and Mobile-equipped Internet gadget. The study revealed that students tend to use the Internet Cafés 'more frequently than any other means to access Internet services (refer to ranking on Table 5). This suggests that either there are inadequate Internet service points within the universities set-up or the Internet facility being offered at does not encourage large usage.

The study also showed that in all the three tertiary institutions, there were more computers in the computer laboratories than the schools libraries. With the current/modern trend where more books are being produced with electronic formats such as the Pdf, e-books, Epub, etc., well resourced Internet-based libraries would not only enhance the quality of academic work but significantly ensure that students have cheaper access to academic literature. Students would also be able to search for books and other related files faster than using the traditional means of locating books at the library where computer aided search technologies are available.

Table 4: **Means of Learning**

Means of Learning	Teachers	Self-Taught	Colleague (students)	Computer Classes	Others	Total
Frequency	125	111	99	96	2	433
Percentages(%)	28.9	25.6	22.9	22.2	0.5	100

Table 5: **Point of Accessing Internet**

Point of Access	Frequency	Rank
School Computer Laboratory	339	2nd
School Library	148	5th
Interne Café	360	1st
Home (Broadband)	286	4th
Mobile Internet	325	3rd
Total	**1458**	

Means of Payment and Costs of Accessing the Internet

The study revealed that providers of Internet services to tertiary students within the Sunyani Municipality are primarily the Universities and the Polytechnic as well as the numerous Internet cafés that have sprung up within the Municipality. A significant number of the respondents indicated that they paid for the use of the Internet through the charges by the universities or polytechnic (28.9%). However, a far larger percentage of students (42.8%) pay for Internet use through charges by Internet café operators who have adopted a pay-and-use policy. Growing number of students also enjoy Internet services through the use of mobile Internet modems. Such users pay for the Internet data volumes by buying prepaid credit and loading it onto the Internet modem. Table 6 shows that about 15.9% of the respondents pay for

Internet services through the mobile Internet modem technology while about 14.4% also indicated that they enjoy free access to the Internet.

The study also sought to find out from students how they rate the costs (monetary) of accessing the Internet services. Some 35.0% students do not seem to know whether it is cheaper or expensive to access Internet services in the Sunyani Municipality but a majority of 49.9% of students think that it is very expensive or expensive to access the Internet. Another 15.1% of the respondents indicated that it was cheaper or very cheap to access Internet services in the Municipality (refer to Table 7).

Table 6: **Means of payment for Internet access**

Means of payment	Frequency	Percentage (%)
Charged by University	125	26.9
Pay for Use at Internet Café	199	42.8
Purchase of Internet Credit	74	15.9
Free Access	67	14.4
Total	**506**	100

Table 7: **Cost of Accessing Internet**

Rating	Very Expensive	Expensive	Do not Know	Cheap	Very Cheap	**Total**
Frequency	75	159	164	25	46	469
Percentages(%)	16.0	33.9	35.0	5.3	9.8	100

Purpose for Using the Internet

The Internet has been identified as one of the means through which students conduct preliminary searches for information to assist them in the preparation of assignments and other forms of school related activities. The Internet is also one of the most active platforms used by students for communication with pals and social interaction as shown in a ranking system in Table 8.

The findings show that there is relatively less use of the Internet for communication with teachers and lecturers. This calls for concern especially now that the world seems to be moving towards the use of information communication technology in all fields of activities. Opportunities provided by the rapid transformation in the information communication technologies can be harnessed to significantly enhance teaching, learning and research in African tertiary institutions.

It was also observed that quiet an important number of tertiary students use the Internet to read sports news and as a place of finding entertainment as

they are ranked third and fourth in the ranking system in terms of purpose of use to which the Internet is put. There is, however, relatively insignificant number of students who use the opportunity the Internet provides to watch pornographic images.

Table 8: **Purpose of Using the Internet**

Purpose	Frequency	Rank
To Look for Information for Assignments	419	1st
To Communicate with Pals	249	2nd
To Communicate with Lecturers	56	5th
Entertainment	165	4th
Sports News	172	3rd
To Watch Pornography	10	7th
Others	20	5th
Total	**1091**	

Regularity of Internet Use

It was found out from the study that majority of tertiary students use the Internet several times in a week (45.0% of respondents) while another 21.4% indicated that the use the service daily. The study also showed that some of the students (30.6%) are not regular users of the Internet while a marginal number of respondents (3.0%) indicated that they do not use Internet at all as shown in Figure 1. Also, the responses in Table 9 show that 42.3% of the sampled tertiary students spend between 30 minutes up to an hour on the Internet per usage period. This could be attributed to the fact that a significant number of students use the Internet cafés as points of accessing the Internet. Accessing Internet services at Internet cafés provides both time and cost constraints and perhaps this explains why majority of students spend fewer hours in accessing Internet services. Information gathered from the tertiary institutions included in the study indicated that there is no regulation of time in the use of Internet facilities both at the school computer laboratory or the school library. This situation is likely to create uneven access by students to Internet facilities in such centres. This also seems to suggest why there are relatively smaller numbers accessing Internet services through the school libraries or school computer laboratories.

Figure 1: How regular tertiary students use the Internet
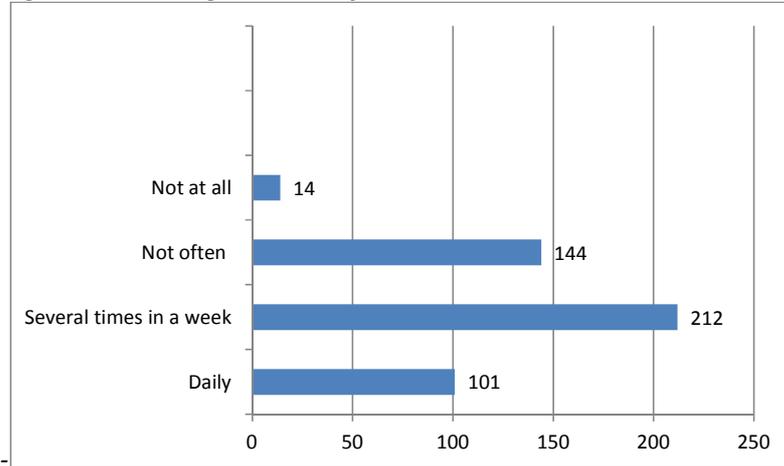
Table 9: **Duration**

Duration	< 30 Min	30min—1Hr	1Hr to 2Hrs	Above 2 Hrs	Total
Frequency	40	198	158	72	468
Percentages(%)	8.5	42.3	33.8	15.4	100

Internet aided networks frequently used

The study was interested in finding out some of the most popular Internet-aided networks that were frequently used by tertiary students in the Sunyani municipality. Of the five popular Internet-aided social networks, Facebook had the highest frequency among tertiary students as the most frequently used (80.9%). This was followed by Twitter, Skype, LinkedIn and Blog (5.2%, 5.0%, 4.7% and 1.9% respectively). The study indentified that Google is the most used search engine by tertiary students in the Sunyani municipality as suggested by 70.4% of the responses. Yahoo followed with about 27.1% of the total responses. The other three (Bing, Alta Vista and Ask.com) which together represent 1.8% are not popular search engines among tertiary students in the municipality. From the responses in Table 10 below, it can be deduced that Google and Yahoo are the most popular search engines among tertiary students in the Sunyani municipality.

Table 10: **Internet Networks Frequently Used**

Internet Networks	Facebook	Twitter	Blog	Skype	LinkedIn	Others	Total (%)
Frequency	342	22	8	20	21	10	423

| Percentages(%) | 80.9 | 5.2 | 1.9 | 4.7 | 5.0 | 2.4 | 100 |

Table 11: **Favorite Search Engines**

Search Engines	Yahoo	Google	Alta Vista	Ask.com	Bing	Others	Total
Frequency	127	330	1	3	5	3	469
Percentages(%)	27.1	70.4	0.2	0.6	1.1	0.6	100

Constraints to Internet Use

It was of interest to the study to find out the hindrances that are limiting effective and efficient use of the Internet in the Sunyani Municipality. The study suggested six (6) constraints which can possibly affect the smooth use of the Internet by tertiary students in the Municipality. The study adopted the frequency of events approach to aid ranking of the responses. The results show that the *number one* constraint to the use of Internet services by tertiary students was identified as poor Internet speed. This situation has the potency to discourage students from such Internet facilities. The respondents also identified inadequate number of computers, poor personal user skills, and non-functional or faulty computers (2nd, 3rd and 4th respectively) as other critical constraints that hinder the use of Internet in the Municipality. Others also identified regulated periods (mostly imposed by charges in Internet cafés) and room temperatures conditions in computer laboratories as constraints to Internet use in the Municipality as shown in Table 12.

Table 12: **Constraints to Use of Internet**

Constraints	Frequency	Rank
Inadequate user-skills	144	3rd
Inadequate Computers in Computer Lab	165	2nd
Non-functional Computers	110	4th
Regulated Time (Cafés)	74	5th
Computer rooms too warm	51	6th
Poor Internet speed	278	1st
Others	4	7th
Total	**826**	

Benefits of Using the Internet

The Internet offer great opportunities that students can take advantage of to develop themselves within the seeming competitiveness of world graduate market. The study intended to find out how students in tertiary institutions have benefited from using the Internet. The study showed that relatively greater number (21.3%) of the respondents stated that the Internet facility has led to improved communication with others while other 16% indicated that the

Internet use has helped them upgrade their knowledge. Another 11.5% of the respondents stated that the Internet has helped them to improve their research skills. Other respondents (6.5%) indicated that the Internet makes learning easier as shown in Table 13.

The responses indicate that improvements in Internet service provision will greatly benefit students in tertiary institutions.

Table 13: **Service Improvement**

Purpose	Frequency	Percentage (%)
Upgrade of knowledge	81	19.7
Reduced transport cost	1	0.7
Improved communication with others	108	26.2
Improved user skills	43	10.4
Improved research abilities	58	14.1
Business transaction	23	5.6
Easy access to information	48	11.7
It makes learning more easier	33	8.0
Improved entertainment	14	3.4
Free software	3	0.7
Total	**412**	**100**

Suggestion for Improvement in Internet
The study also sought respondents' view on what should be done by school authorities and government to improve and facilitate the use of Internet among tertiary students. The study revealed three major issues that, in the view of tertiary students, need to be addressed to ensure accessibility and quality use of Internet services. The first major suggestion from the respondents was that more computers should be provided with Internet access in the various tertiary institutions. The second suggestion was that there is the need for significant improvement in Internet speed to ensure fast and efficient use of Internet services. The third major suggestion from tertiary students was that Internet services must be affordable. These three major suggestions, mentioned above, dominated others and account for 56.5% (i.e., 21.6%, 19.1% and 15.8% respectively) of the responses on suggestion for improvement in Internet service use among tertiary students. Another relatively small group of respondents (11.7%) emphasized the need for the education of tertiary students as to how they can effectively use Internet services to improve learning and research as shown in Table 14.

Table 14: **Ways of making the Internet easily accessible and more useful to students**

Suggestions	Frequency	Percentage (%)
Education on the use of the Internet	43	11.7
Separation of Internet centre from computer lab	4	1.1
Provision of alternate power to ensure constant power	4	1.1
Increase user periods	6	1.6
Provision of wireless Internet service	9	2.5
Provision of Internet at the library	2	0.5
Affordability in accessing Internet	58	15.8
Improvement of Internet speed	70	19.1
Posting of assignment and lecture notes on Internet	22	6.0
Provision of more computers with Internet access	79	21.6
Extension of Internet coverage	22	6.0
Proper maintenance of wireless Internet facility	16	4.4
Government should provide computers at basic education level	11	3.0
Accessible	20	5.5
Total	**366**	**100**

Conclusion and recommendations

The Internet has what it takes to transforms education at all levels. What is needed is the provision of right infrastructure to serve as the vehicle for the Internet to the schools. The study has shown among others that the tertiary students in the Municipality were accessing the Internet from varied points for educational and other purposes. The tertiary institutions in the Municipality have also taken steps to make the facility available on the campuses to students and their lecturers. The study showed that a significant portion of tertiary students in the Sunyani Municipality use the internet facility.

Evidence from the study also revealed that Internet facilities on the campuses of the tertiary institutions in the Sunyani Municipality are characterized by poor or slow Internet speed. This situation has the potency to limit effective use of the Internet technology. As a result majority of tertiary students in the Municipality are not fully harnessing the opportunities offered by the Internet facilities on their various campuses.

Based on the findings, the study recommends the following:

- Effective use of bandwidth: Buying larger bandwidth per se would not necessarily resolve the numerous challenges associated Internet use. Tertiary institutions in the Municipality need to regularly monitor the network to find out how people use it. This will enable them gather accurate information for bandwidth management decisions which will lead to proper optimization. Effective bandwidth use requires a combination of factors including defensive strategies like fire walls and

bandwidth segmentation, engagement of personnel with the requisite computer know-how, advocacy on the correct use of bandwidth, periodic monitoring of the facilities, equipping users with adequate user skills and strategic policies aimed at effective optimization. The tertiary institutions must therefore ensure that the available bandwidth is properly used with documented policies that spell out the kind of applications that can be run on its network, time allocation, etc. for users.

- The institutions in the Municipality should also consider teaming up in a consortium to collaborate and lobby for cheaper bandwidth packages from Internet Service Providers (ISPs).

- The educational institutions in the Municipality should also continually review their training programmes in computer and Internet user skills. This will ensure that users are updated with new techniques and opportunities that characterize the ICT world.

- Libraries and Computer laboratory managers must introduce time regulatory policies to restrict usage periods by students. This will ensure that more students have access to Internet services.

- Instructors and students in tertiary institutions in Ghana must be encouraged to interact on the Internet platform in terms assignments, enquiries, lecture notes and discussions. This will improve teaching and learning.

- The government should support and encourage private sector as well as Internet Service Providers to invest in communication and information technologies such as fiber-optic technologies that have the potential to make access to the internet a lot cheaper for educational purposes.

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