Integration of Smart Phones in Teaching and Learning in Second Cycle Educational Institutions

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ABSTRACT

Using computers in school for instructional purposes is inevitable. How to integrate smartphones well into school's curriculum is a very important issue now simply because there are problems that impede the progress of using smartphones in schools. The study was to find out the usage of smartphones by both teachers and students in the classroom and the factors that will influence integration of smartphones in teaching and learning processes. The researcher used the quantitative approach of gathering data for the study. The researcher randomly selected hundred (100) respondents made up of eighty (80) teachers from the three Senior High Schools; Koase Senior High Technical, Istiqaama Senior High and Methodist Senior High and the remaining ten from Ghana Education Service and Microsoft Excel Office Application were used to analyze the teacher's questionnaire. The opinions of the ten personnel from Ghana education service were obtained from the semi-structured interview.

Studies showed that the students were not allowed to use smartphones in all the Senior High Schools in the Wenchi Municipality. In addition, the study indicated that there is not enough time to develop computer-based lessons and training programmes to increase teachers' knowledge about smartphone use in classrooms. However, the study recommended that government, Research and Curriculum Developers, and teachers need to work together to develop effective policies and educational software applications to integrate smartphones into curriculum and instruction of schools.

Key Words: Cell phone, curriculum, Smartphone.

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1. INTRODUCTION

In today's world, digital technology is changing rapidly and its being integrated into society at such an accelerated rate that, it is hard to keep pace, let alone reflect on the effects it has on our lives. There is no doubting the benefits of the mobile phone which include the ease of communication, with friends, relations, colleagues and business partners at any time and place one might be. Around the world, information and communications technologies (ICTs) infiltrate classrooms at an exceedingly rapid pace. In the wake of this influx, educators face growing challenges as they teach a very "wired" and more and more "wireless" generation of students using technology that is evolving every day.

Smart phones are the new generation of mobile phones, which have emerged over the last few years and already have captured the market. Smart phones with their mini keyboards are not just phones, but have computer functions including email, calendar and address book, as well as office programs for reading and editing. The multimedia phone features such as camera, video, sound recordings or podcasting is advanced and can compete with specialized equipment. Smart phones can be customized with new software, and the variety of these programs is increasing. The social communication platforms (like Face book, Twitter, Instagram, WhatsApp, etc.), GPS functions and games are especially popular.

Smart phones put powerful, user-owned computing devices into the pockets of students and academic staff. The student ownership of these multifunctional mobile devices is growing exponentially (Dixit et al., 2011).Some adults are amazed by how readily young children use computers. Many students have come to realise that using computers give them a sense of power and accomplishment. And, unlike many adults whose first or primary contact with computers is work related, most students first use computers for entertainment purposes and games. This is by no means the only use that students have for computers.

The cell phone is a unique device, and can rightly be called "revolutionary" to a certain extent. While the device itself is not a pioneer of wireless communication, the extreme portability of its design and relative affordability (as compared to say a home computer, or a laptop) resulted in its ubiquitous use and especially rapid adoption by citizens of developing economies. (Townsend, 2000, p. 2).

Basically, cell phones don't provide much more of a distraction than students already have, and students should be learning to embrace the technology as a learning tool. This is great if students are using the device as a learning tool and not just stealthy texting their friends all day. It's important to embrace technology and teach our students to do the same, but the fact that research is being conducted to find out the effect the phones are having on academic performance should be enough for us to collectively decide that there is the need to institute more restrictions in the use of smart phones by students.

Simultaneously, the society also expects teachers to integrate ICT technology into their classrooms and suggests some things educators can do in order to accelerate the progress and reform of the educational system (Johnson, 1997).

People including teachers, parents, and policy makers have an identical consensus that computers have great and important influence on education (OTA, 1988, 1995, Sheingold & Hadley, 1990). This is an impressive record of growth and shows a widespread willingness on the part of school directors of schools, teachers, and parents to explore the possibilities of new learning technologies (OTA, 1988). Hence, the operational use of computer-assisted instruction also raises a number of important relevant issues by using computers in education, including individualization of instruction, standardization of instruction, complexity of instruction, and freedom of education (Suppes, 1992).

2. STATEMENT OF THE PROBLEM

Today's children are the first generation of the "digital age." They are being raised in a society that is changing rapidly as a result of the influx of new computer-based technologies that provide more pervasive and faster worldwide links to commerce, communication, and culture.

Nowadays, students experience digital environments in a very tactile and personal way
through a wide variety of mobile devices (i.e., smart phones and tablets) whose uses can be converted into collaborative learning practices. Smart phones are increasingly becoming ever present, penetrating and transforming everyday social practices and space. Therefore, middle and higher education in developed and developing countries are now trying to adopt the use of smart phones in the learning process from different perspectives and teaching methods (Johnson et al., 2014; UNESCO, 2013).

The study of this nature is therefore necessary to unravel the importance of the smart phones usage by the students and the factors that will influence the teachers to integrate smart phones in their lessons in Senior High Schools in the Wenchi Municipality in the Brong Ahafo Region of Ghana.

2.1 Purpose of the study

Smart phones offer an opportunity to connect students in new ways, providing a ready-made linkage between students and information. There are so many factors to consider when deciding whether a smart phone use by both teachers and students in the classroom is the right move. The study therefore seeks to explore reasons why teachers are unwilling to integrate smart phones in teaching and learning processes.

2.2 Research Questions

The research questions to be addressed by the study are as follows:

1. Is there any policy regarding smart phone usage in Senior High Schools?
2. What are the reasons why teachers are not willing to integrate smart phones in their classrooms?
3. What efforts are being made by the school authorities to integrate smart phones in teaching and learning processes?

3. LITERATURE REVIEW

It is not sufficient simply to teach the handling of digital devices; learners must also be trained in how to learn with the help of ICT (Bosch, 2009; Vladar & Fife, 2010). Today, these tools can be directly used as part of classroom activities to promote new methods of teaching and learning.

Devices such as smart phones, tablets, and e-book readers connect users to the world instantly, increasing accessibility to information and enabling users to interact with each other. With the reality being thus, using mobile technology for teaching and learning has become a rapidly evolving area of educational research (Collins, 1996; Dyson, et al, 2009; Frohberg, et al, 2009; Johnson, et al, 2013; Vavoula, et al, 2009). Mobile applications are considered as a key emerging technology in higher education. These technologies find their ways onto campuses because people are using them, rather than the other way around.

The most important feature of new mobile phone technologies in the area of Education occurs when, due to their portable natures and their abilities to promote additional learning methods, learning continues beyond the classroom (Committee of Inquiry into the Changing Learner Experience,2009; Dublin Descriptors, 2005). Smart phones provide learning and training support for students through their capabilities, which include the enabling of quick content delivery, enhanced support time in project-based group work, a higher level of student engagement in learning related activities within a multitude of diverse physical locations, and the enhanced availability and accessibility of information (Clough, et al, 2007; Cowie et al., 2009; Falaki et al., 2010).

Nowadays, there is no separation between real and digital life: staying in online contact with friends and colleagues, working virtually on international projects, writing an online text, or researching recommendations for interesting locations nearby; digital communication enriches the real world (Eteokleous & Ktoridou, 2009; Norris, et al, 2011).

In the early inception of mobile technology development, mobile phones were elite devices primarily used by middle and upper class people (Lacohee, et al, 2003). As mobile phones evolve, more and more features have been added, such as full colour screen, texting function, mp3 function, and embedded camera, etc.

Needless to say, smart phone has basic functions as feature phone has, such as phone call, text messaging, and camera. All these current features are allowing smart phones to have the same capabilities as computers but with the added bonus of mobility.

Young adults are especially dependent on smart phones today, a survey conducted by CourseSmart, the world's largest provider of e-Textbooks and digital course materials, found that college students can't go long without checking their digital devices, including smart phones, laptops and more (CourseSmart, 2011). Text messaging plays an important role in college student's life, too. A survey conducted at the University of Colorado and several other universities in 2010 found that text messaging and emailing are two of the most commonly used functions on smart phones among college students, followed by reading news, watching videos and reading books (Dean, 2010).

4. METHODOLOGY

This paper explores the ways through which smart phones are used in Senior High Schools and factors that prevent the teachers from integrating smart phones in teaching and learning processes. The researcher employed quantitative approach of gathering data for the study. The opinions of personnel from the Ghana Education Service were obtained from the structured interview conducted by the researcher.

4.1 Instrument
The survey questionnaire was used as the main data-gathering instrument for this study (See Appendix A). The questionnaire was divided into two main sections: a profile and the other questionnaires for the teachers in the selected schools The profile contains socio-demographic characteristics of the respondents such as age, gender and so on. The researcher used interview guide to explore the perceptions of educators/parents on smart phone usage in the classroom as a teaching and learning tool.

4.2 Sample and Sampling Procedure
Sample for this study was selected by the method of random sampling as eighty (80) respondents made up of teachers were selected from the three Senior High Schools in the Wenchi Municipality. (The remaining ten (10) respondents were personnel from Ghana Education Service in the Wenchi Municipality where the structured interview was administered.

5. RESULTS AND DISCUSSION
Demographic Data

Table 1: Distribution of Respondents.

Name of SHS	Frequency	Percentage
Methodist SHS	30	37.5 %
Istiqaama SHS	15	18.75 %
Koase SHTS	25	31.25 %
GES Personnel	10	12.5 %
TOTAL	80	100 %

In the table 1 above, 30 respondents were randomly selected from Methodist Senior High School representing 37.5% while 25, representing 31.25% were also selected from Koase Senior Technical School. Again, 15, representing 18.75% of the respondents were drawn from Istiqaama Senior High School. The remaining 10 respondents, which represent 12.5% were selected from Ghana Education Office to give their perceptions about the use of smart phone in classroom during lessons.

Table 2: Age Distribution of the Respondents.

Age	Frequency	Percentage
20-25	13	16.25 %
25-30	25	31.25 %
30-40	30	37.5 %
40 and above	12	15 %
TOTAL	80	100 %

The data in the table 2, shows that 37.5% of the respondents were between thirty and forty (30-40) years. Twenty-five (25) of them representing 31.25% were between twenty-five and thirty (25-30) years of age. However, thirteen (13) and twelve (12) respondents representing 16.25% and 15% were between the ages of twenty (20-25) and forty (40) and above respectively. The data displayed indicate that most of the teachers have more years to serve and it will be appropriate if they are willing to embrace the new technologies and integrate them in their lessons

.**Table 3: Gender of the Respondents**

Gender	Frequency	Percentage
Female	20	25 %
Male	60	75 %
TOTAL	80	100 %

From Table 3 above, 60 respondents representing 75% were males whiles 20 (25%) were females. It clearly shows that male respondents outnumbered the female respondents in this study. The result clearly indicate that male teachers dominate in all the Senior High Schools selected for this study.

Table 4: Smart Phone usage by the teachers

Daily smart phone usage	1-3Hrs	4-6 Hrs	6 Hrs and above
Methodist SHS	15 (50%)	12 (40%)	3 (10%)
Koase SHTS	16 (64%)	8 (32%)	1 (4%)
Istiqaama SHS	12 (80%)	3 (20%)	0 (0.0%)
GES Personnel	5 (50%)	2 (20%)	3 (30%)

The analysis presented in Table 4, depicts that 50% of the teachers in the Methodist Senior High School use their smart phones between one (1) to three (3) hours daily while 12 respondents representing 40% use their smart phones between four (4) to six (6) hours daily. The remaining three (3) respondents, representing 10% use their smart phones six (6) hours and above daily. For the respondents from Koase SHTS, sixteen (16) of them representing 64% use their smart phones between one (1) to three (3) hours daily and eight (8) of them representing 32%, also use their smart phones between four (4) to six (6) hours daily. Only one (1) respondent, representing 4%, uses his/her smart phone six (6) hours and above daily.

On the part of Istiqaama SHS, 12 respondents representing 80% use their smart phones between one (1) to three (3) hours daily while three (3) respondents, representing 20% use their smart phones between four (4) to six (6) hours daily. None of them use their smart phone above six (6) hours. In respect of the respondents from the Ghana Education Service, 50%, representing five of them use their smart phones between one (1) to three (3) hours daily while two (2) of them, representing 20% use their smart phones between four (4) to six (6) hours daily.

In contrast, three (3) respondents, representing 30% use their smart phones six (6) hours and above daily. Marcinkiewicz (1993-94) concluded that age, gender, computer experience, and self-competence were the factors that could be used to predicate teachers' level of using computers in their classrooms.

The factors that are preventing the integration of smart phones in teaching and learning processes and the efforts being made so far by the school authorities to support the teachers to accept smart phone as instructional tool are presented.

5.1 RESEARCH QUESTION 1. Is there any policy regarding smart phone usage in Senior High Schools?

The school recognizes personal communication through mobile technologies is an accepted part of everyday life but such technologies need to be used well by both teachers and students. It is in this vain that the researcher decided to examine the policies on mobile phone usage in the Senior High Schools in the Wenchi Municipality. As already indicated by Office of

Technology Assessment (1988, 1995), teachers, parents, and policy makers have an identical consensus that computers have great and important influence for education. The data collected is presented in the Table 5.

Table 5 indicates the responses of teachers in respect of policies on mobile phone usage in second cycle schools.

Table 5: Policies on Mobile Phone usage in the Schools

Policies on Cell Phone usage	Strongly Agree	Agree	Strongly Disagree	Disagree	Not Sure
All the second cycle institutions have policy guidelines on mobile phone usage on campus.	45(56.25%)	18(22.5%)	5(6.25%)	5(6.25%)	7(8.75%)
Staffs should not at any time permitted to use mobile phone during school hours.	20(25%)	50(62.5%)	3(3.75%)	2(2.5%)	5(6.25%)
Teachers use their mobile phones everyday on campus	40(50%)	29(36.25%)	3(3.75%)	3(3.75%)	5(6.25%)
Mobile phones brought to school by the students without permission are confiscated	36(45%)	35(43.75%)	4(5%)	3(3.75%)	2(2.5%)
Teachers are to switch off or put their cell phones on silence during school hours.	37(46.25%)	31(38.5%)	4(5%)	6(7.5%)	2(2.5%)

Source: Field Data 2017

Information in Table 5 reveals that 45(56.25%) respondents of teachers strongly agreed while eighteen (18) respondents representing 22.5% also agreed that there is policy on mobile phone usage in their schools. Forty (40) and twenty-nine (29) representing 50% and 36.25% agreed to the fact that teachers use their cell phones on campus every day. On the other hand, mobile phones found on students are confiscated as 36 (45%) respondents strongly agreed and thirty-five (35) representing 43.75% buttress the same point. The data clearly show that (Table 5), thirty-seven (37) and thirty-one (31) respondents representing 46.25% and 38.5% respectively agreed that teachers are to switch off or put their cell phones on silent when school is in session.

5.2 RESEARCH QUESTION 2. What are the reasons why teachers are not integrating smart phones in their classrooms?

Students should be able to use computers as a learning tool in classrooms to promote their learning. Most teachers knew that the integration of computers into teaching and learning as thinking and exploration tools were very important. Teachers used technology for many reasons, but ultimately, getting and keeping students engaged in learning was the strongest motivation (OTA, 1995). Table 6 shows the responses obtained for integration of smart phones in classrooms by teachers.

Table 6: Integration of Smart Phones in Classrooms by Teachers.

Integration of Smart Phones in classrooms	Strongly Agree	Agree	Strongly Disagree	Disagree	Not Sure
Mobile phone technology is new to most of the teachers	35(43.75%	30(37.5)	8(10%)	6(7.5%)	1(1.25%)
Teachers are not ready to accept new mobile technologies	2(2.5%)	25(31.5%)	20(25%)	30(37.5%)	3(3.75%)

The mobile phone applications are different from the one on the curriculum.	27(33.75%)	40(50%)	6(7.5%)	5(6.5%)	2(2.5%)
Teachers should change their attitude towards the new technologies.	21(26.25%)	37(46.25%)	15(18.75%)	6(7.5%)	1(1.25%)
Teachers require an intensive training in computing.	27(33.75%)	33(41.25%)	11(13.75%)	6(7.5%)	3(3.75%)

Source: Field Data 2017

The report presented in Table 6 shows that 35 (43.75%) of the respondents strongly agreed that mobile phone technologies are new to most of the teachers. In the same vain, thirty (30) representing 37.7% agreed to that assertion. However, eight (8) and six (6) representing 10% and 5% respectively disagreed while one (1) representing 1.5% was not sure.

On the other hand, thirty (30) representing 37.5% disagreed that teachers were not ready to accept the new mobile phone technologies. Twenty (20), representing 25% strongly disagreed while twenty-five (25), representing 31.5% of the teachers agreed. Looking at the responses it points to the fact that teachers are ready to accept new mobile phone technologies. It could also be that they did not want to be blamed as technology has become part and parcel of everyday life.

On the other side of the coin, forty (40), representing 50% of the respondents agreed that smart phone applications are different from the one on the schools' curricula. Moreover, twenty-seven (27), representing 33.75%, strongly agreed while six (6), representing 7.5% of the respondents, strongly disagreed. Studies conducted elsewhere also pointed out that the lack of software did keep teachers from integrating computers into their curriculum (Dupaggne& Krendl, 1992; Pruett et al., 1993). In the same vein, Chiero's (1997) study showed that "not enough time to learn to use new software" was rated the biggest obstacle to use the computers.

From the data, 37 (46.25%) of the respondents agreed that teachers attitude toward technology integration should be changed. Twenty-one (21) representing 26.25% strongly agreed while fifteen (15) representing 18.75% of the respondents strongly disagreed. The attitude of teachers for using computers was also an important factor. Pelgrum and Plomp (1991a) pointed out that attitude was the key of success for the implementation of computers in instructional purposes.

5.3 RESEARCH QUESTION 3. What efforts are being made by the school authorities to integrate smart phones in teaching and learning processes?

Studies showed that headmasters played an important role for promoting computers use in schools and classrooms. Their attitude and support were highly related with if schools would have the climate and environment where teachers wanted to use computers in their classrooms (Dupaggne & Krendl, 1992; Pelgrum, 1993)

Table 7: Efforts being made by the school authorities to integrate Smart Phones in classroom.

Authorities effort to integrate smart phones	Strongly Agree	Agree	Strongly Disagree	Disagree	Not Sure
Educators are ready to restructure educational curricula.	3(3.75%)	2(2.5%)	20(25%)	10(12.5%)	45(56.25%)
Students' are taught how they should use their smart phones in school.	1(1.25%)	3(3.75%)	37(46.25%)	20(25%)	9(11.25%)

The school authorities have put measures in place to monitor student.	20(25%)	30(37.5%)	5(6.25%)	20(25%)	5(6.25%)
GES decides on how to use smart phones in the second cycle institutions.	25(31.25%)	55(68.75%)	0(00%)	0(00%)	0(00%)
Teachers are encouraged by the heads of the institutions	22(27.5%)	36(45%)	10(12.5%)	10(12.5%)	2(2.5%)

Source: Field Data 2017

The responses of teachers in Table 7 show that 45 (56.25%) were not sure that the educators are ready to restructure the educational curricula to integrate smart phones in classrooms. Twenty (20) teachers representing 25% of the respondents strongly disagreed while 3 (3.75%) and 2 (2.5%) also agreed to that assertion. Furthermore, 37(46.25%) of the respondents strongly disagreed that students' are taught how to use smart phones in the schools. Moreover, Twenty (20) of the teachers representing 25% disagree while 9(11.25%) of the respondents were not sure.

Considering the assertion that the school authorities have put measures in place to monitor the students on mobile phone usage on campus, thirty (30) representing 37.5% agreed. There was a split decisions as twenty (20) respondents strongly agreed, with same number of respondents also disagreed to the same fact. Another five (5) respondents representing 6.25% disagreed while the same percentage was also not sure. From the data gathered, fifty-five (55) representing 68.37% of the respondents agreed whilst twenty-five (25) representing 31.25% strongly agreed. This shows that most of the rules that govern the use of mobile phones were instituted by Ghana Education Service.

Asides this, it was noted that some of the heads of the Second Cycle Institutions encourage their teachers to integrate ICT in their classrooms as thirty-six (36) representing 45% agreed while twenty-two (22) representing 27.5% strongly agreed. Once again, there was a split decision as 10(12.5%) strongly disagreed and the same number of the respondents disagreed.

5.4 INTERVIEW

The researcher used Semi-Structured Interview to gather the opinions of the personnel's' of Ghana Education Service on smart phone usage in Second Cycle Institutions. The following were the results obtained.

All the respondents interviewed agreed that cell phones have totally changed the way students learn these days. Some of them complained bitterly that they don't have time for their studies but rather glued to their mobile phones always. They also mentioned that the way and manner the students use abbreviations in SMS (Short Message Service) affect them in their final examinations especially grammar.

It was also observed that, few of the respondents agreed that smart phones should be allowed to be used in classrooms, while others claimed that it distracts attention but could be used provided adequate measures are put in place to control their usage. Same of the interviewee asserted that if stringent or adequate measures are put in place by school authorities then smart phone could be one of the most effective teaching and learning tool in the classroom.

However, a few of the interviewee reported lack of adequate training to use the technology, particularly computer-based technologies. In addition, helping teachers know how to use computers in their classrooms and appropriately integrate them into curriculum may be the most important step to help students' learning (OTA, 1995).

In addition, integration of smart phones would help to bridge the digital divide that exist between the have and have-nots in the sense that more students could acquire the device as compared to laptop computers. Moreover, students are well versed in the new technology than even most of their teachers/parents who were born before the introduction of these new technologies as indicated by the interviewees.

Although the number of students with smart phones varies from school to school. The study also revealed that most of the students go in for smart phones due to peer pressure. The personnel interviewed stated clearly that most of the sophisticated smart phones were purchased for the children by their wards or friends who text and chat with them on the phones. They added that at times they call at the time student might be busy thereby destructing their attention and the class as a whole.

Besides, almost the interviewees agreed to the fact that students could be allowed to use cell phones in classrooms in the near future as teaching and learning tool. Cell phones can help strengthen the essential connections between students and teachers, make students more self-directed, and can thus make education more applicable to real life. It only makes sense to put new technology in the hands of our children and let them use it for learning.

6. CONCLUSION

In spite of the potential for negative behavior's, cell phones could become an essential part of every classroom in the future. The fact is that, most students already have the devices in their pockets, so integrating them into the classroom is the next logical step. The new smart phones can be used as tools for learning just like laptops, notebooks, Chrome books and IPads, that are already being allowed.

Knowing how to appropriately use mobile devices is an important aspect in this increasingly connected world. In order to properly prepare students for the future as they transition into the workforce, incorporating mobile technology in the classroom is necessary. How to integrate computers well into school curriculum is a very important issue now because the problems like non-involvement of the teachers in the planning and development of educational, Application Software is not encouraged. The study indicated that although access to computers has changed during the past years, lack of training on the proper handling of the cell phones by teachers and students were not taken into consideration.

It was noted that the new trend BYOD (bring your own device) is now becoming popular as most of the schools are adopting the method to save money by not having to provide computers for students.

A good integration will only take place if teachers, parents, administrators, and students begin to think alike about the teaching and learning process with smart phones.

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