UNIVERSITY OF CAPE COAST

THE PLACE OF INFORMATION TECHNOLOGY IN ART EDUCATION AND CREATIVITY IN THE SHS IN THE TAMALE METROPOLITAN AREA

BY

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Dissertation submitted to the Centre for Continuing Education of the Faculty of Education, University of Cape Coast, in partial fulfilment of the requirements for award of Master of Education Degree in Information Technology

JANUARY 2014

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result 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: ……

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Supervisors' Declaration

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

Supervisor's Signature: …… Date: …….....

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ABSTRACT

This study examined the place of Information and Communication Technology (ICT) in education, factors that militate against its integration into the teaching of Visual Art in Senior High School in the Tamale Metropolitan area. The descriptive survey design was employed where questionnaire was used to collect data. The sample size was 166 comprising 157 students and 9 teachers. All the 157 students were sampled from Tamale, Kalpohin and Vitting Senior High Schools. The data were analysed using the Package for Social Sciences (SPSS) Software to translate the data into percentages and frequencies for interpretation and findings.

The study revealed that most schools were not connected to internet. Majority of teachers did not use computers in their teaching. Teachers did not get the needed support from their schools in the use of computers. Majority of teachers had no training in computer. Students were aware of the potential of ICT in improving their learning but spent little time on the few computers available in their schools.

Based on the findings from the study, it is recommended that refresher courses are organised for art teachers so as to be able to handle current emerging challenges in the industry. Art Teachers should regularly develop oriented policies that would support ICT-related teaching models to encourage students and teachers. It also recommended that "The Impact of ICT on The Performance of Visual Art Students in Internal and External examinations" and "The Place of ICT in The Current Visual Art Curriculum for JHS in Ghana" require further research.

ACKNOWLEDGEMENTS

The success of every human endeavour requires encouragement, guidance and co-operation from people of all walks of life. The successful completion of this research was not only the effort of the researcher but also the contributions of interested and sympathetic friends.

I wish to gratefully acknowledge the assistance I received from my dad, Mr. Dominic Asabia. My special heartfelt thanks go to my supervisor, Prof. Jonathan A. Fletcher who despite his heavy and numerous assignments read through the script and offered fruitful suggestions, guidelines and constructive criticisms. I am also grateful to my mum, Juliet Atinga for her encouragement and support. Finally, I am grateful to Dr. Baba Jatong, a lecturer at University of Education, Winneba for accepting to do proof reading of this document.

DEDICATION

To my parents Dominic Asabia, Juliet Ainga and my friend Rena Akokre.

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CHAPTER ONE

INTRODUCTION

Background to the Study

The benefits of information technology (IT) extend far beyond productivity as it is usually understood and measured. Not only can the application of IT provide better ratios of value created to effort expended in established processes for producing goods and delivering services, but it can also reframe and redirect the expenditure of human effort to generate unanticipated payoffs of exceptionally high value. Information technology can support inventive and creative practices in the arts, design, science, engineering, education, and business and can also enable entirely new types of creative production, (National Research Council, 2003). The scope of IT in creative practice has recently entered a common language that includes Computer Graphics, Computer-Aided Design, Computer Music, Computer Games, Digital Photography, Digital Video, Digital Media, Hypermedia, Virtual Environment, Interactive Design and Electronic Publishing, to name just a few. The new technology has already provided us with a greatly enhanced ability to conduct research and to study artworks, access the World Wide Web to library catalogues around the world, to databases filled with data, to huge image resources, to information of all kinds on many thousands of Web sites. Web searches for materials for this paper brought forth piles of information from many sources. The benefits of such practices have economic, social, political, and cultural components. IT enabled creativity practice has the

potential to extend benefits broadly, not only to economic and cultural elite, but also to the disadvantaged, in both developed and developing countries. The extension of IT to support communication has opened many new windows of opportunity for many.

Indeed, the integration of information and communication technology (ICT) has become a high priority in Ghana as well as in other parts of the world (UNESCO, 2002; Jamieson-Proctor, Burnett, Finger & Watson, 2006). The government of Ghana has placed a strong emphasis on the role of ICT in contributing to the country's economy. The country's medium-term development plan captured in the Ghana poverty reduction strategy paper (GPRS 1 & 11) and the education strategic plan 2003-2015 both suggest the use of ICT as a means of reaching out to the poor in Ghana. In 2004 parliament passed into law Ghana's ICT for accelerated development (ICT 4AD) policy, which is currently at various stages of implementation. This policy represents the vision of Ghana in the information age especially in the area of education (The Republic of Ghana, 2003).

In recent years, the study of art and culture had slowly gained importance with many countries in the world actively seeking to integrate art into the everyday life of their people. It is an interesting coincidence that many governments have begun to promote art and culture extensively now that it has been associated with the new economy, which leverages on the knowledge, creativity and cultural capital of its citizens (Cheng, 2008). Currently, creativity has become part of everyday discourse gaining much attention from scholars and

governments, while organizations like UNESCO are promoting the more integrated role of art and creativity within the primary and secondary school education system in face of the challenges that will confront today's children in an uncertain world (UNESCO, 2008).

Society now demands new visual literacies for its citizens to function effectively in social and employment contexts. Furthermore, the very nature and interest of students themselves contribute to the changing face of Visual Art Education (Maddison & Phelps, 2008). The tools and techniques available for visual arts expression have expanded tremendously with the advent of new hardware and software, and ICT provides unique opportunities to extend visual arts teaching and learning. The little that has been written of Ghanaian Visual Art teachers' use of technology consistently indicates that, while some teachers have embraced new technologies, many continue to use ICT in a limited manner (Maddison & Phelps, 2008).

Indeed the use of ICT in the teaching and learning of Visual Art in Ghana is a new area of experience for both students and teachers. Even with the coming into force of the 2007 teaching syllabuses which lay some emphasis on ICT integration in schools, instructional procedures and ICT goals for teaching and learning remain disparate. This leads to genuine concerns for enthusiastic followers of the ICT integration process to ask whether school ICT programmes are indeed serving their intended purpose of exposing students to the technological tools that would enhance skill acquisition and promote mastery over subject matter.

Considering the changing trends in artistic expressions and the application of skills in modern society whereby digital media are merging with traditional media, the current status of ICT integration is a disservice to the study of Visual Art in schools. Already, the job market has started demanding skilled artists with ICT competencies to take care of the emerging technology-based art and design related industries springing up in the country. It is therefore not out of place to conclude that, without the appropriate skills in ICT, creative ideas alone will be of little value. This indeed intensifies the challenges faced by art educators in the performance of their duties in the present era. It has become the responsibility of the art educator to ensure that technologies in schools enhance Visual Art Education Programmes or perhaps redefine art education programmes so that students can become abreast of time in Visual Art and the technologies needed to be more creative.

Teachers are charged with the responsibility of not only becoming mindful of, but also being capable of skilfully managing at the classroom level the impacts that result from social, cultural, political, and economic trends and educational policies and programmes (Way & Webb, 2007). As indicated by ACOT (2008), educating young people to be successful in this changing world is no small task, but the consequences of failing to do so are enormous.

In the face of globalization, the information revolution, and increasing calls for a highly skilled work force, the need for a developing country like Ghana to resort to capacity building measures that would effectively utilize technology in Art Education is almost a compulsion. This effort would also complement the

general rationale for integrating ICT in education. It will make sense of the growing importance of ICT based resources and services in society as a whole, the complexity of the tools available, and the pressure to make education more cost effective and employment compliant (European Commission, 2010).

Current trends in ICT integration in Ghanaian Senior High Schools suggest so much focus on the physical machine when it comes to what is called ICT classes. In fact, ICT lessons have mainly involved the teaching of computers. This raises the question as to whether ICT integration means getting students to be learning about computers or getting students to be learning content related to curriculum objectives through computers. Among the Visual Art teachers and students in Ghanaian Senior High Schools, for example, there is certainly a very high interest and will to participate in computer related Visual Art activities. Yet, little is seen on how Visual Art is being considered in line with technology (deGraft-Yankson & Avoke, 2007) and still not enough is known about the impact of ICT on education especially when Visual Art is taken into account. Besides, there is little hard evidence or agreement on the effective utilization of ICT in the study of Visual Art at the Senior High School level.

A study by Renata and Carrie (2008) revealed broad diversity in individual teacher's social, artistic and educational values, attitudes and beliefs about ICT, leading to widely diverse approaches to their personal and professional use of technology. Renata and Carrie's study explored a number of issues, such as whether teachers believe it is important to integrate ICT in their teaching, the role ICT is playing in classroom, the issues teachers are experiencing and how they

approach their own ICT learning. Answers to these questions indicate that effective ICT professional development for teachers must take account of teachers' values, attitudes, beliefs and perceptions on ICT, and their personal and professional learning.

Statement of the Problem

In spite of the importance of ICT to the new economy, it appears the future of ICT at the Senior High School level of education in Ghana especially in art education and creativity cannot be guaranteed. It is a fact that most Senior High School graduates who study the Visual Art Programme lack the basic skills in the use of computer in their field of work. It is also evident that these graduates when they enter into tertiary institutions would lack the know-how in the use of the various software application programmes in their work. The effect of this is the inability of such students or artists to compete in the new and fast growing technologies that could add exceptionally high value to their works and services. These challenges coupled with the lack of documentation of ICT in the Visual Art and the attitudes, values and beliefs of Visual Art Teachers in the use of ICT in the SHS in the Tamale Metropolitan Area form the basis for the study.

Purpose of the Study

The purpose of the study was to investigate the place of ICT, factors that militate against its use and attitudes, values and beliefs of Visual Art Teachers on the integration of ICT in Visual Art Education in SHS in the Tamale Metropolitan area, and suggest solutions to the challenges facing the programme.

Objectives

The researcher was guided by the following specific objectives:

I. To examine the contribution and importance of information technology in the Visual Art Programme.

II. To examine the factors that militates against the use of information technology in the Visual Art Programme in the Tamale Metropolitan area.

III. To examine the impact of attitudes, values and beliefs of Visual Art Teachers in SHS in the Tamale Metropolitan Area on the integration of ICT into the Visual Art Programme.

Research Questions

1. What is the significance of IT in the Visual Art Programme?
2. What are the challenges associated with the use of ICT in visual art in SHS in the Tamale Metropolis?
3. What factors impede the integration of ICT into Visual Art Programme?
4. How do the attitudes, values and beliefs of Visual Art Teachers' impact on the integration of ICT into the Visual Art Programme?

Significance of the Study

The study would serve as a document for curriculum developers, policy makers and government on the need to integrate ICT in the Visual Art in Ghanaian Senior High Schools. It can help to develop and promote the use of ICT in the Visual Art. It will serve both as a working document for art teachers, students and others in their day-to-day work in art, and as a reference material for future studies in the field of ICT. Furthermore it will throw more light on the

impact of attitudes, values and beliefs of art teachers on the integration of ICT in Visual Art.

Delimitation of the Study

The scope of this research is delimited to the Tamale Metropolitan area, impact of Visual Art teachers' attitudes, values, and beliefs on the integration of ICT in the Visual Art. Due to lack of resources, such as time and logistics the study was restricted to schools offering the Visual Art programme in the Tamale Metropolis.

Limitation of the Study

The study was done in Tamale, Kalpohin and Vitting Senior High Schools which are Tamale Metropolitan Assembly instead of all the secondary schools in the Metropolis. The three selected schools for the study are far apart; hence, the time that was used in collecting the data from the respondents in each school was not the same. Also, getting literature for the study was a bit difficult since similar study was not popular in Ghana. These situations might have marginal effect on the result of the study but not to the extent that the entire finding(s) cannot be relied on.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The potential of integrating ICT in arts education in the Ghanaian context is noted to be in its early stages of development and only partially realised. There is, therefore, little research published about the integration and use of ICT specifically in Visual Arts Education in Ghanaian settings. One major intent of this study is to contribute to the volume of knowledge currently available in this area of ICT integration in Visual Art Education.

This chapter is a review of current literature on the subject - ICT Integration in Visual Art Curriculum. The main focus of the literature is an examination of the usefulness of ICT in education generally in some countries that have adopted and consequently integrated ICT in Visual Art Education. The reviewed literature looked at the definition of information and communication technology, information and communication technology in education, advantages of ICT in education, ICT and visual art education, potential of ICT in secondary visual arts classrooms and visual arts teachers' use of ICT.

Defining Information and Communication Technology

From their perspective of ICT, Dunmill and Aslangic (2006) define the concept as a term that encompasses a range of human-devised hardware, software and telecommunications technologies that facilitate communication and sharing of information across boundaries. The term, according to them, is used to describe a range of equipment (hardware: personal computers, scanners and digital cameras)

and computer programmes (software: database programmes and multimedia programmes), and the telecommunications infrastructures (phones, faxes, modems, video conferencing equipment and web cameras) that allow us to access, retrieve, store, organise, manipulate, present, send material and communicate locally, nationally and globally through digital media (Dunmill & Arslanagic, 2006). Obviously inclusion of any of the above array of infrastructure would depend on the discipline in which one finds himself/herself.

Galloway's (2007) examination of the term ICT distinguishes between IT and ICT, the former-being the tools and skills for the job, the latter being what you do with them. This implies that computers, cables, the internet, wireless connections, handheld devices, digital cameras and mobile phones can be considered separately, while word-processing, emailing, videoconferencing and searching on the internet will be the other (Galloway, 2007).

Galloway's (2007) observation is further supported by Pelgrum and Law (2003) who trace down the rapid and systematic development of ICT from Ed Roberts' first Personal Computer known as Altair 8800 in April of 1974. In their view, ICT actually emerged with the popularity of the computer. Towards the end of the 1980s, the focus of computing shifted from computing technology to the capacity to store, and retrieve information. This led to the use of the term 'computer" which became synonymous with the term information technology (IT).

The use of the term IT was then followed by the introduction of the term ICT (information and communication technology) around 1992, when the ability

of the computer to share and disseminate information became widespread and e-mail started to become available to the general public (Pelgrum & Law, 2003). Elston (2007) disassociates himself from the ICT and IT dichotomy by Pelgrum and Law, arguing that ICT is not dissimilar to IT but a recent adoption by educational establishments.

Information and communication technology (ICT) is a term used to describe a range of equipment (hardware: personal computers, scanners and digital cameras) and computer programs (software: database programs and multimedia programs), and the telecommunications infrastructures (phones, faxes, modems, video conferencing equipment and web cameras) that allow us to access, retrieve, store, organise, manipulate, present, send material and communicate locally, nationally and globally through digital media. In short, ICT refers to technology which facilitates communication and sharing of information.

It is assumed from the researcher's perspective that as computers have become more and more common place, there is a new form of literacy which is required of people to be ICT literate:

a) ICT literacy can be described as *the set of skills and knowledge required by individuals to enable meaningful use of ICT appropriate to their needs*.

b) In the context of teaching and learning, ICT literacy can be described as *the ICT conceptual and functional skills to support learners and teachers to further participate in work and society in the future* (UNESCO, 2006).

The New Zealand government's digital strategy for schools (published in 2003) identifies that the challenge for the future is to create a learning culture that

keeps pace with the changes and equips people with the relevant knowledge, skills, ideas and values they need to become lifelong learners. The document points out that to meet this challenge, the New Zealand education systems must recognise the enhanced breath, richness and authenticity of learning that can be achieved through ICT; the need for people to use ICT and information to fully participate in society and the workplace; and the importance of specialist ICT skills to economic development.

The following definitions are listed in the document:

a) Digital literacy is the ability to appreciate the potential of ICT to support innovation in industrial, business and creative process. Learners need to gain the confidence, skills, and discrimination to adopt ICT in appropriate ways. Digital literacy is seen as a 'life skill' in the same way as literacy and numeracy.

b) Information literacy is the ability to locate, evaluate, manipulate, manage, and communicate information from different sources. As learners become increasingly information-literate, they develop skills in discrimination, interpretation, and critical analysis. ICT offers opportunities for higher-order thinking and creativity in processing, constructing, and conveying knowledge.

c) E-learning is flexible learning using ICT resources, tools, and applications, and focusing on interactions among teachers, learners, and the online environment. E-learning usually refers to structured and managed learning

experiences, and may involve the use of the internet, CD-ROMs, software, other media, and telecommunications.

d) Online learning is more specific to the context of using the internet and associated web-based applications as the delivery medium for the learning experience (p.23).

Another definition inherent in ICT is cited by the National Academy of Engineering, USA: 'Technological literacy, a broad understanding of the human-designed world and our place in it, is an essential quality for all people who live in the increasingly technology-driven 21st century' (Dunmill & Arslanagic, 2006). This definition provides the human dimension necessary to the understanding of ICT. According to Dunmill and Arslanagic (2006), ICT as a term encompasses a range of human-devised hardware, software and telecommunications technologies that facilitate communication and sharing of information across boundaries and which may be used to generate arts experiences and objects.

Information and Communication Technology in Education

In every aspect of history, there must be certain innovation of events or policy at one time or the other that advances the growth of society, especially the development and advancement of human capacity. This capacity can be brought about by education, which indisputably is the soul of any society, as it passes from one generation to another with modifications or innovations.

Adding impetus to these facts, Dafinone (2008) agreed that the twin phenomena of globalization and information and communication technology have brought tremendous challenges and opportunities to bear on government agencies,

corporate bodies and individuals with the result that no section of the society is immune to this development advancement. He concluded that the old way of doing things is fast giving way to the new with agencies and institutions adopting new approaches.

Dunmill and Arslanagic (2006) observed that, in order to best utilise ICT, digital and information literacies are required to access and utilise e-learning and online materials, and to appropriately select and operate digital materials and technologies. To this end, governments around the world are developing digital strategies to support education in the 21st century. The focus of these strategies is to enable countries to realise their economic, social and cultural capital; to keep pace with rising expectations and technological advancements; to develop creative thinking people who can solve problems in new ways and within multi-dimensional learning environments.

Literature from Australia (Newhouse, 2002) and the United Kingdom (Loveless, 2002) provides evidence that ICT positively impacts on student achievement in core subjects, including evidence that specifically relates to the use of music and visual arts to enhance learning processes and outcomes. Findings assert that both the learning environment and curriculum pedagogy and content are central to the effective use of ICT. However, teachers need to be confident in their subject knowledge as well as in basic ICT literacies so that they can effectively integrate ICT into teaching programmes. A large number of studies have found that students are often more engaged and motivated to learn when using relevant ICT to support specific intentional learning. Unintentional

learning can be identified and is often beneficial to wider learning but research has not yet investigated this in any depth (and not in any arts education contexts).

As identified by Ghana's ICT policy document (The Republic of Ghana, 2003), the challenge for the future is to create a learning culture that keeps pace with the changes and equips people with the relevant knowledge, skills, ideas and values they need to become lifelong learners. The document observes that to meet this challenge the Ghana education systems must recognise the enhanced breadth, richness and authenticity of learning that can be achieved through ICT. The need for people to use ICT and information to fully participate in society and the workplace; and the importance of specialist ICT skills to economic development must also be exposed (The Republic of Ghana, 2003).

Accordingly, educational systems all over the world are under increasing pressure to incorporate ICT in preparing their students for the 21st Century. In the 1998 UNESCO World Education Report, *Teachers and Teaching in a Changing World*, emphasis is laid on the radical implications ICT has for conventional teaching and learning (UNESCO, 1998). The most frequently cited grounds for using ICT in the classroom, according to Tinio (2003), has been to better prepare the current generation of students for a workplace where ICT, particularly computers, the Internet and related technologies, are becoming more and more ubiquitous. Technological literacy, or the ability to use computers effectively and efficiently, is therefore considered as representing a competitive edge in an ever increasing globalizing job market (Tinio, 2003).

On the other hand technological literacy is not the only skill that well-paying jobs in the new global economy will require. EnGauge of the North Central Regional Educational Laboratory (U.S.) has identified what it calls 21st Century Skills, which includes digital age literacy (consisting of functional literacy, visual literacy, scientific literacy, technological literacy, information literacy, cultural literacy, and global awareness), inventive thinking, higher-order thinking and sound reasoning, effective communication, and high productivity (Wikibooks, 2002 & Tinio, 2003).

In the view of Hobart (1997), however, the introduction of ICT in the educational system has not been driven solely by the need to prepare children for a role in an information economy but also to enhance learning outcomes. It is believed that ICT has the potential to pay its way in improving educational delivery, transforming the nature of education – where and how learning takes place as well as the roles of students and teachers in the learning process (UNESCO, 2002). As a transformational tool, ICT when used appropriately can promote the shift to a learner centred environment (Tinio, 2003).

The Vice Rector of Pentecost University College, Prof. Kwame Boasiako Omane-Antwi, recently called on African Leaders and entrepreneurs to invest more resources into education, with special focus on Information Communication Technology (ICT), to help bridge the digital divide between the African continent and the developed world.“If there is one single issue worth your focused attention, it is the continuous fight to reduce illiteracy and school drop-out rates in Africa today. ICT, seemingly, holds the key to improved access to education in

Africa," he noted. He was however, happy about ICT infrastructural development in Ghana, which is progressing at a rate of 2.9%, compared to other low-income countries globally, and above the 1.1% for sub-Sahara Africa.

Education in ICT will offer people the needed skills to contribute to their respective national economies. It is in the light of this that the Education Reforms 2007 of Ghana has stressed on the need for greater emphasis to be put on ICT and Science and Technology. This has led to the inclusion of ICT in the basic school curricula where the subject is now an examinable one (Ghanaian-Chronicle, 2012).

Speaking on improving access to ICT in schools in Ghana, in the (Daily Graphic Aug., 2011) the deputy education Minister, Mahama Ayariga has asked corporate institutions to support the government's initiative to improve access to Information and Communication Technology (ICT) infrastructure in the country's educational institutions. He said the country currently had 13,000 basic schools, 7,500 junior high schools in addition to numerous public and private universities and polytechnics. Mr Ayariga further revealed that the education ministry was now redesigning the educational curriculum to incorporate ICT, since the technological revolution of the time required such a policy (Daily Graphic Aug., 2011).

In line with the minister's thinking, Friends of African Farmers and Fishermen (FAFF), a non-governmental organisation (NGO), in partnership with the Ghanaian Trust Aid, an NGO, will soon commence work on a GH¢ 44,000 Information and Communication Technology facility for a cluster of schools in

the Volta Region (Daily Graphic Aug., 2011). The facility, when completed, would be used to facilitate the learning and training of the youth in ICT development in the District. The Executive Director of the FAFF, Mr. Ricky Livingstone Gamey, announced this when he presented a number of laptops and desktops computers and some printers to some junior high schools (JHS) in the District. According to him, the gesture was in response to the call by government and the people of South Tongu to individuals and NGOs to support the development of the educational sector through the provision of information technology facilities in the area. Mr Gamey stressed the importance of ICT as the most viable vehicle for accelerated growth and development in this age and time, and that every effort must be employed to impart the knowledge in the pupils at a tender age. "Once the ICT knowledge is acquired at the basic level, they will grow to appreciate the importance of ICT and use it in their future endeavours," he stressed (Daily Graphic Aug., 2011).

Advantages of ICT in Education

From the early 1990s, education stakeholders in Ghana have been concerned about how teachers and students use computers in schools and how their use supports learning. Teachers use computers to write lesson plans, prepare materials for teaching, record and calculate student grades, and communicate with other teachers. Becker, Ravitz and Wong (1999) also found out that "computers have become a routine tool for helping teachers accomplish their professional work". However, many teachers do not facilitate substantial student use of computers for learning activities (Karsenti & Tchaméni-Ngamo, 2007).

Information and communication technologies (ICT) do not "automatically add quality to teaching and learning. It is possible to use [them] for trivial purposes, to waste students' time … or even worse, [use them] for destructive or immoral purposes" (Dellit, 2002, p. 56) or to entrench differences. A case in point for Dellit (2002) was the fact that African American students in the USA are "less likely to be exposed to higher order uses of computers and more likely to be exposed to lower order uses than white students. Similarly, poor urban and rural students are less likely to be exposed to higher-order uses than non-poor and suburban students (Wenglinsky, 1998, p. 3 & Kreuger, 2000).

Education in Ghana has a responsibility to ensure that ICT usage, especially among the youth is directed towards more dignified and rewarding embarks. It is based on this notion that Prof. D. D. Kuupole of the University of Cape Coast advised graduates of National Institute for Information Technology (NIIT) and all students offering Information (ICT) programs in the country not to use the skills acquired for nefarious activities such as "sakawa," cyber fraud and other ICT related vices (Danquah, 2012). ICT applications in Visual Art practices hold answers to a lot of uncertainties about the positive sides of technology that have been gloomed by Internet fraud, "*sakawa"* and other associated vices.

However, literature attests to the power ICT can have in teaching and learning processes (Fonkoua, 2006 & Newhouse, 2002). It has been suggested that using technology well in classrooms can even prepare students to be more effective citizens (John & Sutherland, 2004) in increasingly open and democratic societies. Research in West and Central Africa shows that, the use of ICT for

teaching and learning in school environments can contribute to developing a more child-centred approach to pedagogy (ROCARE, 2006).

Teachers with pedagogical proficiency who are ready and willing to transmit knowledge and support students to construct knowledge will normally make a difference in any learning process. In this age of ICT and its integration in the educational system, the role of the teacher, just like in the traditional classroom environment, should not be overlooked or underestimated. If teachers possess little knowledge of ICT as is the case of most Ghanaian teachers then the integration of ICT into pedagogical practices is seriously compromised (Boakye & Banini, 2008, p. 2).

Research conducted by Apple Classroom of Tomorrow (ACOT) in 1997 indicates that ICT can be used to improve teaching and learning by enhancing existing classroom practices, and by opening opportunities to stimulate cognitive processes in ways that are impractical in a classroom devoid of technology. As observed by Sandholtz et al. (1997), the key to raising student achievement lies with providing students with a solid foundation of basic skills and motivating them to learn. This goal, they contend, can be achieved through technology. In the view of the authors, technology engages students and fires their imagination. It helps teachers to stimulate young minds in ways that make a profound and lasting difference.

Below are some of the research findings that outline the impact of technology on student achievement according to Sandholtz et al. (1997: 4):

a) Students, especially those with few advantages in life, learn basic skills-reading, writing, and arithmetic - better and faster if they have a chance to practice those skills using technology.

b) Technology engages students, and as a result, they spend more time on basic learning tasks than students who use a more traditional approach.

c) Technology offers educators a way to individualize curriculum and customize it to the needs of individual students so all children can achieve their potential.

d) Students who have the opportunity to use technology to acquire and organize information show a higher level of comprehension and a greater likelihood of using what they learn later in their lives.

e) By giving students access to a broader range of resources and technologies, students can use a variety of communication media to express their ideas more clearly and powerfully.

f) Technology can decrease absenteeism, lower dropout rates, and motivate more students to continue on to college.

g) Students who regularly use technology take more pride in their work, have greater confidence in their abilities, and develop higher levels of self-esteem.

Also, Barron, Orwig, Ivers and Lilavois (2002) report the following benefits of integrating technology into education:

a) Promotion of active learning

b) Promotion of critical thinking

c) Offer of diversity and self-paced learning and individual growth

d) Motivation and inspiration of students by making learning exciting and relevant

e) Provision of flexible outlets for students with special needs

f) Promotion of cooperative learning and growth in teacher-student interaction

g) Enhancement in communication skills

h) Supply of information through multi-sensory channels (supporting students with various learning styles) and

i) Help to students in building cultural bridges.

The UNESCO (2005) study '*Information and Communication Technologies in schools: a handbook for teachers or how ICT Can Create New, Open Learning Environments'*, is one of a number of publications describing how ICT potentially offers numerous advantages and provides opportunities for:

a) Facilitating learning for children who have different learning styles and abilities, including slow learners, the socially disadvantaged, the mentally and physically handicapped, the talented, and those living in remote rural areas;

b) Making learning more effective, involving more senses in a multimedia context and more connections in a hypermedia context; and

c) Providing a broader international context for approaching problems as well as being more sensitive response to local needs.

At the same time, ICT is said to enable teachers to save time and to increase productivity in such activities as:

a) Preparing and updating daily lessons;

b) Plans, making hard copy visualisations and handouts for classes, as well as individualised educational plans for slower students and students with disabilities or with special problems;

c) Presenting visual/oral content materials, tasks, and questions to the audience;

d) Maintaining grade books;

e) Compiling a data bank of exam questions;

f) Online inspection and correction of students' work on their computers; and

g) Keeping records, chronicles, and archives of all the above mentioned events and proceedings with fast retrieval and easy access to any entry.

In addition, as ICT becomes more pervasive, computer-based equipment is integrated into every aspect of a school's operation, having thus an impact on the whole school operation and development (UNESCO, 2005). Relevant to the benefits enumerated above, Kozma and Wagner (2003) predicted that, ICT can affect the pace at which the learning gap is bridged in developing countries, both domestically and in relation to other nations.

The greatest challenge they perceived in this pursuit is how we can harness the advantages of ICT, in order to improve the delivery and quality of educational services, as well as to accelerate the rate at which knowledge is

distributed and learning chances and outcomes are equalised throughout society (Wagner & Kozma, 2003). Researches such as this obviously hold the key to introducing the Ghanaian educational system into the educational blessedness that ICT guarantees.

ICT and Visual Art Education

In 2002 the Australian Council for Education and the Arts (ACEA) listed several reasons for which learning in the arts is considered to be valuable. These included: the development of personal capacities, described as creative capacities; a sense of connectedness with oneself, others and the environment; and cultural capacities which develop Australia's cultural and artistic future and reflect the cultural diversity of the country. Capacities for the 21st century include technology skills and the ability to have access and exert influence within the 'knowledge society' (ACEA, 2005). The ACEA also claimed that research has demonstrated that the inclusion of arts programs in education engages students and improves their learning by developing imagination, communication, critical thinking, creativity and adaptability.

Ideas about art and its purpose in education and society as a whole, affect the emphasis and approach of an art programme in a school (Wright, 2003). Wright stated that art can be viewed as self-expression, emotional therapy, spirituality, cultural artefact, a discipline, and/or an essential part of being human. This description encapsulates spiritual, emotional, cognitive, expressive and cultural elements. Parr, Radford and Snyder (1998) described the value and importance of the arts for energizing the school environment, developing critical life skills, improving student performance in other areas, exposing students to a

range of cultural perspectives, and reaching students they described as 'hard-to-teach'.

Other writers concur with Wright (2003) regarding the role of art making in shaping culture. Freedman (2003) contended that the current generation of students have grown up surrounded by visual imagery and have at their disposal the tools (e.g., digital cameras and video-recorders, internet sites) to make and widely distribute their own visual images. Art making therefore, can constitute social action as well as self expression and can therefore be regarded as a means of inquiry by which students are both influenced by and influence their social environments (Freedman, 2003). Duncum (2002) who, like Freedman, is a proponent of a visual culture view of art education see its purpose as about helping students to understand the meanings of visual images, including the purposes for which they are used, with the ultimate goal of empowering students to respond to and shape visual culture through their own art making.

Gardner (1990) believed that the visual arts are important because they allow us to think visually, which he claimed is a particular form of thinking that is able to encompass and express unique forms of meaning. The idea of a specialised form of visual thinking occurs in Gardner's writings on the theory of multiple intelligences, as the unique intelligence Gardner labelled 'Visual-Spatial' (Gardner, 1985). Eisner (2002) focused on the forms of meaning that only the arts can convey and strongly believed in the role of the arts in the development of visual perception. He claimed that, 'one cognitive function the arts perform is to help us learn to notice the world' (p. 10). Eisner believed that this type of noticing

or 'seeing' requires greater attention than that which we normally apply in living, and that seeing is the result of making sense of a part of the world. This faculty is developed through artistic representation because the act of representation influences the way we look at or experience that which we aim to represent. In other words, by visually representing something, we pay attention to its visual qualities or the visual symbols of its qualities and therefore experience these qualities in a way that otherwise would not occur (Eisner, 2002). Eisner stated that 'which aspects of the environment will be attended to, the purposes for which such attention is used, and the material the child employs to represent it, influence the kind of cognitive abilities the child is likely to develop' (p. 22).

Visual Arts as a subject on the school's curriculum has always been an issue of continuous debate in developing societies. For one reason or another, its relevance to the education process is always questioned. Opposing views have held that Visual Arts Education is only for those students who are talented and are not academically inclined; yet it has not justified its place on the timetable, and is of little value to the learning process and the development of a child. The supporting philosophy, however, recognizes the importance of Visual Arts Education. As then President-Elect of America, Barrack Obama stated on his campaign website: "In addition to giving our children the science and math skills they need to compete in the new global context, we should also encourage the ability to think creatively that comes from a meaningful arts education. I believe that the arts should be a central part of effective teaching and learning" (Obama, 2012).

To further buttress the importance of ICT, Jacobs and Goldberg (1999), concluded that "the study of the arts has the potential for providing other benefits traditionally associated with arts. Arts have been linked to students' increased critical and creative thinking skills, self-esteem, willingness to take risks, and ability to work with others".

The Potential of ICT in Secondary Visual Arts Classrooms

ICT presents unique opportunities for supporting creativity (Brown, 2002) and extending visual arts "beyond clay, crayons and paint" (Stankiewicz, 2004, p. 88). This potential was recognised as far back as the 1980s when Crowe (1988) commented that ICT could assist with exploring design problems, enhance artistic decision making and provide new opportunities for learning. Since then the literature has continued to highlight the potential for ICT in supporting visual arts teaching: "For visual education these are incredibly exciting times offering new possibilities" (Long, 2001, p. 262).

Drawing and painting software, digital still and video cameras, electronic portfolios, scanners, colour laser printers, samplers and sound mixers, image manipulation, video editing, 3D animation, Internet and web page construction can all play a role in supporting students' artistic expression (Ashford, 2002). Furthermore, as a medium for exploring solutions to design problems (Crowe, 1988; Freedman, 1991 & Matthews, 1997), students are able to record and save ideas quickly, manipulate line and colour, modify and incorporate images and employ motion (Hubbard & Greh, 1991).

ICT can allow students who might not possess skills with traditional media to focus more on the message and less on execution of art works, thus enhancing self expression (Long, 2001; Wang, 2002 & Wood, 2004). Mistakes can be easily corrected, resulting in decreased anxiety and promotion of experimentation, which lies at the heart of creativity (Freedman, 1991; Hicks, 1993 & Wood, 2004). While new technologies do not, of course, replace traditional art processes they do extend the possibilities of art expression, communication and perception (Wang, 2002 & Wood, 2004).

With an ever increasing emphasis on still and animated imagery, symbols and iconography in society, analysis, interpretation, extrapolation and evaluation of visual imagery has become just as important as art creation. Students need to be wise consumers, familiar with how the mass media operates (Hicks, 1993) and visual arts education has an important role to play in preparing students as visually literate and critical members of society (Brown, 2002 & Schwartz, 1991).

Furthermore, as the use of digital media has expanded, new career opportunities have opened up for visual artists. Students with knowledge, skills and proficiency in digital art and design are well situated to obtain employment in commercial visual arts contexts, such as advertising, film, animation and other computer graphic industries (Matthews, 1997 & Taylor, 1999). Web 2.0 technologies such as Second Life and Flickr, together with the expanding games industry, represent environments in which digital visual art and design skills provide new opportunities for self expression, as well as enhanced commercial potential.

Technology provides exciting opportunities for enriching and transforming visual arts teaching, providing teachers and students alike with new tools to access, organise and present information and to enrich lessons through multimedia (Garnons-Williams, 2002 & Wood, 2004). Technology enables the establishment of communities of practice and cooperative learning (Henning, 2000; Hicks, 1993 & Neylon, 1996), with communication not only between students and teachers, but between students from different schools, countries or cultures, and with practising artists from around the globe. The World Wide Web also provides a virtual international gallery for students' work (Loveless, 2003). ICT can engage and inspire students, and this has been cited as a factor influencing ready adaptors of ICT (Long, 2001 & Wood, 2004).

Visual Arts Teachers' use of ICT

Literature since the 1980s has continued to document concerns surrounding Visual Arts Teachers' willingness to integrate ICT in their teaching (Duncan, 1997; Matthew, Callaway, Letendre, Kimbell-Lopez & Stephens, 2002; Rogers, 1995). In almost all instances, teachers' values, attitudes and beliefs, human inertia and resistance to change have been cited as significant contributing factors. These factors have been demonstrated to play a significant role in influencing *all* teachers' preparedness to embrace ICT (Phelps & Ellis, 2002; Phelps, Ellis & Hase, 2001; Phelps, Graham & Kerr, 2004; Phelps, Graham & Thornton, 2006; Phelps, Graham, Watts & O'Brien, 2006). However there are a number of issues specific to visual arts teachers.

For instance, teachers' traditional ideologies concerning the framework of aesthetics, and their beliefs about the incompatibility between technology and art itself, have been identified as barriers to the adoption of ICT (Hicks, 1993; Matthew, Callaway, Letendre, Kimbell-Lopez, Stephens, 2002 & Wood, 2004). Previous studies have indicated that some art teachers view ICT as gimmicky and easily misused, and some fear loss of student creativity (Crowe, 1988) and a focus on replication of art (Rogers, 1995). Interestingly, Taylor (1999) noted that photography, in its early history, faced similar resistance when debate ensued as to whether it should be considered an art form. Additionally, Loveless (2003) documented instances where teachers felt that the school network was set up on a 'business model', which was not helpful in the context of an 'art space'.

Wang (2002) reported continued reluctance on the part of visual arts teachers to embrace new technologies and refers to a study of accomplished art teachers and quality art education (Bamford, 2001), within which no mention was made of the inclusion of ICT. While some resistance to integration might be attributable to age, research cited in Delacruz (2004) suggested that, although many art teachers are using more ICT, most use only basic applications (such as word processing) rather than applications designed to support creativity. Wood's (2004) work highlights that, while some teachers believe technology maintains student engagement and provides inspiration, others were concerned that students could be easily distracted by technology.

Resource constraints have been recognised as barriers by a number of writers (Delacruz, 2004; Henning, 2000 & Wang, 2002) and these papers also

identify poor training opportunities, lack of support and lack of time as significant impacts on visual arts teachers' willingness to integrate ICT. Professional development that does not focus on a specific area of content has been found to be less effective (Wood, 2004).

While it is known that some teachers are integrating ICT in their visual arts teaching with "open minds and a sense of adventure" (Delacruz, 2004), what remains unclear is the extent to which this is occurring across school systems, how practising teachers view or learn to apply technology in their professional lives (Phelps, Graham & Kerr, 2004) and the factors that impact on teachers' willingness to integrate ICT. Certainly, understanding teachers' beliefs and values is a vital ingredient in effective support (Taylor, 1999) and studies such as this are essential in enabling school systems to support teachers in ways which take account of teachers' values, attitudes, beliefs, motivations, discipline and specific concerns.

Summary of Literature Reviewed

With the advancement of technology, governments around the world are looking for ways to integrating ICT into education thereby making education more attractive and worthwhile. Computers help teachers and students to assist in educating and learning of Visual art in various second cycle institutions and even in the tertiary institutions. Integration of ICT into Visual arts does expose students into a range of cultural perspectives and reaching to students to appreciate 'hard–to-teach' and learn topics in the area.

Technological tools help students demonstrate various artistic expressions and also, ICT allow students who might not possess skills with traditional media to focus more on execution of art works. Most Visual art teachers employ ICT while teaching but, they use only basic applications such as word processing which might not be much helpful to their students.

CHAPTER THREE

METHODOLOGY

The purpose of the study was to investigate the place of ICT integration in Visual Art Education in SHS in the Tamale Metropolitan area, the factors that militate against its use and the attitudes, values and beliefs of visual art teachers on the use of ICT, and suggest solutions to the challenges facing the Visual Art Programme. This chapter describes the research methodology employed in the study. It includes the research design, the study area, the research population and the sampling technique, the data collection method and instrument for data collection and data analysis procedures.

Research Design

The study sought to provide documentation evidence on the place of information technology in Visual Art Education and creativity. It adopted the qualitative approach to data collection and presentation. Specifically, the descriptive survey design was used as the research design for the study because it seeks to gain insight into a phenomenon as a means of providing basic information in an area of study (Creswell, 2003).

Population

The study was conducted in the Tamale Metropolitan area in the Northern region of Ghana. There are thirteen Senior High Schools in Tamale Metropolitan area of which three offer the Visual Art Programme. The target population for the study was Senior High School visual art teachers and third year visual art students

in Tamale Metropolitan area offering the Visual Art Programme. The accessible population, which also happened to be the sample for the study was made up of three senior high schools in Tamale namely, Tamale Senior High School, Vittting Senior High School and Kalpohin Senior High School.

Sample and Sampling Procedure

The purposive sampling technique was used to select participants for the study. The sample was made up of all SHS Visual Art Teachers and all third year Visual Art Students from the three schools in the metropolitan area. Table 1 below shows the distribution of schools from which the sample was drawn.

Table 1: Distribution of Third Year Visual Art Students and Visual Art Teachers

Name of School	Number of Students	Number of Teachers
Tamale SHS	53	3
Kalpohin SHS	48	3
Vitting SHS	56	3
Total	**157**	**9**

Instrument Used

A set of questionnaire was developed with the help of Visual arts teachers and other Visual arts experts as well as IT experts and the researcher's supervisor to collect data for the study. It was made up of close-ended questions. The close-ended questions requested for the ticking of Yes or No and the making of choices among a number of possible alternatives.

The questionnaire contained three sections, named "A" "B" and "C" with total of forty items. Section A contained the biographical data with section B containing Four-Point Likert Scale items while section C contained Four-Point and Five-Point Likert Scale items with only items 21 to 22 being closed ended questions.

The scoring of the Likert Scale items was done using the scoring options such as "Strongly Disagree", "Disagree", "Agree", "Strongly Agree", and graded 1 to 4 respectively. The Five-Point Likert Scale items were scored as "Excellent", "Very Good", "Good", "Fair", and "No Capability" and also graded 1 to 5 respectively. The Researcher was convinced that these instruments were the best tools to be used to collect the essential data for the study. The use of the Likert Scale items was also meant to collect attitudinal data which were very vital for such a study.

Validity and Reliability of the Instrument

The content validity and face validity of the questionnaire were certified by the Researcher's Supervisor and other experts in the fields of Visual Art and ICT. The repeated method was utilised to test the reliability of the instrument. It was given to a group at one time to answer. Then, the instrument was given to the same group a second time for their responses. Results obtained from the two administrations were quite similar which confirmed the reliability of the instrument. The test-retest reliability was over 0.8 (To ensure high reliability, the figure should be between 0.8 and 1.00). The testing of the instrument indicated that the instrument was appropriate to use for the study.

Administration of Instruments

The questionnaire was personally administered to Visual Art Teachers and third year Visual Art Students by the Researcher. The Researcher's first point of call was Tamale Senior High School. Permission was sought from the Headmaster to administer the instrument. The Head of Department led the researcher to the third year class to distribute the questionnaire. The next school the Researcher visited was the Kalpohin Senior High School and then followed by Vitting Senior High School. On almost all occasions, the instrument was responded to in the presence of the Researcher.

Data Analysis

The data collected was organised, edited, and coded for analysis using the Statistical Package for Social Sciences (SPSS). The Interface for data analysis was designed from the variable view of SPSS data editor where, each of the items in the student's instrument was given a unique name, likewise the teacher's instruments. The possible responses of each item were also assigned a unique code. For instance, items that had four possible responses (A), (B), (C), and (D) were assigned 1, 2, 3, and 4 respectively. This was to allow easy data inputting and analysis.

In items where teachers and students were required to rate their level of competence on computer usage and skills, a five point likert scale of excellent, very good, good, fair and no capabilities was used and codified as 1, 2, 3, 4 and 5 respectively.

Data inputting and analysis were done through the SPSS data view for Windows. Frequencies and percentages were used to analysed the biographical data of the respondents and research questions one, two, three and four respectively. The data was presented using percentages and tables.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter represents the survey data and analysis based on the objectives set for the study and the research questions, which were outlined in chapter one. The responses from teachers and students are analysed. Tables, figures and description of data are used to represent the findings. Nine Art Teachers took part in the study. However, eight of them, responded. While, one failed to submit his questionnaire.

Analysis of Biographical Data of Respondents

Table 2: Gender of Teacher Respondents and their Respective Schools

Name of School	Female	Male	Percentage (%)
Tamale SHS	1(12.5%)	1(12.5%)	2(25.0%)
Vitting SHS	-	3(37.5%)	3(37.5%)
Kalpohini SHS	-	3(37.5%)	3(37.5%)
Total	**1(12.5%)**	**7(87.5%)**	**8(100.0%)**

From Table 2, a total of eight art teachers responded. Seven male teachers representing 87.5% and one female representing 12.5% responded. Since the teaching of art is carried out by both male and female teachers the essence of showing interest in sex distribution is to find out about gender equity and also to encourage both sexes to study computer.

Table 3: Gender of Student Respondents

Sex	Frequency	Percentage (%)
Male	112	71.3
Female	45	28.3
Total	**157**	**100**

From Table 3, there were a total of 157 students who responded to the questionnaire as it can be observed in Table 3. The males formed (71.3%) of the total sample while the female students numbering forty five and representing (28.3%) of the sample were females. The finding indicates that with majority of the students (71.3%) being males more resources and attention would be needed to increase the numbers of females in the Programme to achieve gender balance in the Schools.

Table 4: Age Distribution of Teachers

Age (years)	Frequency	Percentage (%)
35-44	6	75.0
45-54	2	25.0
Total	**8**	**100**

Table 4 indicated that six of teacher representing (75.0%) of the respondents belong to the 35-44 year age bracket while two representing (25.0%) were in the 45-54 year group. Though the finding indicates that majority of the teachers are in the 35-44 year bracket which may indicate a positive sign for integration, the presence of teachers within the 45-54 year group may have implications since resistance to integration could be attributable to age (Bamford, 2001).

Table 5: Age Distribution of Students

Age (years)	Frequency	Percentage (%)
16	3	1.9
17	34	21.7
Above 18	120	76.4
Total	**157**	**100**

Table 5 indicated that the majority, one hundred and twenty representing 76.4% of the respondents were above 18 years. Thirty four representing 21.7% were in the 17 year group, while three, representing 1.9% of the students fall within the 16 year group. The finding indicate that majority of the students were in their late teens or older and this will have implications on how they learn. Most of them were well into Piaget's formal operational stage and can learn abstract things without so much difficulty.

Table 6: Educational Level of Art Teachers

Educational level	Frequency	Percentage (%)
Diploma	1	12.5
Post Diploma	7	87.5
Total	**8**	**100**

From Table 6, it has been established that 7(87.5%) of the teacher respondents held Post Diploma certificates, while 1(12.5%) of the respondents held a Diploma. This means that with a total of eight teachers obtaining tertiary education one can conclude that the quality and number of ICT human resource personnel in the SHS in the Northern Region is woefully inadequate which can have negative implications on the Programme.

Table 7: Experience of Art Teachers

No. of Years	Frequency	Percentage (%)
Below 4	4	50.0
5-10	2	25.0
15-20	2	25.0
Total	**8**	**100**

Four of the teachers representing 50.0% had below four years of experience. Two of them, representing 25.0%, had five to ten years, while another two, representing 25.0%, had 15-20 years. It was believed that respondents who had more years in the classroom would use their rich experience to bear on addressing the issues raised.

Table 8: Experience of Art Teachers in using Computers

No. of Years	Frequency	Percentage (%)
1-2 years	1	12.5
More than 2years but less than 4years	1	12.5
4-6 years	6	75.0
Total	**8**	**100**

From Table 8, one respondent representing 12.5 % had between 1-2 years experience in the usage of computer. One also representing 12.5 % had 2-4 years experience, while six being the majority of the respondents had 4-6 years experience in the usage of computers. It was also believed that the respondents who had more years in computer usage would use their rich experience to bear on addressing the issues raised.

Table 9: Place of Computer Usage

Place	Frequency	Percentage (%)
My office	2	12.5
Class room	2	12.5
Computer lab.	4	50.0
Total	**8**	**100**

In Table 9, two teachers representing 12.5% used computer in their office, two of them also representing 12.5% used computer in the class room. Four of the respondents representing 50.0% used computer in the computer laboratory. This showed that majority of art teachers did not use computers in their teaching and learning in the class room since only two used it in the classroom. This finding has important implications for integration of technology into art education.

Table 10: Support for Art Teachers in the Use of Computers in School

Support	Frequency	Percentage (%)
There is no support available	5	62.5
There is a person assisting	2	25.0
There are print reference Materials	1	12.5
Total	**8**	**100**

In Table 10, five respondents representing 62.5% did not receive any support in the use of computers in teaching in their schools. Two of them representing 25.0% had assistance in the use of computers in teaching in the class room. One representing 12.5 % had print reference materials for teaching.

By this information, it can be concluded that most art teachers did not get the needed support in the use of computers in the teaching of art in their schools.

Table 11: Training of Teachers in the Use of Computers in the Past Three Years

Response	Frequency	Percentage (%)
Yes	3	37.5
No	5	62.5
Total	**8**	**100**

Three of the teachers representing 37.5% of the respondents who responded to the questionnaire had training in the use of computers in the past three years. Five of them, representing 62.5%, never had any training in the use of computers in the last three years.

The essence of training of Art Teachers is to ensure that they are current when it comes to the use of computers but the high percentage of 62.5 representing teachers that never had any training for the past three years clearly indicate the need for training for Art Teachers. Having presented the backgrounds of the teachers, the sections that follow look at the research questions.

Research Question 1:

What is the Significance of ICT in the Visual Art Programme?

The responses from the data collected from students are shown in Table 12.

Table 12: Students' Perceived Significance of ICT

	Category			
Statement	SD (%)	D (%)	A (%)	SA (%)
1. I enjoy using computer	9(5.7)	7(4.5)	47(29.9)	94(59.9)
2. I am tired of using computer	92(58.6)	45(28.7)	12(7.6)	8(5.1)
3. I would be able to get job if I use computer	3(1.9)	3(1.9)	56(35.7)	95(60.5)
4. I would work harder if I use Computer	5(3.2)	23(14.6)	64(40.8)	65(41.4)
5. It takes long time to finish when I use computer	67(42.7)	56(35.7)	23(14.6)	11(7.0)
6. I can learn many things if I use Computer	3(1.9)	2(1.3)	48(30.6)	106(66.2)
7. I enjoy lessons on computer	5(3.2)	1(.6)	64(40.8)	87(55.4)
8. I believe that if teachers use computers to teach in school I will enjoy school	5(3.2)	7(4.5)	68(43.3)	77(49.0)
9. It is important for me to learn how to use a computer	1(.6)	1(.6)	47(29.9)	108(68.8)
10. I think computers are very easy to use	5(3.2)	1(.6)	82(52.2)	41(26.1)

Table 12 Cont'd

11. I am always nervous when I use a computer	44(28.0)	67(42.7)	35(22.3)	11(7.0)
12. I don't need to use computer in my daily life	104(66.2)	37(23.6)	10(6.4)	6(3.8)
13. Using ICT makes lessons more interesting	4(2.5)	4(2.5)	56(35.7)	93(59.2)
14. Using ICT in visual art is not enjoyable	114(72.6)	28(17.8)	12(7.6)	3(1.9)
15. Using computers makes lessons in visual Art more fun	15(9.6)	15(9.6)	66(42.0)	61(38.9)
16. Using ICT makes the lesson more diverse	22(14.0)	50(31.8)	51(32.5)	34(21.7)
17. Using ICT in visual art improves presentation of materials	4(2.5)	11(7.0)	72(45.9)	70(44.6)
18. Using ICT in visual art makes lesson more difficult	108(68.8)	44(28.0)	4(2.5)	1(.6)
19. Using ICT in visual art reduces students motivation	73(46.5)	62(39.5)	10(6.4)	12(7.6)
20. Using ICT in visual art impairs students learning	63(40.1)	34(21.7)	33(21.0)	27(17.2)

A cursory look at Table 12 shows that respondents agree with items such as "I enjoy using computer", "I would be able to get job if I use computers", "I

would work harder if I use computers", "I can learn many things if I use computers", "I enjoy lessons on computer", "I believe that if teachers use computers to teach in school I will enjoy school", "It is important for me to learn how to use a computer", "I think computer are very easy to use", "Using ICT makes lessons more interesting", "Using computers makes lessons in visual art more fun", "Using ICT makes the lesson more diverse", "Using ICT in visual art improves presentation of materials", which were numbered from 1,3,4,6,7,8,9,10,13,15,16 and 17 respectively in Table 12, had percentage scores ranging from 54.2% to 98.7%.

On the other hand, respondents disagreed with negative statements such as "I am tired of using computer", "It takes long time to finish my work when I use computer", "I am always nervous when I use a computer", "I don't need to use computer in my daily life", "Using ICT in visual art is not enjoyable" " Using ICT in visual art makes lessons more difficult", "Using ICT in visual art reduces students motivation", "Using ICT in visual art impairs students learning", numbered 2, 5, 11, 12, 14, 18, 19 and 20 respectively, in Table 12 which have percentage scores also ranging from 61.8% to 96.8%.

From the analysis made based on Table 12, it was clear that students were aware of the significance of ICT usage and its ability to create future job opportunities. It can, therefore, be concluded that the respondents have a strong awareness of the potentials of ICT in improving the learning and teaching in Visual Art and if the right teaching environment is created it can influence their attitude towards the study of ICT while in school. This finding is line with finding

made by Sandholtz et al. (1997 p. 4), Literature from Australia (Newhouse, 2002) and the United Kingdom (Loveless, 2002).

Research Question 2:

What are the Challenges Associated with the use of ICT in Visual Art in SHS in the Tamale Metro?

Table 13: Time Spent on Computers in School by Students

Time	Frequency	Percentage (%)
Less than 1hr	99	63.1
1-2 hrs	58	36.9
Total	**157**	**100**

In Table 13, 99 respondents representing 63.1% had less than an hour when it comes to the usage of computers in school, while 58 of the respondents representing 36.9 % had up to 1-2 hours in the use of computers in school. By this information, it can be inferred that most students spent less time on computers in the school that may be the cause of the negative statements enumerated by them to the research question on their perceived significance of ICT in the Visual Art Programme.

Table 14: Availability of Multimedia Tools

	Category	
Item	Available (%)	Not available (%)
1. Projector	56(35.7)	101(64.3)
2. Smart Board(Screen)	-	157(100.0)
3. Internet	43(27.4)	114(72.6)
4. Digital Camera	-	157(100.0)

Table 14 Cont'd

5.	Printer	157(100.0)	-
6.	Tutorial on CD	-	157(100.0)

Item 2 of the questionnaire attempted to find out whether there are ICT accessories in the schools. As shown in Table 14, all the 157 respondents, representing 100 % had no Smart Board, Digital Camera, or Tutorials on CDs, 56 representing 35.7% of the respondents had a projector and 101 representing 64.3% had no projector. In the case of internet, 43 representing 27.4% had internet connection in their school, while 114 representing 72.6% had no internet connection. Similarly, all respondents (157), representing 100% responded yes to the availability of Printer in their school.

The findings in Table 14 show that only one school had a Projector and another had internet connection, while accessories like Smart Board (Screen), Digital Camera and Tutorials on CDs were not available. This finding has a negative impact on the integration of ICT in Visual Art. Since these accessories are key in the delivery of ICT. Thus, the main challenges students are facing as far as the integration of computers into the teaching of Visual Art is concerned are the limited time students spend using computers and lack of essential ICT tools and equipment. This finding is line with finding made by (Delacruz, 2004; Henning, 2000 & Wang, 2002).

Research question 3:

What Factors Impede the Integration of ICT in Visual Art Programme?

This section provides data that determines the skill and competence level of teachers and students in the use of software application programme. One's ability to do something, to a level of satisfactory depends on one's skill including knowledge. Knowledge is the application of reasoning and it is the result of reasoned analysis of information. The ability to use application software is a skill that must be acquired through practice.

Table 15: Competence Level of Teachers in the Use of Software Application

Item	Very Good (%)	Good (%)	Fair (%)	No Capability (%)
1. Word	5(62.5)	2(25.0)	1(12.5)	-
2. Spread Sheet	-	5(62.5)	2(25.0)	1(12.5)
3. Presentation Tools	3(37.5)	3(37.5)	2(25.0)	-
4. E-Mail	4(50.0)	3(37.5)	1(12.5)	-
5. Internet	-	6(75.0)	2(25.0)	-
6. Statistical Tools	-	4(50.0)	4(50.0)	-
7. Graphic Tools	3(37.5)	4(50.0)	1(12.5)	-
8. Web Designing	-	-	3(37.5)	5(62.0)
9. Programming	-	-	2(25.0)	6(75.0)
10. Database	-	-	3(37.5)	5(62.0)
11. Project Management	-	1(12.5)	2(25.0)	5(62.0)

In Table 15, five respondents representing 62.5% responded “very good” in the use of Word application, two, representing 25.0% responded “good”, 1, representing 12.5% had “fair” skills in the use of Word, five representing 62.5% responded “good” in the use of Spread sheet software, two, representing 25.0% responded “fair”, 1 representing 12.5% had “no capability”, three representing 37.5% responded “very good” in the use of Presentation Tools, three, representing 37.5% responded “good”, two, representing 25.0% responded “fair”, four representing 50.0% responded “very good” in E-Mailing, three, representing 37.5% responded “good”, 1, representing 12.5% responded “fair”.

Six, representing 75.0% responded “good” in the use of Internet, two, representing 25.0% responded “fair”, four, representing 50.0% responded “good” in the use of Statistical Tools and four, also representing 50.0% responded “fair”, three, representing 37.5% responded “very good” in the use of Graphic Applications, four, representing 50.0% responded “good” and 1, representing 12.5% respondent “fair”, three, representing 37.5% had knowledge in Web designing, five, representing 62.5% had “no capability” in Programming, two, representing 25.0% responded “fair”, six representing 75.0% had “no capability” in Database ,three, representing 37.5% responded “fair”, five, representing 62.5% had “no capability”, 1, representing 12.5% responded “good” in the use of Project Management Tools, two, representing 25.0% responded “fair” and five, also representing 62.5% had “no capability”.

By this information, it can be concluded that most of the respondents had skills in the use of Word, Spreadsheet, Presentation tools, E-mail, Internet,

Statistical and Graphic tools, but when it came to Web designing, Programming, Database and Project Management tools, most of the respondents had no capability in the use of these applications. This observation indicates that more attention should be given to Web Designing, Programming, Database and Project Management in the teaching of ICT in our schools.

Table 16: Competence Level of Students in the Use of Software Application

Item	Very Good (%)	Good (%)	Fair (%)	No Capability (%)
1. Corel Draw	44(28.0)	45(28.7)	20(12.7)	48(30.6)
2. Adobe Photo	14(8.9)	43(27.3)	27(17.2)	73(46.5)
3. Dreamweaver	-	15(9.6)	22(14.0)	120(76.4)
4. Illustrator	-	18(11.5)	15(9.6)	124(79)
5. Painter X	-	19(12.1)	18(11.5)	120(76.4)
6. Mayer	-	-	7(4.5)	150(95.6)
7. InDesign	-	-	31(19.7)	126(80.2)
8. Fireworks	-	14(8.9)	14(8.9)	129(82.2)

In Table 16, out of a total number of 157 respondents, forty-four, representing 28.0% responded “very good” in the use of Corel Draw, forty-five, representing 28.7% responded “good”, twenty, representing 12.7% responded “fair”, forty-eight, representing 30.6% had “no capability”, fourteen, representing 8.9% responded “very good”.

In the use of ‘Adobe photo’, forty-three, representing 27.3% had “good”, twenty-seven, representing 17.2% responded “fair”, seventy-three, representing 46.5% had “no capability” , fifteen, representing 9.6% responded “ good” in

Dreamweaver, twenty-two, representing 14.0% responded "fair", one hundred and twenty, representing 76.4% had "no capability", eighteen, representing 11.5% responded "good" in the use of illustrator, fifteen, representing 9.6% responded "fair", one hundred and twenty-four, representing 70.0% had "no capability" in the use of Adobe Illustrator, nineteen, representing 12.1% responded "good.

In the use of 'Painter X', eighteen, representing 11.5% responded "fair", one hundred and twenty representing 76.4% had "no capability" ,seven, representing 4.5% responded "fair" in the use of Mayer and one hundred and fifty, representing 95.6% had no knowledge in Mayer, thirty-one, representing 19.7% responded "fair" in the use of InDesign, while one hundred and twenty-six, representing 80.2% had "no capability", fourteen, representing 8.9% responded "good", fourteen, representing 8.9% responded "fair", and one hundred and twenty-nine, representing 89.2% also had "no capability" in Fireworks.

The findings indicate that only respondents for Corel Draw and Adobe Photo have their "No Capability" level below 50% mark (i.e. 30.6-46.5). While the rest ranging from 76.4% -95.6% above this mark. It also indicates that a total of 154 respondents have good knowledge in all the items except Mayer and InDesign and a fair idea in the entire item. The low percentage for "Fair" and high percentage of 76.4% - 95.6% for "No Capability" should be of concern to Visual Art teachers in our schools if ICT is to contribute to the development of the nation. The rather low level of competence among both teachers and students in the use of relevant programmes that aid integration of ICT into Visual Art are the main factors that mitigate integration of ICT into the teaching of Visual Art. This finding is line

with finding made by Boakye and Banini, 2008; Newhouse, 2002; Loveless, 2002 & Sandholtz et al., 1997, p. 4).

Research Question 4:

How do the attitudes, values and beliefs of Visual Art teachers' impact on the integration of ICT into the Visual Art Programme?

Respondents were asked to rate themselves on the perceived significance, ease and how they feel about ICT. This was to determine teachers' attitudes, values and beliefs regarding integration of ICT into the Visual Art Programme.

Table 17: Teachers' Perceived Usefulness of ICT

Item	Disagree (%)	Agree (%)
1. A person today cannot escape the influence of computers	-	8(100.0)
2. Computers will replace low-skill jobs and create jobs needing specialized training	1(12.5)	7(87.5)
3. Computers will improve education	-	8(100.0)
4. If there was a computer in my classroom it will help me to be a better teacher	-	8(100.0)
5. Computers are beyond the understanding of the typical person	6(75.0)	2(25.0)
6. Computers could enhance remedial instruction	1(12.5)	7(87.8)

Table 17 Cont'd

7. Computers will relieve teachers of routine duties	3(37.5)	5(62.5)
8. Computers can be used successfully with courses which demand creative activities	-	8(100.0)
9. High school students should understand the role computers play in society	-	8(100.0)
10. I feel qualified to teach computer literacy	1(12.5)	7(87.5)
11. Computers can be a useful instructional aide in almost all subjects areas	-	8(100.0)
12. I feel at ease when I am around computers	-	8(100.0)
13. Teacher training should include instructional application of computers	-	8(100.0)
14. Computers will help stimulate creativity in students	-	8(100.0)
15. Computers would save me time	-	8(100.0)
16. Using ICT makes lesson more interesting	-	8(100.0)

Table 17 Cont'd.

17.	Using ICT in my teaching and learning is not enjoyable	8(100.0)	-
18.	Using ICT makes lesson more fun	-	8(100.0)
19.	Using ICT makes the lesson more diverse	-	8(100.0)
20.	Using ICT improves presentation of materials	-	8(100.0)
21.	Using ICT makes lesson presentation less difficult	-	8(100.0)
22.	Using ICT increases students motivation	-	8(100.0)
23.	Using ICT improves students learning	-	8(100.0)

The result in Table 17 shows that all 8 respondents representing 100.0% agree to the statements "person today cannot escape the influence of computers", "computers will improve education", "if there was a computer in my classroom it will help me to be a better teacher", "computers can be used successfully with courses which demand creative activities", "high school students should understand the role computers play in society", "computers can be a useful instructional aide in almost all subject areas", " I feel at ease when I am around computers", "teacher training should include instructional application of computers", "computers will help stimulate creativity in students", "computers save time", "using ICT makes lesson more interesting", "using ICT makes lesson more fun", "using ICT makes the lesson more diverse", "using ICT improves

presentation of materials", "using ICT makes lesson presentation less difficult", "using ICT increases students motivation", "using ICT improves students learning", while eight, also representing 100% disagree with the statement, "using ICT in my teaching and learning is not enjoyable".

Seven, representing 87.5% agree with the statements, "computers will replace low-skill jobs and create jobs needing specialised training", "computers could enhance remedial instruction" and "I feel qualified to teach computer literacy" while 1, representing 12.5% disagree with the same statements. Six, representing 75.0%, and two, representing 25.0% disagree with statements "computers are beyond the understanding of the typical person", and "computers will relieve teachers of routine duties" respectively.

The results in the table indicate that all the teachers disagree that using ICT in their teaching and learning is not enjoyable, but rather a useful instructional aid that stimulates creativity, saves time, makes lesson more fun and diverse and relieves them of routine duties. Thus making the use of ICT useful in their teaching and similarly contributing a lot to the high performance of their students. Thus teachers had very positive beliefs and attitudes towards the use of computers in the teaching of Visual Arts.

Table 18: Teachers' Perceived Ease of Using ICT in Teaching

Item	Disagree (%)	Agree (%)
1. Using ICT makes it more difficult to control the class	8(100.0	-
2. ICT makes the lesson more difficult	8(100.0)	-
3. ICT makes preparing the lesson more difficult	7(87.5)	1(12.5)
4. Hardware and software problems often disrupt the lesson	3(37.5)	5(62.5)
5. Using ICT in Teaching is expensive	3(37.5)	5(62.5)

The data in Table 18 indicates that all 8 teachers representing 100% disagree with the statements, "using ICT makes it more difficult to control the class". On the issue of ICT making the preparation of lessons more difficult, 1 respondent representing 12.5% agree. Likewise seven, respondents representing 87.5% disagree. However on the statement, "hardware and software problems often disrupt the lesson", and "using ICT in teaching is expensive", five, respondents representing 62.5% agree to these statements. On the other hand three, respondents representing 37.5% disagree.

The results on Table 17 further indicates that generally majority of teachers perceived ICT usage to be easy. This confirmed (the data in Table 16) that teachers have a generally positive attitude towards the integration of ICT into the teaching of Visual Arts. This finding is line with finding made by (Delacruz,

2002; Duncan, 1997; Mathew, Letendre, Kimbell-Lopez & Stephens, 2002; Rogers, 1995).

Also, on the importance of ICT integration in schools, the Director of the Ghana Education Staff Development Institute, Mr Seth O. Barden at the launch of a programme at Saltpond on 2nd April 2013 in the Central Region to train teachers to keep them abreast of using ICT in the study of Mathematics, English language and Integrated Science said "every nation that needed to develop and catch up with the rest of the developed nations must integrate ICT into teaching and learning. Ghana had reached a stage where ICT should be properly integrated into teaching, learning and education management service to contribute greatly to improve efficiency and the effectiveness of achieving quality education, He was convinced that the integration of ICT into teaching of Integrated Science and English, to start with, should bring about a revolutionary change in teaching methodologies so that learning would be fun and accessible. It was important for teachers to know that the use of ICT in a lesson must add value to instruction delivery and class integration."

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter summarises the study and its findings, draws conclusions based on the findings. Recommendations for further research based on the findings have been suggested.

Summary

The purpose of this study was to investigate the place of ICT in Education, factors that militate against its integration into the teaching of Visual Art and the attitudes, values and beliefs of Visual Art teachers towards the integration of ICT in Visual Art Education in Senior High School in the Tamale Metropolitan area.

The target population for the study was Senior High School Visual Art Teachers and third year Visual Art students in Tamale Metropolitan area offering the Visual Art programme. The sample for the study consisted of one hundred and sixty six (166) subjects comprising one hundred and fifty-seven (157) students, and nine teachers. Eight out of the nine teachers responded, making the return rate 97%. All one hundred and fifty-seven students, representing 100%, responded. A total of three (3) schools, Tamale Secondary School, Kalpohini Secondary School, and Vitting Secondary School were used in the study.

The descriptive survey design was employed in this study where questionnaire was the main tool used to collect data for the study. Data was analysed using SPSS software to transcribe the data into percentage and frequencies.

Main Finding

The Main Findings of The Study were that:

1. Most of the schools were not connected to the internet
2. Majority of art teachers did not use computers in their teaching and learning in their class
3. Teachers did not get the needed support in the use of computers in the teaching of art in the schools
4. Majority of the art teachers had no training in the use of computers in the last three years
5. Students were aware of the potential of ICT in improving the learning and teaching in visual art education
6. Students spent little time on computers in schools
7. Most schools did not have the necessary multimedia tools needed tor the integration of ICT in the Visual Art Programme
8. Most students had no ability in the use of software applications
9. Teachers have a strong positive attitude towards ICT integration into the teaching of Visual Art.

Conclusion

In the light of the above findings, it can be concluded that failure of teachers to use computers in their teaching and the lack of internet connectivity in schools contribute negatively to the integration of ICT in the Visual Art Programme in the schools. Similarly, limited Multimedia Tools and teachers 'values, attitudes, believes, motivation, discipline and professional training are

major factors that contribute to low student capability levels in the use of software application in the schools.

Recommendations

Based on the conclusions of the study, the following recommendations are made.

1. Ghana Education Service and Ghana National Association of Teachers should train and retrain Art teachers regularly to effectively use ICTs. It is recommended that teachers should be given refresher courses in ICT use, especially software applications at least once a year.
2. Teacher training and professional development oriented policies should support ICT-related teaching models that would encourage both students and teachers to play an active role in teaching and learning activities.
3. Heads of Institutions, Parent Teacher Associations, District and Regional Directorates, Ministry of Communication should pool resources together to provide all schools with internet services. This will allow effective sharing of information between students and teachers in the various schools.
4. Heads of Institutions, Parent Teacher Associations should liaise with relevant agencies to acquire multimedia tools (e.g. Projectors, Smart Board, Digital Camera, Tutorials on CDs and Printers) for schools to enhance teaching and learning of ICT in our schools.

5. Government should increase and sustain the distribution of the free laptops to students and tutors to deepen their knowledge in ICT.
6. Assistance be sought by government from external and internal agencies to prepare technology enhanced curriculum materials to support pedagogy and content in the Education Management Information System (EMIS).

Suggestion for Further Research

Though the research questions for the study and other interesting issues raised for investigation were exhaustively treated, the study was still limited in scope because it was revealed that there were still other issues of importance on the integration of ICT in our schools that equally deserved further investigation. It is therefore suggested that in future, researchers interested in the integration of ICT in the Visual Art Programme in SHS and other areas could investigate into topics such as "the impact of ICT on the performance of Visual Art students in their internal and external examinations" and "the Place of ICT in the current Visual Art curriculum for JHS in Ghana".

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APPENDICES

APPENDIX A

Questionnaire for Third Year Visual Students

Thank you for accepting to complete this questionnaire. The purpose of this questionnaire is to assess the use of Information Communication Technology (ICT) in Senior High Schools and its effect on teaching and learning in schools in the Tamale Metropolitan area of Ghana. This is not a test and there is no wrong answer to any of the questions. You are assured that any information given is solely for academic purpose and your anonymity is guaranteed. Please, try as much as possible to answer all the questions.

SECTION A

Biographical Data

1. Name of School.....

2. Your Sex

[ ] Female

[ ] Male

3. Your Age

[ ] below 15 years

[ ] 16years

[ ] 17 years

[ ] above18years

4. Your form……

5. How many years have you been using computers?

[ ] Less than one year

[ ] 1-2 years

[ ] More than 2 years but less than 4 years

[ ] 4-6 years

[ ] More than 6 years

6. Who taught you about computers?

[ ] I taught myself

[ ] My teachers

[ ] My friends

[ ] My family

[ ] Other people outside the school

7. What are your favourite activities in using computers? (Please check all that apply).

[ ] Find information

[ ] E-mail

[ ] Download music

[ ] Play games

[ ] Use educational software

[ ] Write computer programs

[ ] Draw and paint

8. How many hours on average per week are you able to use these computers and related ICTs to do your studies?

[ ] Less than one hour

[ ] 1-2 hours

[ ] 3-4 hours

[ ] 5-6 hours

[ ] 7-9 hours

[ ] More than 10 hours

SECTION B

What Students Perceived Significance of ICT

Instructions: Select one level of agreement for each statement to indicate how you feel.

SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree

No	ITEM	SD	D	A	SA
9	I enjoy doing things on a computer				
10	I am tired of using a computer.				
11	I will be able to get a job if I learn how to use computer				
12	I concentrate on a computer when I use one				
13	I would work harder if I could use computers				
14	I think that it takes a long time to finish when I use a computer				
15	I can learn many things when I use a computer				
16	I enjoy lessons on the computer				
17	I believe that the more often teachers use computers , the more I will enjoy school				
18	I believe that it is very important for me to				

	learn how to use a computer				
19	I think computers are very easy to use				
20	working with computer makes me nervous				
21	I see the computer as something I will not use in my daily life.				
22	Using ICT makes lessons more interesting				
23	Using ICT in my teaching and learning is not enjoyable				
24	Using ICT makes the lesson more fun				
25	Using ICT makes the lesson more diverse				
26	Using ICT improves presentation of Materials.				
27	Using ICT makes lesson more difficult.				
28	Using ICT reduces students motivation				
29	Using ICT impairs students learning				

SECTION C

Availability of computers for practical work

Tick **[√]** to indicate the **availability** or otherwise of the following ICT resources in your school.

No	ICT Resource	Available	Not Available
30	Computer laboratory		
31	Computers		
32	Projector		
33	Smart board(screen)		
34	Internet		
35	Digital Camera		
36	Printer		
37	Tutorial on CDs		

SECTION D

Competence level of Students

38**.** How would you rate your level of skill in the use of each of the following computer graphic applications? (Please check one box per row)

ITEM	Excellent	Very Good	Good	Fair	No Capability
CorelDraw					
Adobe Photoshop					
Dreamweaver					
Illustrator					

PainterX					
Maya					
InDesign					
Fireworks					

39. In your school, are you able to use the relevant information communication technologies (ICTs) tools and facilities that you need in doing your subject schoolwork?

[ ] Yes - ICTs are available

[ ] No - access to ICTs is limited

[ ] No - there are no ICTs

40. In which classes or subjects do you use computers and related ICTs?

[ ] Computer class

[ ] Mathematics

[ ] Science

[ ] Social sciences

[ ] Local language

[ ] English

[ ] Ceramics

[ ] Textiles

[ ] Graphic design

[ ] Picture making

[ ] Leatherwork

Thank you for completing this questionnaire

APPENDIX B

Questionnaire for Art Teachers

Thank you for accepting to complete this questionnaire. The purpose of this questionnaire is to assess the attitudes of Visual Art teachers' integration of Information Communication Technology (ICT) in Senior High Schools in the Tamale Metropolitan area. This is not a test and there is no wrong answer to any of the questions. You are assured that any information given is solely for academic purpose and your anonymity is guaranteed. Please, try as much as possible to answer all the questions.

SECTION A

Biographical Data

1. Name of School: …….

2. Your Sex

[ ] Female [ ] Male

3. Your Age

[ ] Under 25 years

[ ] 25-34 years

[ ] 35-44 years

[ ] 45 – 54 years

[ ] Over 54 years

4. What is your educational level?

[ ] Post-secondary certificate 'A'

[ ] Diploma

[ ] Degree or Post diploma

[ ] Masters

5. How many years have you been in a teaching position or teaching Related role?

[ ] Below 4years

[ ] 5 -10years

[ ] 11 – 14 years

[ ] 15 – 20 years

[ ] above 21 years

6. What is your main field of study?

[ ] Textiles

[ ] Picture Making

[ ] Leatherwork

[ ] Ceramics

[ ] Bead Making

[ ] Sculpture

[ ] Graphic Design

[ ] Basketry

7. How many years have you been using computers?

[ ] Less than one year

[ ] 1-2 years

[ ] More than 2 years but less than 4 years

[ ] 4-6 years

8. Where do you use computers in school?

[ ] Staff common room

[ ] In my office

[ ] Administrator's office

[ ] Classrooms

[ ] Computer laboratory

9. Do you receive support to help you use computers in your teaching? (Please check all that apply)

[ ] There is no support available

[ ] Telephone support

[ ] There is a person in my school who assists

[ ] There are print reference materials

10. How many hours per week are your school's computers accessible to you?

[ ] Less than one hour

[ ] 1-2 hours

[ ] 3-4 hours

[ ] 5-6 hours

[ ] 7-8 hours

[ ] 9-10 hours

[ ] More than 10 hours

11. Do you use computers outside of school hours?

[ ] Never

[ ] Every day

[ ] Once a week

[ ] Several times a week

[ ] Once a month

12. Did you receive any training on ICTs before you joined the teaching profession (pre-service)?

[ ] Yes

[ ] No

SECTION B

13. How will you rate your perceived ease of using ICT?

SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree

S/N	Perceived ease o use items.	SD	D	A	SD
1	Using ICT makes it more difficult to control the class.				
2	ICT makes the lesson more difficult.				
3	ICT makes preparing the lesson more difficult.				
4	Hardware and software problems often. disrupt the lesson				
5	Using ICT in teaching is expensive.				

14. How will you rate your perceived usefulness of ICT?

SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree

S/N	Perceived usefulness Items	SD	D	A	SA
1	Using ICT makes lessons more interesting				

2	Using ICT in my teaching and learning is not enjoyable				
3	Using ICT makes the lesson more fun				
4	Using ICT makes the lesson more diverse				
5	Using ICT improves presentation of Materials.				
6	Using ICT makes lesson more difficult.				
7	Using ICT reduces students motivation				
8	Using ICT impairs students learning				

15. Did you receive any training on ICTs during the past 3 years?

[ ] Yes [ ] No

16. Please rate your level of expertise with the following. (Put a check in one square per row according to the rating scale).

ITEM	Excellent	Very Good	Good	Fair	No Capability
Word processing					
Spreadsheets					
Presentation tools					
E-mailing					

Internet browsing					
Statistical tools					
Graphics					
Web page designing					
Programming					
Database management					
Project management					

17. In which subjects do you use ICT as teaching tool? (Please check all that apply)

[ ] Textiles

[ ] Picture Making

[ ] Leatherwork

[ ] Ceramics

[ ] Bead Making

[ ] Sculpture

[ ] Graphic Design

[ ] Basketry

18. How do you use the Internet in your role as a teacher?

[ ] For teaching specific lessons in various subjects

[ ] For preparing lessons

[ ] For communicating with teachers and students

[ ] For accessing and using online assessment tools

[ ] For collecting teaching and reference materials

19. Do you have an e-mail address?

[ ] Yes [ ] No

21. Instructions: please read each statement and tick the best that describes how you feel about that statement.

SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree

S/N	Perceived usefulness Items	SD	D	A	SA
1	A person today cannot escape the influence of computers				
2	Computers will replace low-skill jobs and create jobs needing specialized training				
3	Computers will improve education				
4	If there was a computer in my classroom it would help me to be a better teacher				
5	Computers are beyond the understanding of the typical				

	person				
6	Computers could enhance remedial instruction				
7	Computers will relieve teachers of routine duties				
8	Computer can be used successfully with courses which demand creative activities.				
9	High school students should understand the role computers play in society				
10	I feel qualified to teach computer literacy				
11	Computers can be a useful instructional aide in almost all subject areas				
12	I feel at ease when I am around computers				
13	Teacher training should include instructional application of computers				
14	Computers would help stimulate creativity in students				
15	Using ICT reduces students motivation				
16	Computers would save me time				

Thank you for completing this questionnaire.