The Use of Mobile Technology to Enhance Learning among University of Cape Coast Health Science Education Students

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Abstract:- Globally, education plays an important role in national development and Ghana is no exception to this. Education is very necessary in order to push a country forward especially in terms of economic prosperity. Mobile technologies can be seen to be appealing, resourceful and effective learning tools. Also, mobile technology allows students to engage learning in ways otherwise not thought possible. This technology has vividly transformed the learning environment in such a way that students have access to materials and resources both inside and outside of school. In today's global economy, it is key for students to have connection, communication, collaboration, creativity as well as critical thinking skills in order to survive in this century. And this can be done through mobile technology which improve learning and engage students and teachers by providing new content and facilitating access to information anytime and anywhere. Yet despite the emergence of mobile technologies, most countries are still not designing their educational systems to prepare both teachers and students for the 21st century. Since, these technologies are seen to have numerous educational possibilities that can enhance the learning process for students by providing current materials and resources through the internet. This study aimed at identifying how often health science students used the internet to seek and access information from their mobile technology, their attitude towards using this technology for internet usage as well as their views about blended learning. The research design employed was a descriptive survey. Convenient sampling was the technique used to collect data from 95 (44 males and 51 females) health science education students from the University of Cape Coast, Ghana. Questionnaire was the instrument used for data collection. Pretesting was done to ascertain the validity of the instrument. Also, the reliability of the instrument was carried out and the Cronbach's α of 0.76 was obtained. The data collected was analysed with the help of the SPSS statistical software version 21. Data was analyzed using descriptive statistics. The findings revealed that the mobile technologies had great potential as a learning tool and it was found that the attitude of students towards internet was positive. Also, most Respondents had mobile technologies that could be used to access the internet to perform various activities lasting about less than an hour to more than 4 hours a day. Further, the study revealed that students perceive blended learning to be a good learning environment that would make learning easier for them. After analyses the results were presented in the form of tables and bar charts. Discussion and conclusions were drawn. The study generated some useful data for recommendations.

I. INTRODUCTION

Over the past decades, mobile phone use has engulfed almost all sectors of the Ghanaian economy. It is no news that the number of mobile technology use over the years has increase to almost the number of population in the country (Ghana). According to Castells, Fernández-Ardèvol, Qiu, & Sey, (2007), in only ten to fifteen years, mobile technology use has become a central part of people's everyday life. Similarly, it is observed that mobile technology use has considerably increased in the past years, fueled by new technology such as smart phones. In 2012, it was projected that 78% of all Americans between the ages of 12–17 years had a mobile phone and 37% of them had smart phone (Madden et al., 2013). Ghana is not left out as a report from Ofosu (2009) revealed that Ghana is one of those African countries with extensive admission and integration of mobile phones. With the increase in the use of mobile technology, they are also integrated into the educational system to improve on the way students think and/or solve problem. For instance, as indicated by Kunateh (2012), the individuals who use mobile phone in Ghana, according to information from Ghana National Communications Authority (GNCA) as at August, 2012, is estimated to be approximately 24.4 million out of the total population of 25 million, as indicated by the World Bank. From this, it is possible to say that university students most especially those in the heath science might make mobile technology use an integral part of their education.

However, the main use of mobile technology in education is closely related to its use to access information on the internet. It is also obvious that internet is rapidly becoming more accessible to most individuals around the globe. It is revealed in India that, approximately 213 million people make use of the internet and most of the youth predominantly college students use the internet for social interaction and communication as well as for their education (Singh, 2014). concurrently, just as students use the internet to improve on their education, they also make use of social sites to acquaint themselves with social lives (Jones, 2002). Jackson, et al. (2011) observed that the Internet can be used as a tool to increase the educational

level due to its reach and availability to everyone, everywhere and any time.

➤ How Often Students Use the Internet

Addiction may arise from the use of internet if the user does not control his/her activities. In a study conducted among mental health students in India indicated that students become addicted to spending extensive hours on the internet in search of quality information to assist their patients (Mitra et al., 2015). Similar findings were reported in the work of Topaloglu and Topaloglu (2014). Simply put, students become addicted to internet use and spend lots of hours on the internet on daily basis which may be problematic to their study.

➤ Internet Use by Students

Generally, internet use to obtain health information have increased across various continents. Many researchers have shown that people's interest in the use of the internet to obtain health information is consistently increasing; this ranges from the value of 20% in 2001 to 40% in 2003 in the United States of America, 42% in 2005 and 52% in 2007 in European countries to as high as 69% in Asia. Among these researchers are (Baker et al., 2003; Hesse et al. 2003; Kummervold, 2008; Ministry of Internal Affairs and Communications [Japan], 2008). With the increase use of internet, it can be anecdotally said that healthcare professionals also use it to constantly update themselves on latest procedures and treatment of diseases. Submissions from Datta et al. (2016) revealed that in a study conducted on the mobile technology use pattern and self-reported health problems among 200 medical students, it was found that 33% of them use cell phone very frequently. Thus, more than two hours daily. Similarly, out of 169 students from Rama Medical College, it was found that 94% of them were using smart phone and 6% using basic phone. Despite the fact that these students use cell phones, their main purpose of using cell phones was to communicate with friends, loved ones and family (51% of the students indicated this). In addition, Kumar and Kaur (2006) revealed in their study that majority of them students who took part in the study were using internet for more than 2 years. They found that almost half of the respondents used internet for 2-3 times in a week while only 5 percent used it every day and also, most of the respondents used the internet for educational objective while half of the respondents used it for research purpose and least number of students used the internet for entertainment aims. In one way or another, students tend to use internet for various reasons. This may not exclude nursing, midwifery, medical and other healthcare students undergoing training.

➤ Attitude Towards Internet

Computers are the most common devices used to access the internet. However, nowadays, miniature devices are gradually dominating the rate at which computers are being used to access information from the internet. From researches conducted by Shoham and Gonen (2008), Simpson and Kenrick (1997), McNeil et al. (2006), Brumini et al. (2005), and Laramee et al. (2012), nurses' computer-related attitudes were generally positive. Thus,

the readiness of healthcare students to use technology in healthcare delivery is high. This technological tools may include smart phones and tablets, laptop and desktop computers, personal digital computers, diagnostics machines among others. Some of these devices, laptops, mobile phones etc., could easily be used to search for information on the internet. A general view of this presents healthcare workers and clinical students with the opportunity to use mobile devices such as smartphones, tablets, iPad among others to access information they need to assist their patients. This technology may save time and energy needed to go through hundreds of pages in search of the same information. Report from Mickan et al. (2013) showed that handheld or mobile computers improved work patterns and efficiency. Nevertheless, Tran et al. reported on the personal mobile phones uses among clinicians.

However, Bond (2004) in a survey of 317 pre-registration students, found that although there was a high degree of computer ownership (84%), most students were not confident using the internet and reported only basic skills. A supporting finding from Scott, Gilmour and Fielden (2008) revealed that 46% of the those who use the internet believe most or all of the internet health information are genuine or authentic while many others do not even check the author or the date of posting. Scott and colleagues also found out that the main reason why some of the nursing students are not using information obtained from the internet is that, these students were skeptical about the authors as well as the publishers, and also not excluding issues about commercialisation. Information presented from these findings indicate that the attitude of health science students is both positive and negative. Some students see the use of internet, either via mobile devices or computers, as a risk on people's life or a life saver.

➤ Students' View on Blended Learning

Blended learning is known to process where people learn through various means. Concurrently, many higher education institutions today have multiple modes such as on-campus, distance education, online learning or a blended learning for teaching (Taylor and Newton, 2013). Singh and Reed (2001) define blended learning as a learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of program delivery. In line with this, Hardyman et al. (2013) unveil that trainee doctors in Wales were with "iDoc" (intermediate document) which was initiative to provide trainee doctors with a library of texts on a smartphone. Thus, training doctors to be lovers of technology use in treating patients. Also, other healthcare professionals undergoing training may see the integration of technology as means of improving on their knowledge since it incorporate different modes of learning; visual, audio, animation and sometimes physical. In a study conducted by Erdem and Kibar (2014) in Turkey, students presented the following opinions.

"Face to face learning was more efficient because we got immediate feedback. During the face-to-face sessions we repeated the subject in online environment and face-to-face instruction helped me understand the course concepts better. So, I preferred face to face sessions" (Student A).

"Face-to-face instruction was a better way for me to learn the content/course materials. I liked the teaching way of class. The teacher used an interesting way to teach us. Being in a class with face-to-face communication was more convenient for me, and the face-to-face learning environment contributed to my overall satisfaction of the course" (Student B).

"We received the information in the online environment and ensured a higher level of learning. However, Face-to-face interaction reinforced me and met my expectations since the course instructors provided us with guiding information" (Student C).

It is clearly demonstrated in the study of Erdem and Kibar (2014) that students prefer the conventional/traditional way of learning to the blended type. Meanwhile, blended courses have been noted as courses that offer flexibility both in time and space for students which accounts for the reason why students could be positive about the blended learning environment (Dziuban, Hartman, Cavanagh and Moskal, 2011). Thus, students get ample time to study whatever they want at their own pace for better understanding.

➢ *Research Questions*
The main aim of the study is to access the use of mobile technology by university health science students to access information from the internet. Based on this, the study made use of three research questions to guide the study. The questions are presented below.

- How often do university health science students use internet to access information?
- What were health science students using the internet to do?
- What attitudes do university health science students display towards internet use?
- What are the views of university health science students on blended learning?

II. MATERIALS AND METHODS

➢ *Study Design*
The study made use of the quantitative (descriptive) study to help obtain information on the rate of internet use by healthcare professionals under training.

➢ *Study Sample*
Respondents of the study were health science education university students of the University of Cape Coast. The convenient sampling technique was used to select 95 level 300 students made up of 44 males and 51 females. These students were used to obtain information on the use of internet by health science students. Thus, 50.5% of the targeted population was used. The simple random sampling technique was used with the help of the Microsoft Office Excel software since respondents' names of the respondents were available. Out of 100 questionnaire distributed, 95 of them were completed and usable giving a response rate of 95%.

➢ *Instrument*
The instrument use for the study was a questionnaire. The questionnaire was developed in line with the research questions that guided the study. Validity and reliability were checked for the instrument through pre-testing and with a Cronbach's α of 0.76. The instrument was divided into four sections; the first section was used to obtain respondents bio-data while the rest of the sections were based on the research questions. All the items in the questionnaire where close ended items. The multiple responses made use of 1 = Yes, 2 = No and 3 = No response and the nominal variables were assign codes. The rest of the items where developed in line with the 5-point Likert Scale. The rest of the scales use were (1 = Strongly disagree to 5 = Strongly agree) and (1 = Never, 2 = Rarely, 3 = Occasionally, 4 = often, 5 = Very often).

➢ *Data Analysis*
Data was coded, arranged and entered into the SPSS statistical software version 21. The descriptive analysis was use for all the items.

III. RESULTS

➢ *The Rate of Internet Use by University Health Science Education Students*
Results from the study revealed that 19% of the respondents use normal phones while 82% use smartphones implying that those using the normal phones can only use their phones for texting and making calls. Despite this, 98.9% of the respondents indicated that they make use of the internet. Technological tools used by health science education students to access the internet ranges from smartphones/tablets (54.2%), laptops (41.2%), desktop computers (3.8%) and personal digital assistant devices (0.8%). This is graphically presented in Figure 1.
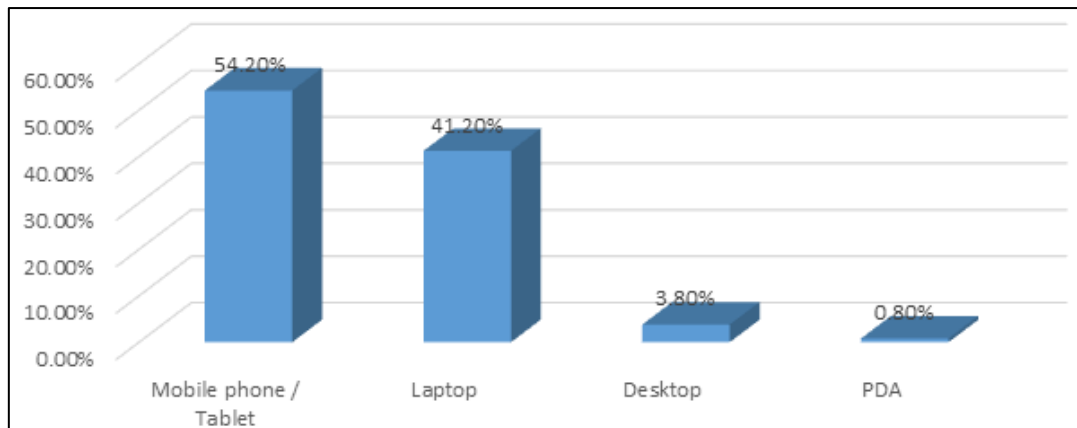
Fig 1:- Type of Technological Tool Used to Access the Internet

With this technological tools, it was observed that 18.9% male and 16.8% of female respondents use the internet less than an hour a day while 13.7% male and 21.1% females use the internet up to two hours a day. Also, 10.5% of the males and 7.4% of the females use the internet up to 3 hours a day. It was also recorded that 2.1% of the males and 3.2% of the females use the internet up to 4 hours a day while similar portion of them use the internet for more than 4 hours a day (5.3% of the females).
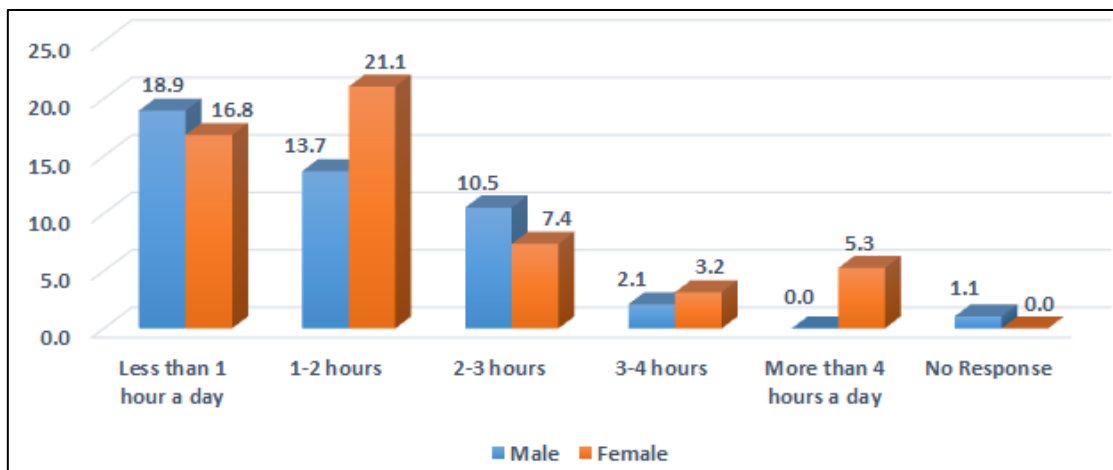

Fig 2:- Frequency of internet used

➢ *Reasons for using internet*
Also, 35.8% of indicated that they spend less than 1 hour a day on the internet, 34.7% spend up to 2 hours a day, 17.9% spend up to 3 hours, 5.3% spend up to 4 hours and 5.3% spend more than 4 hours a day on the internet; the other 1.1% did not provide any response. Pertaining to what the students use the internet for, 12.5% was recorded for learning and downloading each, followed by 11.7% for social networking, 11.5% for research and assignment/presentation each. Other uses such as reading news, sending emails, web browsing and chatting also recorded 11.2%, 9.2%, 8.2% and 7% respectively.

Reasons for internet use [a]	Responses		Percent of Cases
	N	Percent	
Blogging	7	1.3%	7.4%
Skyping	42	8.0%	44.2%
Web browsing	49	9.4%	51.6%
Downloading movies and music clips	75	14.3%	78.9%
Sending email	55	10.5%	57.9%
File Sharing	21	4.0%	22.1%
Reading News	67	12.8%	70.5%
Searching for information	69	13.2%	72.6%
For Assignments /Presentations	69	13.2%	72.6%
Social networking	70	13.4%	73.7%
Total	**524**	**100.0%**	**551.6%**
a. Dichotomy group tabulated at value 1.			

Table 1:- Reasons for using internet

➢ *Health Science Education Students' Attitude Towards Internet*

Findings presented in Table 2 indicates that the respondents agreed or strongly agreed to all the statements presented to them. The mean of the responses presents that students strongly agree to receiving internet training or the school providing more free internet access to students on a 24-hour basis every day. Similarly, health science education students are of the view that they study easily with the help of the internet since internet is the quickest way of obtaining current and accurate information. In addition, students agreed that they prefer to get information from the internet to going to library to search for it. They also view the internet as the best tool form communicating. Even though the mean of 3.79 showed that the students agreed to prefer online learning, the standard deviation showed that dispersion is more than 1 which may result in a significant number of students remaining neutral or strongly agreed.

	Mean	Std. Deviation
Internet training should be provided for students	4.81	0.532
It is necessary for campus to have more places with free WIFI access	4.74	0.732
Internet makes it easier to search for information	4.68	0.588
Internet should be available for students 24 hours a day.	4.61	0.704
Internet allows me to study easily	4.52	0.634
Internet is quickest way of obtaining current and accurate information	4.48	0.823
I prefer to get information from internet to the library	4.14	0.906
Internet is the best tool for communication purposes	4.13	0.914
I prefer online learning	3.79	1.041

Table 2:- Health Science Education Students' Attitude towards Internet (N = 95)

➢ *How Health Science Education Students Perceive Blended Learning*

In Table 3, 60.0% of the respondents agreed that blended learning is the study of a course easier and 32.6% strongly agreed to the same item. Similarly, 64.2% and 26.3% of the respondents agreed and strongly agreed that blended learning would allow them to study at their own pace respectively. However, a little above half of the respondents (25.3% for strongly disagree and 32.6% for disagree) indicated that studying online will be difficult for them. In this regard, 34.7% of the health science education students agreed to the statement "I believe face-to-face learning is more effective than online learning" and 36.8% of them strongly agreed to the same statement. Notwithstanding, participants of the study would appreciate easy online access to their lecturers; 47.4% and 10.5% of the respondents agreed and strongly agreed respectively to this statement. Also, more than 88% of the health science education students (44.2% for agree and 44.2% for strongly agree) were of the view that if there is an opportunity for them, they will join in a class that adopts the blended learning approach of learning.

Statements	SD	D	U	A	SA
Blended learning would make this course easier	2 (2.1)	0 (0.0)	5 (5.3)	57 (60.0)	31 (32.6)
Blended learning would allow me to study at my own pace	1 (1.1)	3 (3.2)	5 (5.3)	61 (64.2)	25 (26.3)
I would like lecture time in the classroom to be reduced	7 (7.4)	27 (28.4)	11 (11.6)	34 (35.8)	16 (16.8)
I would find it difficult to study online	24 (25.3)	31 (32.6)	9 (9.5)	19 (20.0)	12 (12.6)
I would like to have my lessons online rather than in the classroom	15 (15.8)	37 (38.9)	10 (10.5)	25 (26.3)	8 (8.4)
I believe face-to-face learning is more effective than online learning	3 (3.2)	13 (13.7)	11 (11.6)	33 (34.7)	35 (36.8)
I would appreciate easy online access to my lecturer	5 (5.3)	19 (20.0)	16 (16.8)	45 (47.4)	10 (10.5)
I am comfortable in using internet technologies to exchange knowledge with others	1 (1.1)	7 (7.4)	4 (4.2)	53 (55.8)	30 (31.6)
If there is an opportunity, I want to join in a class that adopts the blended leaning approach	1 (1.1)	4 (4.2)	6 (6.3)	42 (44.2)	42 (44.2)

Table 3:- Health Science Education Students' Perception about Blended Learning

IV.   DISCUSSION

This study was conducted among 95 health science education students to obtain information on the use of mobile technology to access the internet. Results indicated that apart from 19% of the cell phones used by the respondents, the rest of the mobile devices owned by the students, help them to access information on the internet. Again, it is obvious that some of the students owned more than one mobile device since about 98.9% of them make use of the internet. This finding is similar to that of Datta et al. (2016) where 94% of the students from Rama Medical College own smartphones. It was confirmed that students spend varied times on the internet to download, learn, connect with friends on social networks among others. Thus, the range of internet use by health science education students ranges from less than an hour up to more than 4 hours a day. However, frequent users of internet in the study of Datta et al. (2016) is more than 2 hours a day. This shows that wherever health science students are, there will always be the need to use internet.

As expected, students displayed positive attitude towards the use of internet to find information and strongly agreed that Wi-Fi access points should be increased on campus so that students can have free access to it. This affirms the positive computer-related attitudes of nurses as presented in studies from Brumini et al. (2005), and Laramee et al. (2012) among others. However, it should be prudent guide students how to make effective use of the technology available to them. Thus, even though respondents strongly agreed that information from the internet is accurate, there should check their authenticity as hinted by the studies of Bond (2004) which indicated that students were not confident of the information they get from the internet, and students from the study of Scott et al. (2008) were skeptical about information they get from the internet.

Health science education students presented a mix-feeling from the results obtained from the study. While majority (88.4%) of them express interest in taking blended learning courses, another majority (71.5%) were of the view that face-to-face learning is more effective than online learning. This mix-feeling is also recorded in the work of Erdem and Kibar (2014). Therefore, there is a need to take students through blended learning environment to let them experience how it feels like and the benefits that come with it. Despite this, respondents in the study believe in blended learning as most of them agreed or strongly agreed to statements that involved the use of technology in learning.

V.   CONCLUSIONS

The study found that almost all the students make use of the internet to perform various task; either for downloading materials, learning, researching, reading news or chatting with friend via social networks. Students also spend from less than an hour up to more than 4 hours on the internet in a day. In addition, health science education students have positive attitude towards the use of the internet. However, despite the fact that the respondents of the study believe in blended learning, they have mix-feelings about it as majority revealed that they prefer face-to-face learning.

RECOMMENDATIONS

Based on the findings of the study, it is recommended that the university management team provide more places with Wi-Fi access to students to enhance easy access to resources on the internet.

Also, students should be trained in the use of mobile technologies in education so that they become aware of the many possibilities provided by its use. Especially, how to use mobile technology to compliment what is learnt during the teaching and learning process. This would help direct students' attention towards the positive use of internet and also control the frequency at which they use it.

Further, lecturers should be encouraged to use the blended learning approach. This should be done by organising regular seminars for them.

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