

UNIVERSITY OF CAPE COAST

AN ASSESSMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY
USAGE IN SELECTED COLLEGES OF EDUCATION IN THE ASHANTI REGION

JUSTICE KWAME WIREKO – AMPEM

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BY

JUSTICE KWAME WIREKO – AMPEM

Dissertation submitted to the College of Distance Education, University of
Cape Coast, in partial fulfilment of the requirement for award of Master of
Education Degree in Information Technology

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the results of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: Date:

Name: Justice Kwame Wireko-Ampem

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature: Date:

Name: Dr. Kenneth Asamoah-Gyimah

ABSTRACT

An assessment of Information and Communication Technology usage among teacher trainees in selected Colleges of Education in the Ashanti Region of Ghana was the main focus of this study. The population consisted of third year teacher trainees and tutors of the Colleges under the study. A sample of 123 respondents was considered for the study. These included 40 trainees and 1 tutor from each of the three Colleges under study. The instruments used for data collection were the questionnaire for trainees and interview guide for tutors.

These instruments were pre tested in order to correct their weaknesses. The Statistical Package for Social Sciences (SPSS) was used to analyse the data. From the analysis it was revealed that although teacher trainees had good access to computer use, internet usage by trainees is on the lower side. The study also revealed that Tutors do not have enough time to acquire computer skills and develop new teaching strategies for integrating technology into their classrooms.

It was therefore recommended that tutors in the Colleges of Education should be regularly trained and retrained using school-based INSET to effectively use ICT tools in teaching. Also wireless internet service should be made available for trainees and hours for ICT lessons should be extended. Also ICT integration into education should well explained and understood by trainees.

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DEDICATION

To my son and my late wife for their prayers and support

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CHAPTER ONE
INTRODUCTION

Background to the Study

The development and exploitation of Information and Communication Technology (ICT) in schools in Ghana has had an operational history that is just over a decade or two old. Although at the beginning, there had been several efforts at developing ICT in schools, there had not been clearly defined policy direction for ICT in education as to what specifically was needed to be achieved and the strategy for it. In the process, several initiatives on ICT in education were started by different interest groups to meet different needs. Examples of such initiatives are outlined in; Computers in Ghanaian Secondary Schools: Where does equality comes in., document by Mfum-Mensah, O. (2003): which highlights key issues and expected benefits of ICTs in Education. Towards the end of 2003, the tempo increased with, the Ghana ICT for Accelerated Development (ICT4AD) Policy, that recognises education as a cross-cutting issue within the national framework crucial to the support of the thirteen other national pillars.

The use of ICT (computer) is becoming more persuasive in Ghana and the number of computers for educational purposes in our institutions is growing. In the process, there is a proliferation of equipment standards for seemingly different goals. This situation has arisen because even though government has come out with a national policy for ICT, there is the need for

a well-defined policy direction in the development and exploitation of ICT in the arena of education.

It is on these premises that the government of Ghana is committed to the transformation of the economy through the agro – based economy of Ghana into an information rich and knowledge based economy and society using the tools of information and communication technology (ICT). The government has acknowledged the need for ICT training and education in the Schools, Colleges and Universities and the improvement of the education system as a whole.

The development of ICT in education will result in the creation of new possibilities for learners and teachers to engage in new ways of information acquisition and analysis. ICT however will enhance access to education and improve the quality of education delivery on equitable basis. Hence, the government's commitment to a comprehensive program of rapid development and utilization of ICT within the education sector to transform the education system and hence improve the lives of people.

The UNESCO Institute for Information Technologies in Education (IITE) situated in Moscow has conducted a study on how ICT is reshaping the teaching and learning processes of children in primary education. Available literature says that to attain quality education at our primary or basic schools, teachers should be well trained in ICT.

It is a common knowledge that Information and Communications Technology (ICT) offers the potential to meet the learning needs of individual students; to promote equality of opportunity; to offer high-quality learning materials; and to increase self-efficacy and independence of learning amongst

students of all ages. For the teaching profession, ICT is not only an essential tool for teachers in their daily work, but it also offers them opportunities for their own professional development.

The pressures placed on our society as it changes from a manufacturing to an informational and technological economy are well documented. Industries and businesses are hard pressed to stay ahead of the learning curve with regard to staying competitive. Computers are one of the main ICT tools driving this change to an information age. It is within this climate that teachers are asked to prepare students for the next century by training the next generation of information “hunters and gatherers.” Nationally, the push to integrate computers into our classrooms comes from government, business, and industry.

According to the white paper on the report of the education reform review committee, Ministry of education, Youth and Sports, (2004), ICT: Projecting Ghana Into the 21st Century;

Government appreciates the importance which the Committee has attached to ICT, as indicated by the range of issues that have been raised in their recommendations in this area. Government notes these recommendations and has already initiated some action towards the incorporation of ICT in various spheres of government machinery and education, p.43.

It is in this context that the Government of Ghana, with the help of the Government of India, established the Kofi Annan Centre of Excellence in Information Technology (IT) to promote IT education and usage in the

country's development effort. But the global march of IT is of enormous economic strength. Coming in late as a junior participant with little or no intellectual propriety to bargain with, Ghana risks being swallowed up in huge foreign exchange costs for the acquisition 'of hard and soft ware. IT education must help to avert this.

For example, with respect to one of the competencies related to working with ICT and new media, the Dutch Government has determined that new teachers should be able to prepare, carry out and evaluate a few different educational situations that make use of ICT and multimedia (Ministry of Education, Culture and Science, 2000). Indicators for this competence are:

ICT as aspect (aid for problem solving) and as medium (tool for the educational process); choose from one or more of the following 'tool types': structured learning tasks via simulations, data sets, hypertext, cognitive tools, computer as tutee, video conferencing, distance education (email; tele-learning via intranet; Internet learning); multimedia (from transparencies and *PowerPoint*® to manipulable CDROM and virtual reality). (Ministry of Education, Culture and Science, 2000).

As Davis and Tearle (1998) noted that many countries around the world are taking action to ensure that their educational systems are updated to permit equality of access and to ensure that the key ICT skills are developed in schools and other educational institutions. It has become abundantly clear that the training of teachers in ICT skills and appropriate pedagogical approaches is essential. Preparing teachers is perceived as the main critical success factor in deploying ICT in education, (Weets, 1997). The changes brought about by

the technical and social mutations affect the education field, but the characteristics of education today still correspond to what were the needs of the industrial system of the 60s and do not anticipate on the future needs of the information society. European educational systems and training organisations need therefore to transform the professionalism [sic] of teachers and trainers.

The integration of information and communication technology into education in order to face the challenges of the 21st century has become very necessary.

Statement of the Problem

Developing future teachers who know how to use modern learning technologies to improve student learning is key to our national development. Even though Information and communication technology is now an examinable subject at the basic school level, teachers teaching in the basic schools have not received adequate training in the use of computers, (i.e. Information and Communication Technology tool). In fact no college of Education in Ghana specialises in the teaching of ICT. All students at this level take only two courses, one for first year and the other for second year.

According to Prensky, (2001), now, students are ‘digital natives’ and teachers tend to be ‘digital immigrants’ who struggle to adopt new technologies that can better serve their students. Therefore there is the need for a powerful role of mentee teacher trainees in the process of educational innovation and the implementation of ICT. The colleges of education produce teachers for the future with the prelude that teachers are the key figures in arranging learning processes. It is imperative to understand the importance of

ICT among colleges of Education. Teacher trainees are those who are going to disseminate the knowledge of ICT to their students

Schools such as the Colleges of Education where prospective Primary and Junior high School teachers are trained have to shift their focus from dealing with present education to that of 'future education'. This invariably will make teachers to be prepared and encouraged for the implementation of ICT at different levels. But teachers of this level are trained to be computer literates and not teachers in computing.

ICT is being used as an integrated component of the teaching and learning environment; teacher trainees should therefore develop understanding, skills, and dispositions with regard to technology integration into teaching and learning. A teacher trainee is supposed to continue to develop the capacity in his work, to develop more opportunities and to help students to build upon what they have learned. Teacher trainees, in order to provide for the need of their students, need to be aware of current thinking about good practice. It is therefore necessary to assess the information and communication technology usage in the colleges of education.

Purpose of the Study

The main purpose of the study is to assess the use of Information and Communication Technology tools among mentee teacher trainees in Colleges of Education in the Ashanti Region of Ghana.

Specifically the study sought to:

- i. Find the of the level of mentee teacher trainee's ICT skills.

- ii. Examine the level of awareness of ICT among male and female mentee teacher trainees.
- iii. Determine how ICT has been integrated into the training of mentee teacher trainees.
- iv. Find the attitude of mentee teacher trainees towards the use ICT (computer) tools.

Research Questions

The study was conducted to find answers to the following research questions:

1. What is the level of mentee teacher trainees' ICT (i.e. computer and internet) skills?
2. What is the level of awareness about ICT among male and female mentee teacher trainees?
3. How has ICT been integrated into the training of mentee teacher trainees?
4. What is the attitude of mentee teacher trainees towards the use of ICT (computers) tools in teaching?

Significance of the Study

The study assessed the use of ICT among mentee teacher trainees. The outcome of the study is therefore expected to assist policy makers and management of educational establishments to address the integration of ICT into teacher training in order to reap the benefits that goes with it.

Further, the study will motivate teachers' in the use of ICT in effective teaching in the Colleges of Education in the Ashanti Region. Finally the study will contribute to the existing stock of knowledge concerning the use of ICT in teaching as well serve as a basis for further research on the integration of ICT

in teaching. The findings of this study will also put stakeholders in the position to see the short comings or areas that needs improvement in our effort as a country to integrate ICT into our basic school's curriculum.

Delimitations of the Study

The study was focused on assessing the use of ICT by teacher trainees. Geographically the study was limited to three selected Colleges of Education in the Ashanti Region of Ghana, namely St. Louis College of Education, Wesley College and Mampong Technical College of Education. It also considered the level of teacher trainee's skill in the use of ICT, how ICT has been integrated into the training of teacher trainees and the attitude of teacher trainees towards the use of computers in teaching. The study did not consider the availability of computers and it accessories of the colleges of education.

Limitations of the Study

The study desires to find out the use of Information and Communication Technology tools among teacher trainees.

The use of three out of the thirty-eight (38) colleges of Education in Ghana would not allow the results to be generalized to all colleges of education in Ghana. Again significant numbers of respondents were unwilling to participate, especially the tutors and some students who thought it was an indirect way of reporting themselves on their teaching techniques and colleges' short comings in terms of ICT usage respectively.

Definition of Terms

College of Education: Institutions in Ghana, where teachers are trained and awarded Diploma certificate to teach in basic schools.

Mentee: Final year teacher trainees sent to basic school to do teaching

practice under the mentorship of a certificated teacher.

Organization of the Rest of the Study

The study is organized into five (5) chapters. The second chapter deals with the review of the related literature. The third chapter talked about the research methodology that was used in the study. The fourth chapter dealt with the presentation and analysis of the data that was collected. It also discussed the findings that was obtained for the data analysis. The last chapter talks about the summary of findings, the conclusions that were drawn and the recommendations based on the findings.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

In this chapter a review of related literature on Information and Communication Technology usage in teaching and learning is done. The review covers Information and Communication Technology, the meaning of ICT integration in education and the need and significance of ICT in teacher education. Literature on the advantages of ICT in Education, the level of ICT usage by teachers and gender as a factor in ICT usage are also reviewed. It also include literature on factors that prevent teachers from using technology and factors that encourage teachers to use technology

Information and Communication Technology (ICT)

Pelgrum and Law (2003) have stated that near the end of the 1980's the term computers was replaced by 'IT' (Information Technology), signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term 'ICT' (Information and Communication Technology) around 1992, when e-mail became available to the general public.

To Adeya (2002), ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information

services, and other related information and communication activities. ICTs are embedded in networks and services that affect the local and global accumulation and flows of public and private knowledge.

ICTs are diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information. These technologies include computers, the internet, broadcasting technologies (radio and television), and telephony (Tinio, V. L. (2003).

Department for International Development [DFID] (2002) defines ICT as technologies that facilitate communication and the processing and transmission of information by electronic means. The definition encompasses the full range of ICTs from radio and televisions to telephones (fixed and mobile), computers and internet. To Ogunsola (2005), ICT is an electronic based system of information transmission, reception, processing and retrieval, which has drastically changed the way people think, live and their environment. It can be used to access global knowledge and communication with other people.

Meaning of ICT Integration in Education

Simply put, ICT is an accepted acronym for information communication technology. It is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information (Blurton, 1999). This means that ICT helps in the storage and management of information.

The emerging phenomenon was welcomed in the 1980's that educational systems needed to prepare students to adjust to and survive in this new technologically driven society. This meant preparing students for

“lifelong learning in an information society” (Pelgrum and Law 2003, p.20). Allied to this, early advocates of ICT integrated education, saw it as a catalyst for change, fostering skills in problem solving and critical thinking, as well as the development of student centred learning.

According to Kozma (2005), there are three rationales for the introduction of ICT into education. The first one is the economic rationale which refers to the role it can play in preparing students as future workers and in supporting economic development. The second is the social rationale where ICT investment aims to: increase knowledge sharing, encourage cultural creativity, increase civic participation, make government services more accessible and finally enhance social cohesion. The third and final rationale is the educational and pedagogic rationale where ICT can advance educational reform and improve educational management structures. Similarly, Pelgrum et al (2003) broadly concur, identifying three reasons for the use of ICT in education: the development of new skills for the information age, increased productivity and the development of quality learning.

Whereas Kozma (2005) posited that, there are three rationales for the introduction of ICT into education, Hawkrige (1990) proposed four rationales for the utilization of computers in schools. He noted these as social, vocational, pedagogical and catalytical. The social and vocational rationales point to the increased use of ICT in all spheres of human activity. The pedagogical and catalytically rationales relate to the effects of technology on students and schools.

According to Bigum (1997), arguments for using computers in schools stem from technological and socially determined points of view. His

standpoint is that the school systems within which the computer is used, is driven by computers. He argued that a change occurs within the education system using the computer and that change is as a result of the effect of technology. Bigum (1997), argued that the social context sees computers as neutral technology-technical means of achieving a defined purpose in education. Two contexts emerge and are used in this study.

The social context and the pedagogical context. The social context runs along the lines of Hawkrige (1990) social and vocational rationales, while the pedagogical context agrees with Hawkrige's pedagogical and catalytical rationales. The pedagogical context also agrees with the views of Bigum (1997), Drent and Meelissen (2008), identified three objectives for the integration of ICT in education. They are: the use of ICT as a 'discipline or profession'; ICT as a 'teaching or learning medium' and the use of ICT as an 'object of study' (Drent and Meelissen, 2008). It can be gleaned from these objectives that integration involves aiding the teaching and learning process (apart from the third objective which is a discipline in itself). Successful integration of ICT in education can lead to a number of benefits.

Advantages of ICT in Education

One of the principal advantages of the use of ICT in teaching and learning is that it enables schools and colleges to cater for the needs of the individual rather than to the average needs of the class. Another major advantage is that ICT can dramatically improve access to information for, and communication of ideas by students with special learning needs. ICT can be used across the curriculum to enhance student learning. For example, students can improve the quality of their written work in any subject by using word

processing, which allows them to reflect on what they have written and make changes easily. Difficult concepts can be made simpler to understand when illustrated with animated graphics and computer simulations. Students can access high-quality information more easily using CD-ROMs and, to some extent, the Internet.

Need and Significance of ICT in Teacher Education

New technologies have provided new possibilities for the teaching profession. However, teacher educators and teacher trainees have to learn how to use these new technologies in the classroom situations. Most of the teacher education institutions are facing difficulties like shortage of ICT trained qualified teacher educators, weak curricula, lack of ICT equipment etc. Perhaps one of the greatest challenges facing teacher education today concerns the preparation of good quality teachers capable of using ICT effectively. Unless and until they are trained we cannot expect any qualitative changes in teaching.

Level of ICT Usage by Teachers

Despite the impact of ICT on society in general and the advantages of using it in teaching and learning, few schools and colleges are using ICT to its full potential. A major report from OFSTED (Office for Standards in Education, 2002) concluded that:

The breadth of ICT experience intended by the National Curriculum is yet to be achieved in the majority of schools. Much remains to ensure that pupils are not just 'exposed' to sophisticated ICT systems but achieve the levels of ICT

capability required by the National Curriculum and understand the main implications of their use.

Research findings suggest that ICT is significantly under-used by student and teachers. The problem is worldwide and many explanations are offered. Lack of resources or lack of access to resources in schools / initial teacher training (ITT) institutions has been suggested by Veen (1993), Byard (1995), Wild (1996), Dearing (1997) and Taylor (1997). The lack of opportunity to use computers (Blackmore et al, 1992; Dunn & Ridgway, 1991), predominance of other pressures during the early years of teaching (Wild, 1996), and the lack of ICT experience and training at pre-service level (Oliver, 1994; Wild, 1995) have also been implicated as factors leading to low student ICT uptake.

Other suggestions include the lack of encouragement for students to use ICT by teachers in schools or teacher trainers (Dunn & Ridgway, 1991; Downes, 1993; McDonald, 1993a; Collison & Murray, 1994) and lack of confidence in the computing skills of student teachers and teacher trainers (Chen, 1997).

ICT and Other Subjects

Although, ICT is being taught in Junior High Schools in Ghana as a subject which is examinable and may be used as an elective subject to be examined in the near future. But the question is how is ICT used by other teachers in their day to day teaching activities? This, however, can be done by the use of power point and other presentation software's: Internet connectivity of the school, the use of Skype in linking other interesting areas or institutions,

and software with maps animation, market scenes, teleconferencing formulae, audio conferencing etc. for subjects like Mathematics, Geography, Economics and the like.

Gender as a factor in ICT Usage

The effect of gender on computer use is also in dispute. Reports from Summers (1990) and McMahon and Gardner (1995) suggest that male students are less anxious about ICT and make more frequent use of it. Several other studies have reported that female students are less confident or knowledgeable than males about using computers (Blackmore et al, 1992; Oliver, 1993; Marshall, 1997; Marshall & Bannon, 1986).

In contrast, there are also many reports which indicate that there are no significant differences between the attitudes of male and female students towards ICT usage, for example: Koohang (1989), Kay (1989), Marshall and Bannon (1986) and Woodrow (1991).

Gender and awareness of Internet resources

Choudrie and Dwivedi (2005) noted that, gender education, and social class will definitely have an imperative role in explaining the users' awareness of Internet resources. In this regard, Chandran (2000) carried out a study on the use of Internet information resources in S.V. University Tirupathi, India, and did not find any significant difference between male and female awareness of diverse online journals, databases and e-books. Notwithstanding, Kwapong (2009), observed a high gender difference in awareness of Internet resources in the deprived regions in Accra than the endowed regions. He noted that gender breakdown revealed that awareness of Internet resources is

relatively higher amongst men than women in the most endowed region, in Accra, than the deprived regions. Also, Thanuskodi (2011) stated that more males than females are aware of e- journals availability on the Internet. However, Bavakutty and Salih (1999) conducted a survey at Calicut University and indicated that students, research scholars and faculty members are aware of Internet materials in their specific interest areas irrespective of gender differences.

Furthermore, Madhusudhan (2007) stated that most research scholars at Delhi University are aware of information resources. However, no gender difference in awareness was reported. Increasingly, Salaam, and Adegboire, (2010) surveyed the awareness level of the National Virtual Library of Nigeria in some selected universities in South-West, Nigeria, and reported that both male and female library users are significantly aware of electronic resources available in the virtual library. Similarly, Parameshwar and Patil (2009) opined that, both men and women are equally aware of online journals as well as other Internet sources. Bar-Llan, Peritz and Wolman (2003) pin-pointed that there is a high degree of awareness and acceptance of electronic resources in seven Israeli universities among male and female Internet users. They however stated that disparities in awareness exist between disciplines and ages. Also, Connell, Rogers and Diedrichs (2005) reported a high level of awareness and extensive use of electronic resources in Ohio State University.

In another development, Gbaje (2010), discovered significant lack of awareness of open access journals among male and female editors in Ahmadu Bello University Zaria, Nigeria. Similarly, Martinez-Pineda, found low level of awareness of open access journals that are accessed through the Internet by

using search engines among Spanish medical researchers. Ezeama (2009), equally lamented the lack of awareness of African Journals published on the Internet among male and female researchers. Consequently, majority of the articles published in so many journals and e-books are only read by authors and reviewers as against the targeted audience (Meho, 2007).

Gender and Search Engine Utilization

A large body of research supports the existence of small, but significant, gender differences (Burman, Bitan, & Booth, 2008). Commonly reported cognitive and psychosocial gender differences include female advantage in language and cooperation and male advantage in visual-spatial reasoning and competitiveness (Bonanno & Kommers, 2005). Such gender differences have found its way into online environments (Lee, 2007). According to Lee & Chae (2007) among 10 to 12 year old children, boys were more likely than girls to play online games, while girls were more likely than boys to be involved in online communities. Correspondingly, Papastergiou & Solomonidou (2004) found that boys used the Internet more than girls for entertainment and Web page creation. Similarly, Cooper, Joel and Weaver, Kimberlee (2003), stated that males are more comfortable with technology than females. They explained that the roots of the gender digital divide lie deep in the socialization patterns of boys and girls. Therefore, Colley (2003) noted that girls had a greater work orientation and appreciation for email while boys showed a greater affinity for online games.

Increasingly, studies have demonstrated that females are more productive, prolific, and effective than males in online environments (Caspi, A., Chajut, E., & Saporta, K., 2006; Lin, C., Yu S., 2008). For instance,

Jackson, L., Samona, R., Moomaw, J., Ramsay, L., Murray C., Smith, A., and Murray, L., (2007) reported that girls visited more geographic and environmental websites than boys. In addition, based on a large sample of school children, Murphy and Beggs (2003) concluded that girls were more positive than boys regarding the educational utility of the Internet, while boys were more positive than girls about the play-value of the Internet.

Contemporary research increasingly reports no significant adolescent gender differences. Most scholars agree that the gender gap in Internet use has narrowed significantly in the college age group (Goodson, I., & Sike, P., 2001); as well as the general population (Ono & Zovodny, 2003). For example, among Taiwanese children in fifth and sixth grade, Lin and Yu (2008) could not find gender differences in motives for using the Internet (i.e., searching for information, socializing, and boredom avoidance were equally reported by boys and girls). Similarly, Jackson, Samona, Moomaw, et al (2007) found no gender differences in the overall number of websites visited by children but a difference in the category of sites visited. Tapscott (1998) had earlier predicted that individuals born into the digital-age would experience gender equity in Internet technology utilization.

Meanwhile, gender differences have been found in attitudes toward technology acceptance, intensity of Internet use, online applications preferred, and experience in cyberspace. In a study of college students' attitudes toward technology for instance, Smith and Necessary (1996) found that males had significantly more positive attitudes towards the Internet than females. Jackson (2007) also found that females in general reported less favourable computer attitudes.

Other literature, however, contradicts these findings. Several investigations have reported that gender had no significant effect on any of the dimensions of computer attitude, while another found significant effect on computer attitudes (Jennings & Onwuegbuzie, 2001; Zhang, 2002). The inconsistency in these findings might be attributed to differences in methodology, or might reveal how the increasing number of female Internet users is altering women's attitudes regarding computers and the Web.

Be that as it may, Goh (2011), investigated gender differences in sms-based mobile library search system adoption by students. The study was based on a sample of 90 students, the results suggest that there are significant differences in perceived usefulness and intention to use but no significant differences in self-efficacy and perceived ease of use between genders. The findings reveal that SMS efficiency has a significant influence on self-efficacy for males but not for females. Online Public Access Catalog (OPAC) experience has a stronger but less significant influence on self-efficacy for females but very little influence for males. Perceived usefulness is still the driving force behind intention to use for both genders (Goh, 2011).

Nevertheless, Ono and Zavodny (2002) examined whether there are differences in men's and women's use of the Internet and whether any such gender gaps have changed within a five-year period. The researchers used data from several surveys during the period 1997 to 2001 to show trends in Internet usage and to estimate regression models of Internet usage that control for individuals' socioeconomic characteristics. They found that women were significantly less likely than men to use the Internet in the mid-1990s, but the gender gap in usage disappeared by 2000. However, women continue to be

less frequent and less intense users of the Internet. The results suggest that there is little reason for concern about sex inequalities in Internet access and usage now, but gender differences in frequency and intensity of Internet usage remained (Ono & Zavodny, 2002). They concluded that one frequently noted dimension of inequality in Internet access and usage is gender.

In the bid to identify the reason for the differences in male and female use of the Internet, Bimber (2000) explained that gender differences exist because men and women differ, on average, in socioeconomic status, which influences computer and Internet access and use. Another reason is that men tend to be more interested in computers than women, on average, contributing to gender differences in Internet use (Shashaani, 1997). Such intergroup differences tend to eventually diminish, although not necessarily disappear altogether, as a technology diffuses over time (Campbell, Patricia & Sander 2002). Gender differences in Internet access and usage are important because groups that have lower usage, risk being excluded from job and educational opportunities as well as losing political influence as the Internet becomes increasingly important to how people live and work (Norris & Phillips 2003). Gender differences in computer use in classrooms and at home noted by many studies may carry over to Internet usage (Shashaani, 1997). In addition, Bimber (2000) contends that the Internet is biased toward men, dominated with male-oriented pornography, and filled with online sexual harassment toward women. Not surprisingly, male college students are significantly more likely to have accessed sexually explicit materials online, while more female users reported sexual harassment on the Internet (Goodson & Sike., 2001).

The sexuality of the online environment is bound to affect how both sexes feel about the Internet in general and the specific Web sites encountered.

However, Cooper, Joel and Weaver, Kimberlee (2003), noted that the sex difference in Internet usage rates declined from about 4% in 1997 to nearly zero in 2000 and remained near zero in 2001. Ono and Zavodny (2002), observed that women were more likely than men to use the Internet by 2001. Women were significantly less likely than men to use the Internet in 1997 and 1998 both at home, conditional on computer ownership, and anywhere, not conditional on computer ownership or use. Transforming the results for 1997 into odds ratios, women were 68 percent as likely as men to use the Internet at home and 78 percent as likely to use the Internet anywhere. In 2000 and 2001, in contrast, women were significantly more likely to use the Internet anywhere. Women were also more likely than men to use the Internet at home in 2001. Women may be more likely than men to use the Internet outside the home. This difference may result from women being more likely to use computers and the Internet at work, as previous studies report (Ono & Zavodny, (2002).

Nonetheless, Bimber (2000) argued that the gender gap in the Internet is larger where web applications such as search engines are involved. Thus, females are less intensive Internet users than males. Bimber (2000) attributes this result to a combination of gendered technology embodying male values and content that favours men.

Moreover, the percentage of women using the Internet according to Pew Internet & American Life Project (2012) falls slightly behind the percentage of men. According to the Project, Women under 30 and black

women outpace their male peers. However, older women trail dramatically behind older men. Men are slightly more intense Internet users than women. Men log on more often, spend more time online, and are more likely to be broadband users (Pew Internet & American Life Project, 2012). Ono and Zovodny (2003) also found women to be less frequent and less intense users of the Internet. Increasingly, male college students are more likely than their female counterparts to use the Internet for recreational purposes (e.g., playing games online, visiting adult-only sites, gambling, accessing news groups and discussion forums, staying abreast of news developments, and seeking information for personal use), while females are more likely to use the Internet to talk to family and friends (Goodson, & Sike, 2001). These findings appear to reinforce the widespread assumption that men prefer to use the Web for information gathering and entertainment and women prefer to use the Internet for communication (Shaw & Gant, 2002).

According to Pew Internet and American Life Project (2012) men are more avid consumers of online information than women. The scope of information searched online by men is also wider than what women search for. Men are more likely than women to use the Internet as a destination for recreation information. Men are more likely to gather material for their hobbies, read online for pleasure, take informal classes, participate in sports fantasy leagues, download music and videos, remix files, and listen to Internet radio (Pew Internet & American Life Project, 2012). It was increasingly noted that though men and women value the Internet as a gateway to information, men however reach farther and wider for topics, from getting financial information to political news (Pew Internet & American Life Project, 2012).

Along the way, they work search engines more aggressively, using engines more often and with more confidence than women (Pew Internet & American Life Project, 2012).

Similarly, Maghferat and Stock (2010) found that men tried to use professional information services as well as search engines for search, regardless of the difficulty of the search task and its formulation. In contrast, women behaved cautiously in choosing search sources. They decided either on sources, which they knew skilfully or where their use was assigned. Women were generally more satisfied with the obtained results as men. In this regard, Dubi and Rutsch (1998) examined the Internet information search behaviour of students with different type of schooling in an exploratory study. In the study, significant gender differences were reported. It was observed that the female students lacked self-confidence. They behaved with less certainty than the male students while using the Internet (Dubi & Rutsch, 1998). Maghferat and Stock (2010) in their study of gender specific behaviours reported that men use scientific databases more often than women, but women tend to use more operators while formulating a search query. They also reported that men tend to find search results accidentally, while women are more targeted in their searches. Increasingly, women were found to be more satisfied with the search results, regardless of using search engines or scientific information services, but men tried to use both professional information services and search engines, regardless of the question and its formulation (Maghferat & Stock, 2010).

In another gender study, Steinerova and Susol (2007) explored the information seeking behaviour of library users (predominantly students and teachers) in 16 academic libraries in Slovakia. They dealt in more detail with

gender differences and were also of the opinion that the obtained data confirmed the traditional gender stereotypes (Steinerova & Susol, 2007). Also, Lorigo, Pan, Hembrooke, Joachims, Granka and Gay (2006) observed that men had greater average fixation durations on selected Web documents than females and that women submitted significantly longer queries to the Google search engine than men. It was observed that men despite the possibility of using simple search engines, and accessed scientific databases more than women. Moreover, PEW Internet Project (2005) reported significant differences in online activity patterns of men and women. The study found that compared to women, men are more likely to use the Internet to check the weather, read news, check for sports information, retrieve political information, get financial information, conduct online survey or research, download software's, listen to music, rate an online product through an online reputation system, use a web camera, download music files, and enrol in online courses (PEW Internet Project, 2005).

Again, women compared to men were found to be more likely to use the Internet to send and receive e-mail messages, retrieve maps and directions, search for health and medical information, and read religious information (PEW Internet Project, 2005). Similarly, Hotchkiss (2008) stated that more women than men send and receive e-mail to write to friends and family about a variety of topics from sharing news and worries to planning events and much more. He also noted that though men and women appreciate e-mail for its efficiency and convenience, women are more likely to feel satisfied. Nevertheless, men look for information on a wider variety of topics than women (Hotchkiss, 2008).

Factors that Prevent Teachers from Using Technology

A number of early studies investigated why teachers do not use computers in their teaching (Rosen & Weil, 1995; Winnans & Brown, 1992; Dupagne & Krendl, 1992; Hadley & Sheingold, 1993). Not surprisingly they found a list of inhibitors:

1. lack of teaching experience with ICT;
2. lack of on-site support for teachers using technology;
3. lack of help supervising children when using computers;
4. lack of ICT specialist teachers to teach students computer skills;
5. lack of computer availability;
6. lack of time required to successfully integrate technology into the curriculum;
7. Lack of financial support.

Evans-Andris (1995) summarised three styles of computing use among teachers: avoidance, integration and technical specialisation. These styles play a significant role in student access to computer technology. Her study evolved over an 8-year period in the elementary schools of a large metropolitan area. The dominant style of computing among teachers was that of avoidance. Here teachers typically distanced themselves from computers and otherwise reduced the amount of time they spent attending to computer-related activities. Their pupils had limited and repetitive use of software intended for drill and practice or word processing. Generally these teachers sustained a low level of interaction with students while they worked with computers. In contrast, teachers engaged in 'integration' generally embraced computers. They integrated the technology into their teaching methods and curriculum, their

working day, and the learning experiences of students. They selected drill and practice software based on curricular goals and the needs of their students. In addition they introduced a broad range of computer applications and developed creative and engaging projects that integrated computer activities with more normal instruction.

As in integration, teachers engaged in 'technical specialisation' embraced computers and viewed the technology as a challenge. These teachers promoted computers in their schools and their activities relating to computing typically demonstrated strong teaching methods such as consistent use, preparation, and delivery of planned lessons involving the computer. During lessons they generally integrated the computers rather than using them to supplement the traditional curriculum. They also focused their efforts on teaching students about the technical aspects of the computer.

As cited by Kirschner and Selinger in "The state of affairs of teacher education with respect to information and communication technology" (2003): Inadequate teacher expertise is the bottleneck in the application of ICT in education. The cause is an alarming situation in teacher education. The Inspectorate of Education is disappointed about ICT results in teachers' colleges:

The Inspectorate comes to this hard conclusion based upon a number of recent reports. Teacher expertise stops at the level of basic skills. The attention, both qualitative as quantitative, paid to ICT in teacher education is not up to par and money for innovation is used for 'business as usual'. Many teacher colleges aren't busy equipping their students with ICT skills. Aspiring

teachers also aren't learning about what is going on in elementary and secondary schools. (Automatiseringsgids, 2002)

The challenge posed to teachers' attitudes by information technology is so acute because IT demands that teachers learn new skills and alter the way that they operate in the classroom (Pelgrum & Law 2003). In the past, the required acquisition of IT skills before teachers could effectively incorporate applications into their programmes of study may have militated against the use of IT.

Institutional related barriers

The environment or conditions prevailing in the various institutions or schools can also be a factor that will inhibit the integration of ICT into the learning and teaching process. These conditions can be varied depending on where the school is located and the class or category of the school. Some of these include but not limited to the following:

1. Technical problems and shortage of computers in laboratory
2. Lack of detailed plan into how ICT can be used to enhance the teaching and learning
3. Timetable difficulties
4. Unwillingness of school authorities to provide the needed funds when the need arises.

Teacher related barrier

I am of the view that the teacher (s) is/are the principal actors or stakeholders in the learning process. Gressard and Loyd (1985) asserted that teacher's attitude towards ICT is one of the key factors which determined

successful integration, while Jegede, Dibu-Ojerinde and Llori (2008), recognized the teacher as a key instigator in fostering ICT integration in education.

From the above, it is clear that the teacher is one key determinant factor among the others factors in the integration of ICT. It, therefore, implies from the above that the barriers of integration with relation to teachers can have a negative impact on the whole integration process. The following sessions will look at some of the teacher related challenges or barriers.

Lack of knowledge or competence

According to Bingimlas (2009), teacher competence refers primarily to the ability to integrate ICT into pedagogical practice. Lack of knowledge or competence is regarded as a significant teacher related barrier to ICT integration.

A teacher's lack of knowledge serves as a considerable challenge to the use of computers in teaching methods and practices. These barriers according to some researchers vary from country to country. Pelgrum (2001), found that lack of knowledge or competence in technology, among teachers in developing nations, is the primary obstacle to the uptake of ICT in education.

Lack of Confidence

Numerous studies carried out posits that the lack of confidence prevents teachers from using ICT. According to a BECTA reports in 2004, many teachers who are unskilled in ICT are not prepared to use them in the classroom or in front of students who might probably know more than them. This lack of confidence is further deepened with the expectation of students on the competence of the teacher in the use of ICT. This is so because students

are of the view that their teachers know more than them and with this at the back of the mind of the teacher if he/she is even having a fair knowledge about ICT will not be willing to go and disgrace himself before the students.

The lack of confidence in the use of ICT is in most instances accounted for by the inconsistency between training and usage. This is so because most teachers even if they have received training in the use of ICT can still fail to integrate it into teaching. BECTA report 2004 says that the lack of confidence is linked to other barriers affecting the use of ICT in education. The report mentioned the fear of ICT as a factor that can compromise the level of confidence. Other factors that were mentioned included the lack of technical assistance which can lead to low confidence levels, lack of competence and the quality of training received.

According to Jegede et al (2008), as teachers become more appreciative of the use of ICT as a pedagogical aid, attitudes and interest become positive. The rationale therefore, is that increased interest fosters commitment to improving skills and thereby boosting competence levels. Beggs (2000), posited that fear of failure is a possible cause of lack of confidence whereas Balanskat, Blamire and Kefala (2006), said the limitation in the knowledge base of the teacher in ICT use make them feel anxious about using it and thus not confidence to use it in teaching. Some researchers are also of the view that the lack of confidence and experience with the use of technology influences the motivation of teachers in the use of ICT. Cox *et al* (1999) found that teachers who have confidence in using ICT, identify that technologies are helpful in their teaching and personal work and that they need to use them more frequently.

From the above it can be concluded that when most of the barriers to the use of ICT in education is removed many of the problems associated with lack of confidence will be resolved.

Anxiety or Fear

Computer anxiety or fear is a key barrier, limiting or preventing the use of ICT by teachers. Underlying these anxieties are a fear of humiliation when using computers and a fear of losing professional status through the downgrading of traditional teaching skills.

According to a BECTAs 2004 report, teachers who admitted to a lack of confidence ascribe this lack of confidence primarily to fear. According to several reports the same teachers have the fear that computers might challenge or compromise their vocation by downgrading their role.

Lack of Training

A full and complete integration of ICT use in education requires high quality frequent training and professional development. If this training is not provided, then attempts at integration will inevitably be unsuccessful. This is significant, as according to most researchers another barrier that is frequently cited, is the lack of effective training. A study by Pelgrum in 2001 revealed that there were not enough training opportunities for teachers in the use of ICT in the classroom.

This is so because it involves a number of complex factors in order to render the training effective. These complex factors include finding the time for training, training in pedagogy, skills training and the use of ICT in the teacher's initial training (Bingimlas 2009). BECTA (2004) concurred, asserting that training is particularly complex, because it is important to

consider several components to ensure the effectiveness of the training. A similar study conducted by Cox et al (1999) argued that ICT training for teachers needs to incorporate pedagogical aspects. This study concluded that when teachers received basic ICT training without considering the pedagogical aspects of ICT, they still did not know how to use ICT in class. Schoepp (2005), maintained that if new technology is going to be integrated into education, teachers should receive training on how to use the specific ICT.

Cox et al (1999) again assert that if teachers are to be convinced of the value in using ICT in their teaching, their training should focus on pedagogical issues. This in the view of this study is due to the fact that even after teachers had attended professional development courses in ICT, they still did not know how to effectively use ICT in their classrooms. This was because too much emphasis was placed on acquiring technical ICT skills during training, as opposed to skills in how to incorporate ICT into the curriculum.

According to Newhouse (2002), some training is still needed for teachers to develop appropriate skills, knowledge and attitudes, regarding the effective use of computers to support learning by their students. He argued that this also requires continuing professional development, to maintain these appropriate skills and knowledge.

Extent of previous ICT experience

Poor previous ICT experience among teachers can clearly be regarded as a very real barrier to ICT integration in the classroom. Drent and Meelissen (2008) posited that solid experience in the use of ICT and the changes related to ICT, support the development of a learner centred pedagogical practice,

while Becta (2004) viewed substantial previous computer use by teachers, as one of the key determinants, in his classification of teachers, as either 'exemplary computer-using' or 'non-exemplary computer-using'.

Difficulty in changing teaching method (pedagogy)

Teachers have to accept that the widespread use of ICT in schools is having an impact on teaching methods and requires a significant rethinking of approach. Becta (2004) described two main teaching methods and their effects on the ways in which ICT is used in lessons.

Traditional transmission institution assumes that students will learn through teacher explanation or reading from texts. Skills are learnt through practicing skill in a sequence prescribed by the teacher. Constructivist institutions assume that understanding comes from relating new ideas to the learners' prior beliefs. Skills acquisition comes in an unstructured way as new skills are used as required to solve practical problems.

In conclusion one could deduce that using ICT in lessons, the constructivist approach is more likely to lead successful outcomes. Furthermore, teachers with the most constructivist philosophies tend to use computers more often and in a more challenging way both in classroom and as users themselves.

Teachers' Attitudes towards Information and Communication

Technologies (ICT)

A large number of recent studies mostly conducted in controlled settings have revealed that the use of ICT for educational purposes yield positive outcomes on the part of the students such as increased motivation, active learning, providing efficient resources and better access to information

(Young, 2000). These benefits have generated some attempts leading to program developers to bring about educational reforms and initiate national programs to introduce ICT into education in countries worldwide, especially in developing countries such as Ghana. For this purpose, large amounts of money have been invested to the technical and infrastructure related conditions necessary for ICT integration. However, in most cases, the expected benefits have not been attained (Ertmer, 2005).

One developing country that has taken many steps for ICT integration is Ghana. Now, most of the schools throughout the country own at least one ICT classroom/laboratory depending on the number of students they have. Despite the increasing investments, studies have shown that use of ICT for educational purposes is rather low in Ghana (Tezci, 2009).

The related literature suggests teachers' attitudes, knowledge and skill level as major obstacles for them to adopt and make effective use of ICT (Pelgrum, 2001). While a number of studies on teachers' attitudes and ICT integration have been conducted in developed countries, there are few studies investigating this topic in developing countries such as Ghana, and even fewer focusing on attitudes towards ICT among teachers (Lau & Sim, 2008). Therefore, the purpose of this study is to explore ICT usage by teachers in Ghana and their attitudes towards ICT for educational purposes.

Factors that Encourage Teachers to Use Technology

Cox, Preston and Cox, (1999) carried out a study examining the factors relating to the uptake of ICT in teaching. The results showed that the teachers who are already regular users of ICT have confidence in using ICT, perceive it to be useful for their personal work and for their teaching and plan to extend

their use further in the future. The factors that were found to be the most important to these teachers in their teaching were: making the lessons more interesting, easier, more fun for them and their pupils, more diverse, more motivating for the pupils and more enjoyable. Additional more personal factors were: improving presentation of materials, allowing greater access to computers for personal use, giving more power to the teacher in the school, giving the teacher more prestige, making the teachers' administration more efficient and providing professional support through the Internet.

Veen (1993) carried out a study 8 years earlier to describe the day-to-day practice of four teachers from a Dutch secondary school who were implementing ICT in their classrooms. The teachers were provided with a computer at home, and a computer and a liquid crystal display in their classrooms. School factors played an important role in how the teachers made use of their computers including the essential technical support of 20 hours per week and the positive attitude of the principal. However, teacher factors outweighed the school factors in explaining the teachers' use of computers. These teacher-level factors were grouped into two subcategories: beliefs and skills. The most important of these were teachers' beliefs regarding what should be in the curricula (content) and the way in which their subjects should be taught (pedagogy). The skills that most influenced their uses of computers were those related to the teachers' competence in managing classroom activities; to their pedagogical skills; and, less importantly, to their computer-handling technical skills. The most important finding from Veen's work is that if the software matched the teacher's pedagogy they used it.

Summary of Literature Review

Information and Communication Technology is recognized as an essential component in teaching and learning. In order for ICT to be utilized fully in teaching and learning, it should be well integrated into teacher education.

Factor such as Gender, Institutional related barriers, Lack of knowledge, competence and confidence, Fear or Anxiety, Lack of training and difficulty in changing teaching methods (Pedagogy), has been identified as those that prevent teachers from using ICT in classroom.

Appropriate measures should be taken to minimize the factors that prevent teachers from using ICT in the classroom. Teachers should be trained and giving INSET on periodic basis to boost their knowledge and skill in using ICT tools. Teachers who are regular users of ICT have confidence and perceive it to be useful for their personal work and teaching.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter presents the methodology that was employed in the study. It is made up of the research design, the population, sample and the sampling technique(s) that was employed. The data collection instruments and the data collection procedure is also presented in this chapter. The chapter also presents the data analysis method that was used.

Research Design

The research design that was used in this study was the descriptive research. Descriptive research, as pointed out by Leedy P. D. and Ormrod J. E. (2010), involves identifying the characteristics of an observed phenomenon or exploring possible correlation among two or more phenomenon. The descriptive research examines a situation as it is. According to Gravetter F. J. and Forzano L. B. (2006), descriptive research typically involves measuring a variable or set of variables as they exist naturally. The descriptive strategy is not concerned with relationship between variables but rather with the description of individual variable. The goal is to describe a single variable or to obtain separate descriptions for each variable when several are involved. In addition, the results in a descriptive research can help us to capture interesting, naturally occurring behaviour. Descriptive research, is used to describe characteristics of a population or phenomenon being studied. It does not

answer questions about how/when/why the characteristics occurred. Rather it addresses the "what" question (What are the characteristics of the population or situation being studied?). The design will allow me to draw a sample from a targeted population of interest and based on the outcome of the response, generalizations will be made about the population. The choice of this research design is deemed suitable, as an attempt is made to assess the Information and Communication usage among teacher trainees in selected colleges of education in the Ashanti Region of Ghana.

Population

Population according to Gravetter and Forzano (2006), is the entire set of individuals of interest to a researcher. Although the entire population usually does not participate in a research study, the results from the study are generalized to the entire population. The population for the study comprised all colleges of Education in the Ashanti Region of Ghana. These are, Akrokerri, Offinso, Agogo, Wesley, St. Louis, Mampong Technical, St. Monica's and Cambridge College of Education. The targeted population were, however, the students of the three colleges of Education selected.

Sample and Sampling Procedure

Sampling is a procedure of selecting a part of a population on which a study can be conducted. Leedy and Ormrod (2010), simply defines sampling as the process of choosing from a much larger population, a group about which a generalized statement is made, so that selected parts represents the total group. Also, Gravetter and Forzano (2006), defines sample as a set of individuals selected from a population and usually is intended to represent the population in a research study. Sampling, per say, is not a technique for

getting information but it ensures that any technique used will help in getting information from a smaller group, which could accurately represent the entire group.

The study employed the multistage sampling techniques. In the first place, a purposive sampling method was used to select the three colleges of Education and the third year group of the three (i.e. two single sex and one mixed) out of the eight Colleges of Education in the Ashanti Region. The selected colleges were, Wesley College of Education, St. Louis College of Education and Mampong Technical College of Education. Apart from Wesley College of Education which is a mixed school, St. Louis College of Education and Mampong Technical College of Education are single sex, (Female and male Colleges respectively).

Simple random sampling technique was employed in selecting Forty Teacher Trainees out of the three hundred and seventy and three hundred and ninety third year students from St. Louis and Mampong Technical respectively. The simple random sampling technique was employed because ICT is a core subject at all Colleges of Education. While stratified non proportional sampling was used to select twenty female and twenty male out of four hundred trainees from Wesley College of which two hundred and thirty five were males and the rest (i.e. 165) female.

The stratified non proportional sampling was used at Wesley College because the researcher wanted to get the same number of male and female trainees. Also one ICT tutor was purposively sampled from each of the three

Colleges and interviewed. In all, one hundred and twenty mentee teacher trainees and three Tutors were selected for the study.

Instrumentations

The instruments that was used to collect the data in this study included questionnaire, and an interview guide. The questionnaire items were designed for the mentee teacher trainees' whiles the interview schedule was used to solicit information from ICT tutors in the selected colleges. The questionnaire was administered to one hundred and twenty Teacher Trainees and three ICT tutors were interviewed, using an interviewed schedule.

The questionnaire consisted of twenty three items and was in four sections. The first section requested for respondents demographic information like gender, name of school and subject of study and was made up of three questions. The second section which is made up of nine questions, asked questions on mentee teacher trainees ICT (computer & Internet) skills. The third section which was made up five questions was on the level of ICT integration. The fourth section looked at the attitude of teacher trainees toward the use of computer (ICT) in teaching and was made of seven question. The interview schedule consisted of three items which were based on third research question, which is to find out how ICT has been integrated into the training of teacher trainees.

Both closed-ended and open-ended questions were used to solicit information from the respondents. The closed-ended questions were used to guide respondents to provide answers within the reviewed literature, whilst the open-ended questions were used for additional in-depth information. The content validity evidence of the instrument for the study was assessed by

submitting the instruments to my supervisor who has an expert knowledge in validation of the research instruments.

Pretesting of Questionnaire Items

The questionnaire items were pretested on six Mentees from Akrokerri College of Education at Denyase M/A J.H.S. at Denyase in the Bekwai municipality of Ashanti Region. Out of the six mentees three were male and the remaining were females. The pretesting was to check for clarity, ambiguity, spelling and grammatical errors. The mentees were given pen and papers to note wrongly spelt words, grammatical errors and ambiguous statements. All mistakes noted by the mentees were looked at and corrections effected.

Data Collection Procedure

I picked a letter of introduction from my department, College of Distance Education, University of Cape Coast to the selected Colleges of Education. I visited Mampong College of Education to familiarize myself with the schools environment and met the Vice Principal academic to introduce myself to him. The purpose of the research was explained to the Vice Principal and he introduced me to the ICT tutor, who was to schedule an appointment with me to administer the instrument. The ICT tutor at Mampong College of Education agreed with the researcher that the researcher can come back the following week to administer his instrument.

The next day, the researcher visited both Wesley and St. Louis Colleges of Education, because they were closer to each other. First the researcher visited St. Louis College of Education and met the Vice Principal

Academic and explained to her the purpose of the study. She also introduced me to the ICT tutors, who also upon discussion with the researcher, scheduled an appointment with the researcher to come the following week to administer the instrument. At Wesley College of Education the situation was almost the same as the earlier ones.

The following week the researcher, went to the three colleges respectively to administer the instruments. In each college, the ICT tutors assisted the researcher to sample forty trainees to one classroom. The researcher explained the purpose of the study and explained items to the respondents. Respondents answered the questionnaire the same day and was collected by the researcher. After that, the researcher administered the interview guide to the ICT tutor. This procedure was used in all three colleges.

Data Analysis

All the copies of the answered questionnaires and the interview guides schedules were examined to check for accuracy and completeness. The questionnaires were numbered serially, edited, coded, entered and analysed using the Statistical Package for Social Science (SPSS) software, version 21, to form the frequency and percentages.

The main source of data used in this study was the primary data. Primary data or sources of data are data that have been collected from first-hand-experience. It is normally collected through the use of both open – ended and close – ended questions.

All the responses from the interviews were numbered, edited, coded

and analysed, putting similar responses together.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter covered the presentation and interpretation of the analysed data, which was collected from the field on an Assessment of Information and Communication Technology usage in selected Colleges of Education in the Ashanti Region of Ghana. Tables and figures are used to present the findings.

Demographic Characteristics of Respondents

This section looked at the demographic characteristics of respondents from all the selected Colleges of Education. The demographic characteristic of the student respondents in each institution with respect to gender is presented in Table 1.

Table 1: Gender Distribution of Students Respondent from the Respective Schools

Name of College	Males	Females	Totals
St. Louis		40 (100%)	40 (33.33%)
Wesley	20 (50%)	20 (50%)	40 (33.33%)
Mampong Technical	40(100%)		40 (33.33%)
Total	60 (50.0%)	60 (50.0%)	120 (100%)

Source: Field data, 2014

A total of 120 teacher trainees participated in the study. Sixty, representing 50% of the student respondents were females and sixty, representing 50% were males. All Colleges had the same number of respondents.

Research Question 1

What is the level of mentee teacher trainees ICT (i.e. computer and internet) skills?

The first research question sought to identify the level of teacher trainee’s computer (ICT) skills. Items 3 – 11 on the questionnaire sought to obtain information on teacher trainees’ computer awareness and skill.

Table 2 shows responses on items 3 to 5 on the questionnaire.

Table 2: Level of Mentee Teacher Trainee Skills

Item	No Response	Yes	No
Did you have any computer training before enrolling into the College of Education?	1 (0.8%)	65 (54.2%)	54(45.0%)
Have you used the computer to type a letter or document?	-	80 (66.7%)	40 (33.3%)
Do you surf the internet to do your work?	-	102 (85.0%)	18 (15.0%)

Source: Field data, 2014

Table 2 shows that 65 (54.2%) of teacher trainees answered yes to having any form computer training prior to enrolling into the colleges of education while 54 (45.0%) answered no to the same question. This shows that although majority of teacher trainees had computer training before being admitted into the colleges of education, the difference is not that much. Drent and Meelissen (2008), have asserted that solid experience in the use of ICT and the changes related to ICT, support the development of a learner centred pedagogical practice,.

As indicated in Table 2, 80 (66.7%) of teacher trainees said they have use computers to type a letter or document as against 40 (33.3%) who answered No, to having use computer to type a letter or document. The information on Table 2 clearly shows that majority of teacher trainees Have use computers to type document.

The information on Table 2 also shows that 102 (85.0%) of teacher trainees indicated that they surf the internet to do their work. Only 18 (15.0%) of trainees indicated they do not surf the internet. From the information on Table 2, it clearly reveals that majority of the teacher trainees surf the internet.

Table 3 provides responses on how the teacher trainees' rated their experience in computing.

Table 3: Rating of Mentee Teacher Trainee Computer Experience

Responses	Frequency	Percent
No Response	5	4.2
Quite Good	46	38.3
Good	54	45.0
Very Good	15	12.5

Table 3 (Continued)

Total	120	100.0
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Source: Field data, 2014

Information on Table 3 indicates that 54 (45.0%) of teacher trainees responded that they would rate their experience with computers as good while 46 (38.3%) rated their experience with computers as quite good. As it clearly shown on Table 3, most trainees rated their experience with computers as good. Drent and Meelissen (2008) and Becta (2004) stated substantial previous computer usage by teachers, as one of the key determinants, in their classification of teachers, as either ‘exemplary computer-using’ or ‘non-exemplary computer-using’.

Table 4 provides responses to the question on the number of years teacher trainees had use computers.

Table 4: Teacher Trainees Years of Computer Usage

Responses	Frequency	Percent
Less than a year	24	20.0
1 – 3 years	47	39.2
4 – 6 years	40	33.3
7 – 9 years	4	3.3
Above 10 years	5	4.2
Total	120	100.0

Source: Field data, 2014

As can be seen from Table 4, 47 (39.2%) of teacher trainees have been using computers between 1 – 3 years now and 40 (33.3%) of the sample population have been using computers for 4 – 6 years now. As much as 24

(20.0%) started using computers less than a year now. The results show clearly that the number of years that teacher trainees started using computers is between 1 – 3 years.

Table 5 provides responses to the question how teacher trainees get access to internet connection.

Table 5: Mentee Teacher Trainees Access to Internet Connection

Responses	Frequency	Percent
No Response	19	15.8
Personal Modem	58	48.3
Colleges Online	28	23.3
Internet Cafe	9	7.5
Others	6	5.0
Total	120	100.0

Source: Field data, 2014

When teacher trainees were asked on how they get access to internet connection, from the data in Table 5, 58 (48.3%) indicated that they get internet access via personal modem whereas 28 (23.3%) indicated that they access internet through the colleges online. From the data on Table 5, it clearly shows that most teacher trainees access internet through personal modem. This, from the information gathered from the colleges, is due to the fact that the colleges do not have wireless or online services.

Table 6 provides responses to the question on, how often do trainees use the internet.

Table 6: Internet Usage by Teacher Trainees

Responses	Frequency	Percent
Very Often	28	23.3
Often	37	30.8
Not Often	55	45.8
Total	120	100.0

Source: Field data, 2014

From Table 6, 55 (45.8%) of teacher trainees answered, “Not Often” to the question “How often do you use the internet”. Also 28 (23.3%) answered “Very Often” and 37 (30.8%) answered “Often”. The information on Table 6 clearly shows that significant percentage of teacher trainee’s usage of internet is not encouraging. This from the researcher’s checks in the colleges is due to the fact that the colleges lack online and wireless service.

Table 7 provides responses to the question on, how many hours a week do trainees spent on the internet.

Table 7: Hours teacher trainees usually spent on the Internet

Responses	Frequency	Percent
No response	3	2.5
5 or few hours a week	80	66.7
6-10 hours a week	11	9.2
11- 15 hours a week	9	7.5
16 - 20 hours week	4	3.3
21 - 25 hours a week	4	3.3
26 - 30 hours a week	9	7.5

Table 7 (Continued)

Total	120	100.0
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Source: Field data, 2014

From Table 7, 80 (66.7%) of trainees indicated that they spend five or few hours a week on the internet. From the responses as indicated on Table 7, majority of teacher trainees spend less hours (i.e. 5 or few hour) on the internet than the average internet user who spends at least 13 hours a week (www.cnet.com/news/average-net-user-now-online-13-hours-per-week/).

Research Question 2

What are the levels of awareness about ICT among male and female mentee teacher trainees?

To establish the level of awareness of ICT among teacher trainees, the researcher asked a series of questions and the responses are illustrated in Tables 8, 9 and 10.

Table 8 shows if teacher trainees had any computer training before enrolling into the college of Education.

Table 8: Computer Training before Enrolling into College

Gender	No Response	Yes	No	Total (100%)
Male	1 (1.7%)	34 (56.7%)	25 (41.6%)	60
Female	-	31 (51.7%)	29 (48.3%)	60

Source: Field data, 2014

The information in Table 8 indicates that 34 (56.7%) of male teacher trainees had computer training before enrolling into the college of education as against 31 (51.7%) of their male counterparts. Also, 29 (48.3%) of females answered No as against 25 (41.6 %) of their male counterparts. It is clear that most male trainees had training in computers before being enrolled into the Colleges of Education than their female counterparts. Summers (1990) and McMahon & Gardner (1995) have maintained that male students are less anxious about ICT and make more frequent use of them than female.

Table 9, is a response to the question on how teacher trainees rate their experience with computers.

Table 9: Male and Female Trainees Experience with Computers

Gender	No Response	Quite Good	Good	Very Good	Total (100%)
Male	2 (3.3%)	27 (45.1%)	23 (38.3%)	8 (13.3%)	60
Female	3 (5.0%)	19 (31.7%)	31 (51.7%)	7 (11.6%)	60

Source: Field data, 2014

From Table 9, 31 (51.7%) of female trainees indicated that they had good experience when it comes to working with computers as against 23 (38.3%) of their male counterparts. Also 27 (45.0%) of male trainees indicated they had average experience with computers as against 19 (31.7%) of their female counterparts. From information shown on Table 9, one can clearly say that when it comes to experience with computers, majority of females had good experience with computers. On the other hand majority of male trainees

had average experience with computers. When it comes to having very good experience with computers, males had 8 (13.3%) as against 7 (11.6%) respondents. This also supports the stance of Koochang (1989), Woodrow (1991) and others that, there are no differences between the male and female students towards ICT usage. Responses to the questions, should ICT be a stand – alone subject, need for more training and necessary skill in using computers in teaching are dealt with in Table 10.

Table 10: Integrating ICT with other subjects

Item	Gender	No	S. A.	A	D	S. D.
Response						
ICT should be a stand-alone subject and not used in other classes.	Male	-	35	15	7	3
		-	(58.3%)	(25.0%)	(11.7%)	(5.0%)
I have the necessary skills to use the computer / ICT tools in teaching my subject.	Female	1	25	9	14	11
		(1.7%)	(41.7%)	(15.0%)	(23.3%)	(18.3%)
I have the necessary skills to use the computer / ICT tools in teaching my subject.	Male	-	14	27	17	2
		-	(23.3%)	(45.0%)	(28.3%)	(3.3%)
I have the necessary skills to use the computer / ICT tools in teaching my subject.	Female	2	9	36	10	3
		(3.3%)	(15.0%)	(60.0%)	(16.7%)	(5.0%)

Table 10 (Continued)

I Feel That I	Male	-	48	12	-	-
need more		-	(80.0%)	(20.0%)	-	-
training in	Female	1	42	17	-	-
computer		(0.8%)	(70.0%)	(28.3%)	-	-

Source: Field data, 2014

When teacher trainees were asked whether ICT should be a stand-alone subject, from Table 10, 35 (58.3%) of male trainees strongly agreed that ICT should be a stand-alone subject while 25 (41.7%) of their female counterparts strongly agreed. Also 15 (25.0%) of male trainees agreed that ICT should be stand-alone subject while 9 (15.0%) of their female counterparts agreed. On the other hand 14 (23.3%) of female trainees disagreed that ICT should be a stand-alone subject while 7 (11.7%) of their male counterparts also disagreed on the same issue. Also 11 (18.3%) of female trainees strongly disagreed that ICT should be a stand-alone subject while 3 (5.0%) of male trainees also strongly disagreed. It is, therefore, clear that when it comes to ICT integration into education, female teacher trainees have a positive attitude than their male counterparts.

The data in Table 10 also show that 36 (60.0%) of female trainees agreed that they had the necessary skill to use the computer and other ICT tools in teaching their subjects while 27 (45.0%) of their male counterparts also agreed. On the other hand 17 (28.3%) of male trainees disagreed that they had the necessary skill to use computer and ICT tools in their classes while 10 (16.7%) of the females also disagreed. From the information on Table 10, it is

clear that female trainees believe they are well equipped to use ICT tools in their classes than their male counterparts.

Again, from Table 10, 48 (80.0%) of the male trainees strongly agreed that they need more training in computer while 42 (70.0%) of the female respondents also strongly agreed to the statement. One can clearly see from the data in table 10 that none of the respondent disagreed when it comes to training in computers, this clearly shows that all trainees need computer training.

Research question 3

How has ICT been integrated into the training of mentee teacher trainees?

The third research question sought to identify how ICT is integrated into training of teacher trainees. Items 14 – 19 on the questionnaire sought to obtain data on extent at which ICT is integrated into training of teacher trainees. Table 11 shows responses to items 14, 17 and 18 on the questionnaire.

Table 11: Integration of ICT

Item	No	Yes	No	Total
	Response			(100%)
Do your ICT tutors give you online test or assignment?	1 (0.8%)	113 (94.2%)	6 (5.0%)	120

Table 11 (Continued)

Do other tutors apart from the ICT tutors give you online assignment?	-	83 (69.2%)	37 (30.8%)	120
Do you submit assignment through email?	-	116 (96.7%)	4 (3.3%)	120

Source: Field data, 2014

As can be seen from Table 11, 113 (94.2%) of teacher trainees indicated that their ICT tutors give them online test or assignment while 6 (5.0%) said they are not given online test or assignment. From the responses on Table 11, it can clearly be seen that mentee teacher trainees are given online test or assignment.

Information on Table 11 again show that 83 (69.2%) of teacher trainees indicated that other tutors apart from their ICT tutors give them online assignment while 37 (30.8%) indicated that other teachers apart from their ICT tutors do not give them online assignment. From the information on the table, although most teacher trainees assert to the fact that other tutors give them online assignment, quite a significant percentage answered negative to that assertion.

Information on Table 11 again indicates that 116 (96.7%) of respondents indicated that, they submit assignment through email. This clearly shows that most teacher trainees can use email services.

Table 12 provide responses to where teacher trainees access computers in the colleges.

Table 12: Where Teacher Trainees Have ICT lessons in College

Responses	Frequency	Percent
Classroom	1	0.8
Computer lab	106	88.3
In my dormitory	8	6.7
Internet cafe	2	1.7
No Response	3	2.5
Total	120	100.0

Source: Field data, 2014

From the information on Table 12, 106 (88.3%) indicated that teacher trainees had access to computers at the Colleges computer lab while 8 (6.7%) said they access computers in their dormitory. So it can be clearly concluded that most teacher trainees access and use computers in the Colleges' computer lab than on their own free will.

Table 13 provides responses on how many hours a week teacher trainees are permitted to use computers in their Colleges' lab.

Table 13: Hours per Week Permissible for the Computers Use

Responses	Frequency	Percent
No Response	2	1.7
Less than an hour	39	32.5
1 – 3 hours	67	55.8
4 – 6 hours	4	3.3

Table 13 (Continued)

7 – 9 hours	2	1.7
Above 10 hours	6	5.0
Total	120	100.0

Source: Field data, 2014

From Table 13, 67 (55.8%) of teacher trainees indicated that they are permitted to use the computers in the Colleges' between 1 – 3 hours a week while 39 (32.5%) indicated that they spent less than an hour a week in their computer labs. From the information on Table 13, it clearly shows that majority of teacher trainees are not permitted to spend enough hours at their computer labs on weekly basis. This from the researcher's checks is due to the time allotted to ICT as a subject on Colleges' time table.

Research Question 4

What is the Attitude of teacher trainees towards the use of ICT (computers) tools in teaching?

The fourth question sought to find out the attitude of teacher trainees towards the use of ICT tools in teaching. Items 17 – 23 on the questionnaire sought to obtain information on the fourth research question. Table 15 shows responses to items 17 – 23 on the questionnaire the question on whether ICT should be a stand-alone subject and not used in other classes.

Responses were indicated by ticking (√) either Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) for the items

Table 14: Teacher trainees and ICT

Item	No	S. A.	A	D	S. D.
Response					
ICT should be a stand-alone subject and not used in other classes	1 (0.8%)	60 (50.0%)	24 (20.0%)	21 (17.5%)	14 (11.7%)
I have the necessary skills to use the computer / ICT tools in teaching my subject.	2 (1.7%)	23 (19.2%)	63 (52.5%)	27 (22.5%)	5 (4.2%)
Teachers should avoid using computers / ICT tools in my classroom.	3 (2.5%)	3 (2.5%)	16 (13.3%)	38 (31.7%)	60 (50.0%)

Table 14 (Continued)

The use of the	3	5	5	26	81
internet in teaching	(2.5%)	(4.2%)	(4.2%)	(21.7%)	(67.5%)
is time wasting.					

Source: Field data, 2014

From the information on Table 15, 60 (50.0%) of teacher trainees strongly agreed that ICT should be a stand-alone subject and not to be used in other classes while 24 (20.0%) of trainees disagree on that note. Looking at the table carefully, it is clearly indicated that a sizeable number (i.e. 70.0%) of teacher trainees do not understand the concept of ICT integration in Education, because they prefer it being a stand-alone subject. On the other hand 35 (29%) of respondent disagree that ICT should be a stand-alone subject.

Also from Table 15, 63 (52.5%) of the mentee teacher trainees indicated that they had the necessary skill in using computers and ICT tools to teaching whereas 27 (22.5%) percent of their colleagues disagree on the same question. Information provided on Table 15, indicated that although majority of teacher trainees agree to have the necessary skill in computers and ICT tools, other significant percentage assert otherwise.

Information on Table 15 again indicates that 60 (50.0%) of the mentee teacher trainees ‘Strongly Disagree’ that they will avoid the usage of Computers in their teaching practices, whereas 16 (13.3%) agree that they will not avoid the use of computers.

As can be seen from Table 15, 81 (67.5%) of teacher trainees ‘Strongly Disagree’ that the use of internet in teaching is time wasting whereas 5 (4.2%)

‘Strongly Agree’ that it is time wasting. The information on Table 15 clearly shows that most teacher trainees assert to the fact the use of internet in teaching is of immense benefit.

According to Bingimlas (2009), teacher competence refers primarily to the ability to integrate ICT into pedagogical practice. Lack of knowledge or competence is regarded as a significant teacher related barrier to ICT integration. Pelgrum (2001), also found that lack of knowledge or competence in technology, among teachers in developing nations, is the primary obstacle to the uptake of ICT in education

Table 16 sought to find responses to items 21 – 23 on the questionnaire.

Table 15: Teacher Trainees Attitude towards ICT

Item	No	S. A.	A	D	S. D.
	Response				
Text books are better than information on the internet.	2 (1.7%)	6 (5.0%)	2 (1.7%)	27 (22.5%)	83 (69.2%)
Introducing students to the internet will not let them learn but play games.	2 (1.7%)	4 (3.3%)	14 (11.7%)	49 (40.8%)	51 (42.5%)

Table 15 (Continued)

I Feel that I need	1	90	29	-----	-----
more training in	(0.8%)	(75.0%)	(24.2%)		
computer.					

Source: Field data, 2014

The information on Table 16 indicates that 83 (69.2%) ‘Strongly Disagree’ that text books are better than the information on the internet, whereas 6 (5.0%) ‘Strongly Agree’ that there are better things in the Text Books than what can be found on the internet. This clearly shows that majority of teacher trainees are of the view that information in the text books are not better than that on the internet.

Again, Table 16, shows that 51 (42.5%) of teacher trainees ‘Strongly Disagree’ that introducing students to the Internet will not let them learn but play games while 4 (3.3%) ‘Strongly Agree’ that the Internet will make students play games than learn. From the information on the Table 16, one can clearly say that majority of teacher trainees are of the assertion that introduction of Internet to students will promote learning.

Also Table 16, indicates that 90 (75.0%) of teacher trainees ‘Strongly Agree’ that they need more training in Computers. To support the assertion for the need of more training in Computers 29 (24.2%) of Teacher Trainees also indicated they ‘Agree’ on the need for more training in Computers. The information on Table 16 clearly shows all respondent were in favour for more Computer training. It can be seen that most trainees lack training in computers therefore do not have much skills to operate the computer

Gressard and Loyd (1985) asserted that teacher's attitude towards ICT is one of the key factors which determined successful integration, while Jegede, Dibu-Ojerinde and Llori (2008), recognized the teacher as a key instigator in fostering ICT integration in education.

Responses from the Interview Schedule

A structured form of interview was used to solicit information from the three ICT tutors about the challenges that characterised the use of Computers or ICT tools for teaching various subjects in the Colleges of Education. The respondents were made to answer questions based on the third research question which was design to find out how ICT is integrated into the training of teacher trainees. The interview covered very important areas as shown below.

Training Opportunities for Tutors

In response to training opportunities for other teachers in the use of ICT tools in teaching their subjects, tutors confirmed that other subject tutors were not taken through any practical training in the use of ICT tools to enable them use computers effectively in the classrooms. In answer to a question as to how soon training opportunities would be provided to other tutors in the Colleges of Education, the Tutors indicated that, the Principals had told them that opportunities would soon be opened to tutors to upgrade themselves to appreciable levels to enable them use computers effectively either by organising frequent capacity building workshops with practical training for them or giving sponsorship to upgrade their computer knowledge at the Universities.

This supports Pelgrum (2001), that there were not enough training

opportunities for teachers in the use of ICT in the classroom. Also Newhouse (2002), posited that some training is still needed for teachers to develop appropriate skills, knowledge and attitudes, regarding the effective use of computers to support learning by their students

Motivating Tutors to use Computers in Teaching

All tutors said that, no motivations were given to tutors as far as the use of computers in colleges of education is concerned. Also assessment officers who process and store data on students' performance and achievement and still teach their normal classes were not given any allowances for doing that difficult and sensitive job.

Technical Support for Tutors

On provision of technical support, the tutors responded that there were no technical specialists in the college to provide technical support on full-time basis. They added that if any technical problem arises from the computer lab, tutors have to wait for hours, days or weeks to get them resolved.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents a summary of findings and conclusions drawn from the study. It proposes recommendations for action and areas for further study to improve upon the ICT Usage in Colleges of Education in the Ashanti Region of Ghana.

Summary

The purpose of the study was to assess the use of information and communication technology tools among mentee teacher trainees in Colleges of Education in the Ashanti Region of Ghana.

A total sample of 123 respondents took part in the study. This comprised 120 mentee teacher trainee and three ICT tutors. These samples were picked from three Colleges of Education, comprising of 60 female and 60 male for the mentee teacher trainees and three ICT tutor, all being males. Purposive sampling was used to select the Colleges of Education and Tutors while simple random sampling technique was used to select Mentee Teacher Trainees from St. Louis and Mampong Technical. The Stratified sampling was used for the mentee teacher trainees from Wesley College. The instrument used for the study was a questionnaire for mentee teacher trainees and

interview schedule for tutors. Data was analysed using SPSS software to draw out frequencies and percentages.

Major findings of the study

The main findings of the study were:

- 1.** Majority of mentee teacher trainees had computer training before enrolling into the colleges of education, and can use the computer to process documents. Also it was revealed that the majority, 85% of mentee teacher trainees surf the net to do their work and spends 1 – 5 hours on the internet a week, which is lower than the average internet user who spends 13 hours a week on the internet.
- 2.** On the subject of the level of awareness among male and female mentee teacher trainees. It was found that generally, majority of teacher trainees have had computer training before enrolling as trainee teachers. It also was seen that more male mentees had computer training before enrolling into the colleges and had good computer experience. Majority of male mentee teacher trainees strongly agreed that ICT should be a stand-alone subject and that they need more training in the use of computers. Also, female mentee teacher trainees said they have the necessary skills to use the computer or ICT tools in teaching.
- 3.** Most trainees indicated that both ICT and other subject tutors give them online assignment and also submit assignment online in their various colleges. Also mentee teacher trainees said they spent 1 – 3 hours a week, when it comes to computer usage. This shows that ICT is used by teachers teaching subjects other than ICT in the colleges.

4. Although most mentee teacher trainees said ICT should be stand-alone subject and should not be used in other classes, majority of them claim to have the necessary skill in using ICT tools in teaching their subjects. Also mentee teacher trainees strongly disagreed that teacher should avoid the use of ICT tools in teaching and also indicated that they need more training in the use of computers or ICT tools.

5. From the interview conducted on the college's ICT tutors, it was clearly evident that there has not been any training opportunity to help train tutors in the use of ICT tools in teaching and that, they are not motivated to use computer or ICT tools in teaching. Also ICT tutors said there are no immediate technical supports for tutors when their computers breakdown.

Conclusion

The following conclusions were drawn based on the findings of the study.

Firstly with respect to the level of mentee teacher trainees' computer and internet skills, it was found that most mentee teacher trainees had computer training prior to enrolling into the colleges and can use the computer to type letters or document. Also most teacher trainees surf the internet to do their work but the hours they spend per week is less than that of the average internet user. Also male mentees were more aware when it comes to the use of ICT tools. They also do not have a better understanding of ICT integration into education, since they prefer it to be stand-alone subject.

With regards to how ICT has been integrated into the training of mentee teacher trainees, most mentees indicated that both ICT and non ICT tutors give them online assignment and also submit assignment online. It was

revealed that mentee teacher trainees spend less hours on the internet than the average internet user.

Finally, on the attitude of mentee teacher trainees towards the use of ICT tools in teaching, it was found that most trainees have the necessary skill to use ICT tools to teach their subjects and that, they will not avoid the use of computers or ICT tools in the classroom. Also, most trainees believe that, text books are better than information on the internet.

Recommendations

1. Teacher training and professional development oriented policies should support ICT-related teaching models that would encourage both students and tutors to play an active role in teaching learning activities. It is also recommended that all the teachers in the colleges of education should be given refresher courses in ICT use, at least once a year. This will boost teachers' confidence in the use of ICT facilities in their teaching so they can help their students to develop ICT skills.
2. In the light of the above findings, it is recommended that the Colleges should set up online or wireless internet services on their campuses so that students can easily access internet. Also tutors should be given serious in-service training on the acquisition of the knowledge in computer skills.

Suggestions for Further Studies

It is suggested that more research can be conducted to investigate into the assessment of Information and Communication usage by teacher trainers since this work could not cover that.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

QUESTIONNAIRE FOR TEACHER TRAINEES

Thank you for accepting to complete this questionnaire. The purpose of this questionnaire is to solicit information on “An Assessment of Information and Communication Technology Usage in Selected Colleges of Education in the Ashanti Region”.

I would therefore be happy if you could provide frank answers to the questionnaire items. Please read each question carefully and answer according to your true opinion. The information provided will be treated confidentially.

Please tick (√) or circle where appropriate or write the appropriate response concerning each statement below.

DEMOGRAPHIC DATA

Please (Tick all that apply)

1. **Gender:** Male Female

2. **Name of school**

St. Louis College of Education

Wesley College of Education

Mampong Technical College of Education

TEACHER TRAINEE ICT (COMPUTER & INTERNET) SKILL

3. Did you have any computer training before enrolling into the College of Education?

Yes No

4. Have you used the computer to type a letter or document?

Yes No

5. Do you surf the internet to do your work?

Yes No

6. How would you rate your experience with computers?

a) Quite Good Good Very Good

7. How many years have you been using computers?

Less than a year 1 – 3 years 4 – 6 years
7 – 9 years above 10 years

8. Where do you use or have access to the computers in your school?

Tick all that apply

Computer lab Internet Café In my dormitory
Classroom Other (please specify)

9. Do you have access to an internet connection?

Yes No

10. How often do you use the internet?

Very Often Often Not Often

11. How many hours a week do you usually spent on the internet?

- | | | | |
|-----------------------|--------------------------|----------------------|--------------------------|
| 5 or few hours a week | <input type="checkbox"/> | 6 – 10 hours a week | <input type="checkbox"/> |
| 11 – 15 hours a week | <input type="checkbox"/> | 16 – 20 hours a week | <input type="checkbox"/> |
| 21 – 25 hours a week | <input type="checkbox"/> | 26 – 30 hours a week | <input type="checkbox"/> |

LEVEL OF ICT INTEGRATION

12. Do your ICT tutors give you online test or assignment?

- Yes No

13. Do other tutors apart from the ICT tutors give you online assignment?

- Yes No

14. Do you submit assignment through email?

- Yes No

15. Where do you have your ICT lessons?

- | | | | |
|-------------------------------|--------------------------|-----------------|--------------------------|
| Computer lab | <input type="checkbox"/> | Classroom | <input type="checkbox"/> |
| Internet Café | <input type="checkbox"/> | In my dormitory | <input type="checkbox"/> |
| Others (please specify) | | | |

16. How many hours per week is it permissible for you to get the chance to use the computers in the school?

- | | | | | | |
|-------------------|--------------------------|----------------|--------------------------|-------------|--------------------------|
| Less than an hour | <input type="checkbox"/> | 1 – 3 hours | <input type="checkbox"/> | 4 – 6 hours | <input type="checkbox"/> |
| 7 – 9 hours | <input type="checkbox"/> | above 10 hours | <input type="checkbox"/> | | |

**ATTITUDES OF TEACHER TRAINEES TOWARD THE USE OF
COMPUTERS / ICT IN TEACHING**

Please indicate by ticking (√) either **Strongly Agree (SA)**, **Agree (A)**, **Disagree (D)**, **Strongly Disagree (SD)** for the following statements

		SA	A	D	SD
17.	ICT should be a standalone subject and not used in other classes.				
18.	I have the necessary skills to use the computer / ICT tools in teaching my subject.				
19.	Teachers should avoid using computers / ICT tools in my classroom.				
20.	The use of the internet in teaching is time wasting.				
21.	Text books are better than information on the internet.				
22.	Introducing students to the internet will not let them learn but play games.				
23.	I feel that I need more training in computers.				

APPENDIX B

INTERVIEW GUIDE FOR TUTORS

Please answer each question according to your true opinion. The information provided will be confidential and your anonymity is highly assured.

1. Are there training opportunities for tutors to acquire new ICT (computer) knowledge or skills for teaching their subjects?
2. Is there any motivation or incentives for tutors to use Computers in teaching?
3. Do tutors have any technical support in the event that they encounter problems when using ICT tools?