THE USE OF COMPUTER IN TEACHING GRAPHIC DESIGN IN SELECTED SENIOR HIGH SCHOOLS IN THE CENTRAL REGION OF GHANA

By

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A thesis submitted to the School of Graduate Studies
Kwame Nkrumah University of Science and Technology, Kumasi,
in partial fulfillment of the requirements for the Degree of

MASTER OF ARTS IN ART EDUCATION

Faculty of Art
College of Art and Social Sciences
August, 2012

DECLARATION

I hereby declare that this submission is my own work towards the M.A. degree and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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ABSTRACT

The pace of change brought about by new technologies has had a significant effect on the way people learn and live. New and emerging technologies challenge the traditional process of teaching and learning. The computer is now being applied in the delivery of curriculum of Graphic Design in Ghana without the Ghana Education Service providing any in-service training before or after the introduction of this new technology for the teachers to have first hand information of its application and also be well equipped with the skills and knowledge required for them to teach effectively with this tool. The qualitative research method with observation and interviews was therefore used to study the use of computers in graphic design education in four selected Senior High Schools in the Central Region. It examined the scope of the Graphic Design curriculum, the teaching methods Graphic Design teachers employ to teach the different topics with computers and how this affects student learning in these schools. The study discovered that the sampled Graphic Design teachers used discussion, demonstration and some hands-on techniques to impart the outlined skills and knowledge to their students using a few computers. No Ghana Education Service recommended textbooks on Graphic Design to guide its teaching apart from the Curriculum Research Development Division's teaching syllabus. The design works produced by the students in the sampled schools brought to bear the fact that computer generated works are very accurate and precise as compared to the manual works. Much more time is spent on the execution of manual works than the computer works. On the other hand the study revealed that using the computer for

graphic designing made students in the four schools lazy as they resorted to the use of images they

sourced from the internet to design their works without studying the images in detail or doing any thumbnail sketches by themselves before executing their works. It was observed that the students preferred using the computer in designing to going by the manual way to execute their works. It is recommended that Graphic Design teachers should use the multi- sensory approach of teaching. Also government should equip the visual art department with computers and liaise with Ghana Education Service to organize workshops and seminars for Visual Arts teachers to be abreast with technological advancements to enhance their teaching so that they can equip their students with the skills and knowledge they need for effective design works.

ACKNOWLEDGEMENTS

My greatest appreciation goes to the LORD God Almighty, who helped me in coming up with this project. My sincere thanks also go to Nana Afia Opoku-Asare, Mrs., who supervised this project. I am most grateful for her patience and valuable comments that helped in the successful outcome of this project.

I thank my husband Desmond Bright Oppon, my children and my mother who helped me in diverse ways for the completion of this work, God richly bless them.

Special thanks also go to the rest of my family members who supported me in all the ways they could to make this project successful. I thank all friends who supported me in various ways; may God richly bless them.

AUGUST 2012

E. J.

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ABBREVIATIONS

SHS :	Senior High School
KNUST:	Kwame Nkrumah University of Science and Technology
CRDD:	Curriculum Research and Development Division
GES:	Ghana Education Service
ICT:	Information and Communication Technology
UCC:	University of Cape Coast
UEW:	University of Education Winneba
WASSCE:	West African Senior Secondary Certificate Examination
NET.ART:	Is an internet phenomenon that uses the internet as a medium, and has been created specifically for viewing on the World Wide Web.

CHAPTER ONE

INTRODUCTION

1.1 Overview

The chapter provides the background of the study, the problem being studied and the objectives the study, research questions, the scope of the study, and the importance of the study.

1.2 Background to the Study

The use of computers in the 21st Century has become one of the most dominant issues and challenges facing diverse communities, businesses, educational institutions, the Ghanaian society and the world as a whole. Amidst the euphoria about the power and potential of computer technology to transform the way we learn, the ways we communicate, and the ways society functions, there is increasing debate about who has access to technology, and the consequence of access to full participation in Ghanaian society. This debate has particular implications for Ghanaian public schools.

The use of computer technology and the internet in education, especially the teaching and learning process, has resulted in academic improvements globally (Butzin 2000, Sivin-Kachala & Bialo 2000). As a result, Cawthera (2003) propounds that there is concern for those who have little or no experience with computer technology, most of whom are in the developing countries such as Ghana. An examination of the use of computer technology in Ghanaian schools, according to Parthermore (2003), indicates that computers and the internet for educational purposes are used more in urban than rural Senior High Schools. This lack of access to computer technology is symbolic of

the vast inequalities that exist across communities and classrooms in urban and rural settings more generally.

For the art teacher who teaches computer graphics and whose curriculum includes art criticism (the description, interpretation, and judgment of artwork), art history and aesthetics in addition to studio activities, including net.art in such a way that encourages critical thinking and new perspectives on art, as well as the Internet, the use of computer is a daunting challenge. Not only does the art teacher need to acquire the computer skills needed to assist students in creating net.art, the art teacher also needs a good understanding of the cultural, technological and theoretical underpinnings of much existing net. art in order to help students comprehend and appreciate it.

The role of computers in education has become important in recent times. Education through computer aided learning has simplified education. There are several uses of computers which include word processing, internet, digital video, audio composition and desktop publishing. In visual art education, software as well as hardware are used in executing art works in most of the disciplines. In Graphic Design, which is one of the disciplines in Visual Arts software that are used in Graphic Design are Corel Draw, Adobe Illustrator, Adobe Photoshop, Paint Box, Xara – 3D Effect, Quark – Xpress, Corel Graphic Suite, among others.

A computer executes software instructions through its hardware which are the physical components that are relied on to create digital works. There are the input hardware, for example, mouse and keyboard as well as output hardware that includes

monitors, removable storage, printers, scanners, keyboard, and mouse. Software are the programmes and procedures required to enable a computer to perform a specific task.

According to the Curriculum Research Development Division of Ghana Education Service Teaching Syllabus for Graphic Design (2008), Graphic Design teachers are to introduce students to Corel Draw and any other software such as Paint Box, Photoshop, Illustrator, and Quak – Xpress to enable the students use the computer to design and produce visual communication media items such as stickers, posters, trademarks and labels. It is important therefore that teachers know how to use the computer in order to help their students well.

1.3 Statement of the Problem

Both Information and Communication Technology (ICT) and Graphic Design are part of the Visual Arts curriculum. ICT is compulsory in the Senior High Schools. However, there is a problem with the teaching of Graphic Design with computers. This is largely attributed to the fact that no in–service training was conducted for Visual Arts teachers before or after the introduction of computer usage into the Senior High School Graphic Design curriculum to upgrade the knowledge and skills of the teachers to enable them teach the subject effectively. A survey conducted by the researcher in some schools in the Central Region indicates that some Graphic Design teachers are not computer literate and thus they have no skills and knowledge to teach Graphic design using computers. Another category of the Graphic design teachers are computer literate but they have no computers at all to teach their specialized subject in the schools. The third category of teachers are computer literate and are using their

1.6 Delimitations

The study is limited to four schools in the Central Region of Ghana namely: Mfantsipim, Mfantsiman, Wesley Girls and Holy Child Senior High Schools. Also the study focuses on how Visual Arts teachers use the computers available in the four schools in teaching Graphic Design.

1.7 Limitations

The researcher encountered difficulties as some Visual Arts teachers in the selected schools were reluctant in offering assistance to the researcher in the observation process hence, data gathered from observation were scanty. Again, some of the teachers were skeptical and also not comfortable with the information they gave going out of the school.

1.8 Definition of Terms

The meanings of some technical terms used in this report are explained to facilitate easy understanding of the content.

Graphic Design: The art of combining pictures, words, and decorations in making of books, magazines and advertisements.

Computer: A programmable, multiuse machine that accepts data,raw facts and figures, and processes these into information that can be used, such as summaries, totals or reports.

Computer Software: Also called computer programmes, they are instructions that cause the computer to work.

Hardware: Objects that can actually be touched on the computer such as the systems unit, display screens, keyboard, mouse, disk drives and printers.

Printer: A device that prints text or illustrations on paper.

1.9 Importance of the Study

The study will:

- Help Graphic Design teachers to identify the strengths and weaknesses of using the computer to teach Graphic Design in the Senior High Schools and to find applicable solution to the problems.
- Serve as a resource and a reference material for future researchers.

1.10 Organization of the rest of the Text

The research write up is organized into five chapters. Chapter One contains the background to the study, the statement of the problem, objectives and the importance of the research. It also defines some of the technical terms used to enable readers to understand the text. Chapter Two reviews literature related to the topic. The discussion includes definition of key issues on the topic, as well as classification and evaluation of information that other scholars and researchers have written on the topic. Chapter Three expounds on the methodology used to gather data for the research. This has to do with the research design, library research, and the population from which respondents were sampled. It also indicates the sample used and sampling procedure, data gathering instruments used and how they were administered in the field. Chapter Four dilates on the presentation and analysis of the data gathered. Chapter Five summaries of major conclusions and recommendations are made based on findings of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Overview

The chapter reviews literature related to the study. It provides an overview of literature derived from various literary materials that are related to the topic under study. The purpose was to ascertain the relevant aspects of the topic that had already exists. This section of the report has been organized according to the sub-topics outlined for the thesis.

2.2 The Introduction of Computers

The advent of computers and the internet indicated a new phase in instructional technology. By the mid 1980s, the internet had gained acceptance in business and was finding its way into education in the United States (McChesney, 1999) as cited in Boateng (2006). In addition to the internet, instructional materials such as CD-ROMs and other computer associated programmes have been introduced and are widely used in education. Computer mediated instruction and programmes have introduced a level of interactivity and immediate response that most instructional television and radios do not offer. Walter (1995) states that until 1940, a computer referred to a person who computes and after 1940, to' gigantic calculators' that gradually replaced human computers. Walter sums up a computer as any machine that can be seen to do useful thinking.

According to Evans (2011), a computer is a machine that can: 1) Accept input. Input could be entered by a human typing at a keyboard, received over a network, or provided automatically by sensors attached to the computer. 2) Execute a mechanical

procedure, that is, a procedure where each step can be executed without any thought.

3) Produce output. Output could be data displayed to a human, but it could also be anything that affects the world outside the computer such as electrical signals that control how a device operates.

Dunn (1986) confirms that "computers are becoming increasingly important in our lives because of their increased versatility and reliability. Computers can be used in other ways such as producing typed text for use in a report; as teaching aid using craft design technology to help with drawing and design work. Dunn however, cautions that it is essential to use a well written programme to ensure that the computer copes with the instructions given. It is evident that the computer can be simply defined as a machine which carries out operations based on the data it is fed with (input), and gives back the result of the operation (output) in another form that can be understood and used.

2.3 Uses of Computers

Computers exist in a wide range of forms, and thousands of computers are hidden in devices we use every day but do not think of as computers such as cars, phones, TVs, microwave ovens, and access cards. Personal computers (PCs), also called microcomputers, are the most popular type of computer in use today. The PC is a small-sized, relatively inexpensive computer designed for an individual user. Today, the world of PCs is basically divided between IBM-compatible and Macintosh-compatible machines, named after the two computer manufacturers. Computers may be called 'desktop' computers, which stay on the desk, or 'laptop' computers, which are lightweight and portable. Organisations and individuals use PCs for a wide range

of tasks, including word processing, accounting, desktop publishing, preparation and delivery of presentations, organisation of spreadsheets and database management (International Records Management Trust, 1999).

Computer programmes or applications exist to aid every level of education, from programmes that teach simple addition or sentence construction to programmes that teach advanced calculus. Educators use computers to track grades and communicate with students; with computer- controlled projection units, they can add graphics, sound and animation to their communications (Webopedia, 2004).

2.4 The Use of Computers in Ghanaian Educational Institutions

According to Parthemore (2003), after the review of education and recommendations to include computers in the curriculum, the first computer technology project launched in Ghana was School Net. School Net was established and launched in March 1996 in secondary schools in Ghana. The objective of the School Net project was to create and provide current information to teachers and students through information and communications technologies (ICTs), primarily the internet. Although the intentions of the School Net project were to promote the use of ICTs in secondary schools across Ghana, it was limited to 50 schools that had electricity and telephone connectivity, which were primarily elite urban schools. The schools were equipped with computer labs with fully functional computers and connections to the internet.

According to the School Net project, teachers and students were provided with basic computer training that covered e-mail, the internet, how to integrate technology in the

curriculum and how to design collaborative projects. Students were permitted to use the computers after school hours on collaborative projects. The School Net project however, was bedeviled with some challenges, including poor communication infrastructure, lack of technology experts for effective implementation, telephone connectivity and internet access, among others. This reveals that computer and ICT education was given to few teachers and students in the selected schools and not all the schools in Ghana (Parthermore, 2003) to enable country-wide use as a tool for teaching and learning.

2.5 Challenges in Computer Education

In discussing the challenges of computer usage in the Nigerian secondary school classrooms, Tayo, Ajibade and Ojedokun (2009) say that over the years the costs of computers have been high. This has been a deterrent to the adoption of computers for instructional purposes in most Nigerian secondary schools. Coupled with this is the exorbitant price of software; it follows the same pattern as that for the hardware. Where attempts were made to purchase computers for instructional purposes, the costs of maintenance and replacement are unavoidable. Another impediment that the authors identified was the syndrome of resistance to change among the Nigerian teachers who viewed the use of computer for education as a means of displacing them from their cherished job rather than being used as an instructional material to enrich teaching and learning. The teachers also regarded the use of computers as an increase in their tasks in the classroom without adequate compensation, hence the prayer for premature death for computer education.

Closely related to resistance to change is the problem of poor technological development in Nigeria. Tayo et al (2009) lament the lack of instructional facilities which militate against computer education in schools. This is because facilities such as air conditioning, appropriate computer environment and buildings were not provided. Furthermore, electricity, which is the primary source of power supply to the computer, was not stable. They also mention epileptic power supply and nonstop power surges that caused damages to the computer system. Besides, the cost of generators which could provide alternative power to use the computers were skyrocketing. Coupled with this, was the exorbitant cost of maintaining and using the computers for problem solving and information storage. These are problems which could deter anyone from using computers in the classroom.

Dexter, Anderson and Becker (1999) found that using technology in the classroom range along a continuum of instructional styles from instruction to construction. In instruction, they explain that teachers conduct classes in a teacher-centered way, they impart facts and procedural skills to students and integrate technology as a complement to this style, employing it mainly for drill and practice. In construction or student-centered classrooms, teachers use tools, software and information technologies to allow students to work in active ways. The technology supports the active learning; it becomes a tool with which the students may construct knowledge. Dexter et al indicate that teacher's predisposition to the change in technology is a factor that speeds up or slows down the inevitable reaction that occurs when technology is present as a catalyst of reform.

Educational technology "popular" K12-oriented magazines are more technology-specific in their recommendations about how to operationalize technology as a catalyst of educational reform. They emphasize that providing access, technical support, and training is the key to successful educational reform via technology. Largely absent in this discussion of teachers changing their instructional style so that the technology acts as a catalyst in that process is how the teacher thinks and learns, which many contend is the basis of a teacher's instructional style.

According to McIlroy (2009), the graphic design industry, like all other sectors of the broad publishing industry, is facing huge challenges and undergoing great changes because of electronic media. Some abhor and fear those changes; others embrace them and thrive on the new world that awaits them, just beginning to explore what will constitute effective graphic design in this emerging digital media era is being explored while the rules continue to be written. This suggests that there are numerous challenges confronting the use of computer in the teaching and learning process as far as it introduction is concerned. The challenges starts from the high cost of acquiring a computer and its accessories, its maintenance and repair couple with erratic power supply and attitude of personnel handling of the instructional skills for the Graphic Design students to benefit from the teachers and to be abreast with technology.

2.6 How Classroom Teachers can Incorporate Computers in their Teaching

According to Vahlensieck (2005), the evolution of technology and the introduction of the Internet have changed our workplace, our schools and our society. Not since the spread of modern industrialization has our world changed so quickly in such a short period of time. As educators, Vahlensieck cautions that we must not only react to this

change but be pro-active in order to prepare our students for the emerging knowledge-based workforce and the challenges of a global economy. As a teacher, Vahlensieck believes that this requires the active use of new technology tools in the classroom. Students are naturally enthusiastic about new technology so finding ways to channel that energy into learning is a great opportunity for all teachers. However, changing familiar teaching methods can be a challenge. Vahlensieck (2005) sees the emerging technology available for teachers as a way to ignite students' curiosity and make teaching materials more engaging and effective. From Vahlensieck's findings, teachers can incorporate computers in their classroom using the following methods:

Presentation Media

The simplest and most inexpensive way to include the computer during a lesson is to gather students around the teacher's computer screen. Obviously, this approach is limited to the number of students that can see the screen. Other options are the video projector, hardware video network and classroom management software.

The Video Projector

With the help of a video projector (similar to a slide projector), a teacher can project his or her screen to the front of the classroom. Unless the projector has a high intensity light, the teacher must dim the lights in order that all the students can see the screen. The challenge is that projectors, particularly those with high intensity lights, are still very expensive. In addition, the teacher cannot monitor the student computers or direct the students' attention to the presentation, which is only possible with the hardware video network.

The Hardware Video Network

The hardware video network can transmit the teacher's screen over a cable to all the computer screens in the classroom; the teacher does not need to dim the lights for students to see the screen. However, this hardware solution is not easily moved between classrooms and its implementation costs can be high.

Classroom Management Software

Classroom management software transfers the contents of the teacher's computer screen to the student computers. Requirements for this software include an existing network, which is generally already present in school computer labs, and a high-speed connection (preferably 100 Mbps). Unlike the hardware video network, there is no need for additional cables or wires. Classroom management software has the further advantage that it is independent of the light quality and the arrangement of the student computers. Students who sit in the back of the class have the same view as those sitting in the front and the teacher can use additional software features for an interactive lesson which goes beyond simple screen sharing. This software represents one of the most modern and, at the same time, extremely low-priced solutions and is the preferred method. Today's standard for classroom management software is Vision from Geneva Logic. The practical example in this brochure uses this program and the additional tool, Pointer.

2.7 The Need for Equipping Teachers with Computer Skills

Improving the quality of education through the diversification of contents and methods and promoting experimentation, innovation, the diffusion and sharing of information and best practices as well as policy dialogue are UNESCO's strategic

objectives in education (UNESCO, 2002). Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills they need in the 21st century. The 1998 UNESCO World Education Report on Teachers and Teaching in a Changing World describes the radical implications ICTs have for conventional teaching and learning. It predicts the transformation of the teaching-learning process and the way teachers and learners gain access to knowledge and information.

With the emerging new technologies, the teaching profession is evolving from an emphasis on teacher-centred, lecture-based instruction to student-centred, interactive learning environments. Designing and implementing successful ICT-enabled teacher education programmes is the key to fundamental, wide-ranging educational reforms. Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change. For education to reap the full benefits of ICTs in learning, it is essential that pre- and in-service teachers are able to effectively use these new tools for learning. Teacher education institutions and programmes must therefore provide the leadership for pre- and in-service teachers and model the new pedagogies and tools for learning.

UNESCO (2002) states that to effectively harness the power of the new information and communication technologies (ICTs) to improve learning, the following essential conditions must be met: 1) Students and teachers must have sufficient access to digital technologies and the Internet in their classrooms, schools, and teacher education institutions. 2) High quality, meaningful, and culturally responsive digital content must be available for teachers and learners. 3) Teachers must have the knowledge and

skills to use the new digital tools and resources to help all students achieve high academic standards. 4) Teacher education institutions are faced with the challenge of preparing a new generation of teachers to effectively use the new learning tools in their teaching practices. For many teacher education programmes, this daunting task requires the acquisition of new resources, expertise and careful planning.

In approaching this task UNESCO (2002) explains it is helpful to understand the following:

- The impact of technology on global society and the implications for education.
- The extensive knowledge that has been generated about how people learn and what this means for creating more effective and engaging student centered learning environments.
- The stages of teacher development and the levels of adoption of ICTs by teachers.
- The critical importance of context, culture, leadership and vision, lifelong learning, and the change process in planning for the integration of technology into teacher education.
- The ICT competencies required of teachers related to content, pedagogy, technical issues, social issues, collaboration, and networking. The importance of developing standards to guide implementation of ICTs in teacher education.
- The essential conditions for successful integration of ICTs into teacher education.
- Important strategies to consider in planning for the infusion of ICTs in teacher education and managing the change process.

According to UNESCO (2002), the challenge confronting educational systems is how to transform the curriculum and teaching-learning process to provide students with the skills to function effectively in this dynamic, information-rich, and continuously changing environment. Education is at the confluence of powerful and rapidly shifting educational, technological and political forces that will shape the structure of educational systems across the globe for the remainder of this century. Many countries are engaged in a number of efforts to effect changes in the teaching/ learning process to prepare students for information and technology based society. The UNESCO World Education Report (1998) notes that the new technologies challenge traditional conceptions of both teaching and learning and, by reconfiguring how teachers and learners gain access to knowledge, have the potential to transform teaching and learning processes.

ICTs provide an array of powerful tools that may help in transforming the present isolated, teacher centered and text-bound classrooms into rich, student-focused, interactive knowledge environments. To meet these challenges schools must embrace the new technologies and appropriate the new ICT tools for learning and must also move toward the goal of transforming the traditional paradigm of learning. To accomplish this goal requires both a change in the traditional view of the learning process and an understanding of how the new digital technologies can create new learning environments in which students are engaged learners, able to take greater responsibility for their own learning and constructing their own knowledge.

2.8 What is Graphic Design?

Graphic design, according to Bertoline, Wiebe, Muller and Nasman (1995) as cited in Puwurayire (2010), is a visual communication language incorporating text, image and numeric information. Graphics include everything from the more traditional type of engineering drawings to sophisticated computer models, such as the solid of mechanical part or the display in the goggles of a virtual reality system and all follow the rules or laws of visual science. The definition shows that graphics deal with information that the eye conveys to the individual and that such information is made up of text, numbers and drawings. Bertoline et al (1995:9) add that graphics play a very important role in all areas of engineering, for documentation, communications, design, analysis and modeling and that each of the activities is so slanted towards graphic communications.

Singer (1998) as cited in Puwurayire (2010) adds that graphic design is a creative process that combines art and technology to communicate ideas. The designer works with a variety of communication tools in order to convey a message from a client to a particular audience. The main tools are image and typography. Gilbert (1992:242) points out that "All arts have to do with communication, but this is uniquely true of graphic design". Gilbert underlines the view that the goal of graphic design is to communicate a specific message and the effectiveness of a design is measured by how well the message is conveyed. Gilbert's contention is that if it can be demonstrated that the public received the message because the product sold well or the company's stock went up or the traveler found the right service, then the designer has achieved the maximum goal. It is because of this that graphic design was for a long time known as 'commercial art' even though not all graphic design involves selling. For this

reason, Gilbert says the term graphic design is more inclusive and describes more accurately what artists in the field really do.

Gilbert (1992) also says graphic designers create visual images by combining words and pictures to communicate a message quickly and effectively, they design books and packages and advertisements, they devise the trademarks and symbols (logos) that construct special corporate identities for firms doing business around the world, they invent symbols that have the same meaning to people who speak different, languages and provide the colourful images that introduce television programmes and movies. Gilbert's (1992) explanation makes graphic design a powerful tool in the communication of information through designing of books, packages, logos as well as images for television and film productions. The symbols that the graphic designer makes are conventional and can be understood by people all over the world irrespective of the language spoken.

Based on this discussion, it can be concluded that graphic design is a process of working with lettering, lines, illustration or images to make representations for understandable visual communication. It also includes the production of postage stamps, trademarks, billboards and television commercials (advertisements), the designing of brochures, packages, posters and printing of books and magazines. Etching, engraving, block printing as well as other forms of printing such as silkscreen printing are all works of graphics.

Duchamp (2001) points out that Graphic Design is also called "visual communications," a term that emphasizes its function of giving form such as the

design of a book, advertisement, logo, or web site - to information. An important part of the designer's task is to combine visual and verbal elements into an ordered and effective whole. Graphic Design is therefore a collaborative discipline, writers produce words and photographers and illustrators create images that the designer incorporates into a complete visual communication. Graphic design embodies different forms of Art. This is expressed by Johnston (1998) who says Graphic designers work with drawn, painted, photographed, or computer-generated images (pictures), but they also design the letterforms that make up various typefaces found in movie credits and TV ads; in books, magazines, and menus; and even on computer screens.

Design has no subject matter of its own, but instead serves as a channel for the expression of an interrelationship between multiple and sometimes abstract ideas and elements. It is a multifaceted discipline that is practiced by individuals who understand this nexus. Design is 'integrative' in that by its lack of specific subject matter, it has the potential to connect many disciplines (Swanson, 1997). Many will agree with Mortimer (2003) when he argues that graphic design is all around us in our society and it is what drives advertising, attracts us to brands and makes public settings enjoyable or "hard on the eyes". The impact of graphic design is presently felt in education, health and communication and, in fact, on the total life and life style of societies. Advances in art and technology depend largely on graphic design. Consequently, graphic design has made a positive impact on the economic development of nations and improved the quality of life in most parts of the world (CRDD, 2008).

According to Jay (1996), the evolution of graphic design as a practice and profession has been closely bound to technological innovations, societal needs and the visual imagination of practitioners. He adds that graphic design has been practiced in various forms throughout history. According to him, graphic design dates back to manuscripts in ancient China, Egypt, and Greece. As printing and book production developed in the 15th century, advances in graphic design developed alongside over subsequent centuries, with compositors or typesetters often designing pages as they set the type. According to Hollis (2001), graphic design has the ability to perform at least one of three basic functions. The most elementary role of graphic imagery is to use design as a means of identification: "to say what something is and where it came from." To illustrate this point, Hollis (2001) uses the example of a footprint and how that icon relays an enormous amount of information, what type of creature made the impression, how large it is in comparison to others and what direction it was traveling.

The second role of design is to inform. Using the example of the footprint, if a graphic artist were to illustrate the exact size and shape of the footprint and disseminate that likeness to others, this would be considered an exercise in informational design. The third role according to Hollis (2001) is to "present and promote" where it aims to catch the eye and make its message memorable. Again, in reference to the image of the footprint, other carefully selected images and graphic elements might be used to convey a stronger message. For instance, a depiction of the creature's footprint positioned next to a photograph of a campsite left in disarray might suggest to campers to keep their food storage secure and a watchful eye out for bears. The implication is that graphic design can be taught and learned as a body of knowledge and also as a skill.

Learning is based on the experience one acquires through interaction with the environment. Students' perception of their learning environment is related to the approach to learning they adopt. It is known that deeper approaches to learning are related to higher quality learning outcomes. Also, a deep approach is associated with students' perceptions of high quality teaching, independence, awareness of goals and standards and active engagement in the academic environment. Here the teacher act as a guide to direct the student to do a specific design in relation to the objective for the student to upgrade the skills and knowledge already acquired.

2.9 Why Computer Graphics?

According to Rieber (2000), computer learning environments pose particularly exciting and demanding situations for visual communication. The range and diversity of visualization that computers offer are unprecedented. The last 10 years have demonstrated marked increases in sophistication in the graphics produced and displayed on computers. The principal reason to highlight the computer in the design and development of instructional graphics is the computer's increasing range, versatility, and flexibility of graphic design. There is almost no graphic design need that the computer cannot serve. Instructionally speaking, the number of creative strategies and applications that simply would not be possible or practical without computer technology is increasing.

The digital divide between advanced and developing countries, particularly in Africa, is well established. Like most African countries, Nigeria as a nation came late and is still slow in the use of ICT in almost all sectors of the nation's life (Yusuf, 2005).

Accordingly, the most common problems associated with effective use of computer in teaching Graphic Design are:

1. Lack of qualified personnel. Most institutions lack computer literate teachers and ICT experts that would support and manage the Internet connectivity and application of computing in the teaching learning process (Yusuf, 2005).

2. Cost of equipment. The cost of equipment in a country like Ghana with a battered economy and seriously devalued currency is enormous. However, it should be noted that the problem might not be the funds nor the technology but rather the will on the part of government and the governors of education (Itegboje & Okubote, 2002).

3. Management's attitudes. The attitudes of various managements in and outside institutions towards the development of ICT related facilities such as the Internet and procurement of computers is rather slow in some instances, and in others there are no aids or support by the government at all (Albirini, 2006).

4. Inconsistent electric power supply in most of the parts of the country and also inadequate telephone lines particularly in the rural areas (Yusuf, 2005).

5. Non-inclusion of ICT programmes in teachers' training curricula and at the basic levels of Education (Yusuf, 2005).

6. Bureaucracy and delay at the Ministry of Education in providing the needed financial and technical resources to provide media in educational institutions. This leads to lack of sufficient materials to use (Agun and Imogie, 1988).

7. Lack of adequate personnel to train teachers to use media in schools (Agun and Imogie, 1988).

8. Lack of enough patronage from heads and supervisors of educational institutions for media usage (Agun and Imogie, 1988).

9. The impression that new technology would replace teachers makes some teachers to see instructional media as threats (Agun and Imogie, 1988).

2.10 Computer Skills Needed by Graphic Design Teachers

Many school leaders still perceive the lack of ICT-related knowledge of teachers as a major obstacle to the realisation of their ICT-related goals (Pelgrum, 2002). In describing the kind of skills teachers may need when integrating ICT in new student-centred learning approaches, Pelgrum (2002) points out that this depends very much on the circumstances of the particular schools and personal teaching styles. One size fits all does not usually work (Davis, Preston, and Sahin, 2009). The UNESCO's ICT competency standards for teachers (2008), therefore go further to describe three approaches: technological literacy, knowledge deepening, and knowledge creation. These approaches are seen as part of a development continuum, and each approach has different implications for education reform and improvement, plus different implications for changes in the components of the education system which are pedagogy, teacher practice and professional development, curriculum and assessment, and school organisation and administration.

The UNESCO indicates that ICT plays a unique but complementary role in each of these approaches, with new technologies requiring new teacher roles, new pedagogies, and new strands to teacher education. It notes that the successful integration of ICT into the classroom depends on the ability of teachers to structure their learning environments in non-traditional ways to merge technology with new pedagogies. This requires a very different set of classroom management skills to be developed, together with innovative ways of using technology to enhance learning

and encourage technology literacy, knowledge deepening and knowledge creation. At the knowledge creation end of the continuum, the curriculum goes beyond a focus on subject knowledge to explicitly include 21st century skills that are needed to construct new knowledge and engage in lifelong learning: the ability to collaborate, communicate, create, innovate and think critically.

Teacher development is seen as a crucial component here. It ideally coordinates teachers' sophisticated professional skills with the pervasive use of technology. This in turn supports students who are creating knowledge products, and who are engaged in planning and managing their own learning goals in a school that is a continuously improving, learning organisation. Teachers model the learning process for students, and serve as model learners through their own ongoing professional development, both individually and collaboratively.

According to UNESCO (2008), bringing ICT into the classroom can have a considerable impact on the practice of teachers, in particular when ICT is conceptualised as a tool that supports a real change in the pedagogical approach. Not only do teachers need to change their roles and class organisation, they also need to invest energy in themselves and their students in preparing, introducing and managing new learning arrangements. Some need to acquire basic ICT skills. Teachers also need to determine which applications have added value for learning in their subject area. While doing this they need to be aware that this is not a one-time activity, as the information environment is continuously changing. Perhaps the most important and challenging issue for teachers is determining which basic subject, social and management skills students need to function in such environments. The change can

impact on assessment tasks, with new learning environments moving away from summative methods of assessment to formative approaches and open-ended products (such as reports and research papers created by groups of students). These different aspects are time consuming, and result in an increased teacher workload.

2.11 The Senior High School Graphic Design Syllabus in Ghana

Graphic design forms an integral part of the Visual Arts curriculum pursued in Ghanaian Senior High Schools. The Senior High School (SHS) graphic design syllabus focuses on developing skills in the following areas: drawing and illustration, poster designing and greeting cards, lettering, sign writing and calligraphy, layout, designing and construction of articles with paper, print-making, packaging designing, book craft, creating images and designing visual communication items with the computer (CRDD Teaching Syllabus for Graphic Design, 2008). Table 2.1 shows a section of the SHS Graphic Design syllabus followed in Ghana.

Table 2.1: A section of the Graphic Design syllabus

SENIOR HIGH SCHOOL – YEAR 3

SECTION SIX

COMPUTER AS A GRAPHIC DESIGN TOOL

General Objectives: The student will:

1. develop computer skills in accessing information, ideas and designing graphic communication media.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	
UNIT 1 **INTRODUCTION TO COREL DRAW AND ANY OTHER SOFTWARE** **- Paint box, Photoshop Illustrator Quak-xpres, etc**	The student will be able to: 6.1.1 use the computer to design visual communication media items.	Computer aided work. Note:- Icons are small pictures or symbols on a computer screen that you point to and click on with a mouse to give the computer an instruction. i) creating images with the computer ii) designing visual communication items iii) accessing and presenting information	Guide students to identify various icons of the software Assists students to create images using the icons of the software Students to use the computer to design greetings cards, posters, etc. Students display their works and discuss. **NOTE:** The computer with its accessories and other ICT gadgets can be used as tools to enhance the teaching and learning of graphic design and performing tasks in eg. drawing, designing, painting, layout designing, composure, illustration, cartooning, animation, etc.	S -

It is noticed from the oval notation in Table 2.1 that technology plays a vital role in the present evolution of Graphic Design. It is therefore incumbent to inculcate technology into the teaching and learning of Graphic Design at all levels of schools education. A review of the syllabus that guides teaching and learning of Graphic Design in Senior High schools reveals compliance with modern technology where computer software are required for designing visual communication items (Ministry of Education Graphic Design Teaching Syllabus, 2008).

2.12 Teaching

Teaching is an educational activity (Kyriacou, 1995). The World Book Encyclopedia (2001) explains teaching as "helping other people learn". This makes teaching one of the most important ways that enable people to relate to one another as far as knowledge and skills acquisition are concerned. Teaching helps people acquire the knowledge they need to become responsible citizens, to earn a living and to lead useful rewarding lives. Teaching is also said to be a vehicle for transferring knowledge from one generation to next. Teaching is not a monologue but a dialogue in which one partner is vocal, but the other partner may, by simple participation in the form of a query, partake in the dialogue. According to Bruner (1994), teaching is the ability to impart knowledge to a group of people or it is to show the way to something or a process. Agun and Imogie (1988) also explain teaching as any interpersonal influence which may be exerted by somebody and which is aimed at changing the ways and behaviour of an individual. Teaching therefore concerns the activity of facilitating learning. So far as consideration of knowledge transfer is undoubtedly important, it is valuable in relation to the extent of quality of learning that is triggered.

"Teaching is the activity of facilitating learning" (Felipa, 2003, p.13). This definition is in line with Rabia's (2004) view that teaching is the transfer of knowledge from a teacher to a learner. Felipa is of the view that if teaching activities do not result in learning, there has not been effective teaching. According to Felipa (2003), the quality of teaching can be valued based on the quality of learning it triggers and concludes that if the learning is lacking in quality, the teaching is unsuccessful to that extent. Mortimer (2003) agrees with Felipa that a teacher is the facilitator of learning. In line with the idea, Felipa makes reference to Socrates' saying which compares the art of

teaching to the ancient craft of the midwife and explains that just as the midwife assists the body to give birth to new life, so the teacher assists the mind to deliver itself of ideas, knowledge, and understanding. The essential notion here, according to Socrates, is that teaching is a humble, helping art. One can therefore conclude that if all other things are available but the physical resources for learning are not conducive enough, learning will be negatively affected. This means teaching and learning is more likely to be effective in schools that are blessed with good physical resources (infrastructure) and human resources (qualified teachers).

According to Wilson and Peterson (2006), widespread belief persists that teaching is a straightforward enterprise. Using textbooks, teachers follow each page, directing students in what they should read and do. If the materials are good, and everyone behaves himself or herself, so the logic goes, students will learn. That is simply not true. Good teachers must think hard about what they want their students to learn, contemplating countless questions like: What is interesting about this subject for my students? What ideas and concepts are particularly difficult? What are the different means I can use to help students connect with these ideas? What do my students already know that might help? What do they believe that might get in the way? What time of the day is it? The year? How can I use my students' diverse backgrounds to enhance the curriculum? How can I create a community of learners who can support the individual and social construction of knowledge? Answering any and all of these questions entails theories and knowledge about learners and learning. When teachers decide what to teach, they must find ways to emphasize both concepts and facts and modes of inquiry that is, the nature of knowledge students' need to acquire. When teachers consider what students will find interesting or difficult, they need ways to

access students' minds; they need to create communities among their students that is, learners as active constructors of knowledge.

From Schoenfeld (1998), teaching is a dynamic act, responsive to what happens in interaction with the students. The teacher is constantly monitoring what is taking place during instruction and acting on the basis of perceptions of what is taking place. What a teacher might do in any situation is, fundamentally shaped by the set of intellectual resources the teacher can bring to that situation that is, the teacher's knowledge base. This large category includes knowledge of the students, of the context, and of the content. It includes a variety of general and content-specific classroom and interactive routines. Central among these are 'action plans' at various levels of grain size that can be used to achieve various goals like the expectation of using a standard routine for collecting homework, an interactive dialogue intended to engage students with a particular idea, or a well rehearsed 'mini-lecture' on a particular topic. The kinds of resources the teacher can bring to bear, and how such resources are accessed, are major issues for teaching and learning.

2.12.1 Teaching Strategies

To effectively impart the knowledge and skills of graphic designing to a learner, teaching and learning strategies must be examined on purpose to identify those that will aid understanding and quicken skills acquisition in students (Sachs, 1999). Various instructional strategies are employed in the classroom when imparting knowledge and skills to a learner. The teaching of graphic design is no exception to this. Some of the teaching strategies are examined in the following sections.

Demonstration Method

According to Training Curriculum and Family Nutrition Program (2001), demonstration is a teaching method used with both large and small groups. Demonstrations become more effective when verbalization accompanies them. For example, in a half demonstration-half lecture, an explanation accompanies the actions performed. It is a generally accepted learning theory that the greater the degree of active participation and sensory involvement by the learner, the more effective learning will be. Demonstrations are an effective method for teaching concepts and problem-solving procedures. A good demonstration should lead to increased attentiveness, learning, and performance.

The Project Method

Baidoo (2001) explains that the project method is a form of teaching-learning process that consists of students working on a particular task with relatively little direct interaction with the teacher. It is one of the problem solving methods, which generates activity for the development of the cognitive, affective and manipulative skills of pupils. This method differs a little from other problem-solving methods because it usually results in creating concrete or tangible objects like a sculpture piece, ceramic wares, dresses etc, for various purposes. This method is useful especially where much time is needed for a particular activity.

Project method could be individually or group organized. It is good to use the group type for the less able students to adjust and contribute since the endowed pupils will prop up their effects (Baidoo, 2001). In this method, pupils are free to use their ingenuity with the teacher only coming in to offer help as and when it is necessary. It gives learners the opportunity to experience problems in real life situations and learn

how to solve them. It inculcates in pupils virtues like tolerance, independent thinking, resourcefulness, creativity, leadership qualities and obedience. It provides a great opportunity for low achievers to participate in practical learning situations.

Knowledge and experience acquired in other subject areas are integrated or applied to solve problems in practical ways; for example in Graphic Design, knowledge from Mathematics is used in enlarging and reducing a picture using the grid whiles knowledge from drawing is used in designing mathematics objects (Baidoo, 2001). Learners are motivated by the satisfaction that they have been able to produce concrete objects for their use. It makes them aware of the nobleness in creativity. This method enhances problem solving attitudes in that it makes learners think critically, plan, look for information, formulate intelligent guesses and arrive at generalization (solution). In other words, it pushes into the background rote learning.

On the other hand, there is the likelihood that learners may be given too much freedom by lazy teachers under the pretext of allowing independent thinking. This will make pupils commit and perpetuate mistakes. It must be noted that the teacher is a facilitator and therefore proper supervision should be conducted to get every learner encouraged to execute the work. There should be room for discussion of important facts and principles at the beginning and appreciation after the work (Baidoo, 2001).

Discovery Method

Man by nature is curious and through this man seeks through exploration to solve his problems and enlarge his world. It is this exploration out of curiosity that leads to discovery, hence creativity. Discovery method as used in teaching and learning

process could be described as the method in which the students are not presented with subject matter in its final form but are rather required to organize it themselves to find solutions to problems (Baidoo, 2001). In this method, there is a process of self-learning and the learners generate ideas and concepts with very little intervention from the teacher. In other words, this method can be described as research or enquiry method. It sets the learners to investigate a problem and come out with their own findings. Learners could for instance be assigned to explore and find a clay deposit in their environment by mining and testing.

Baidoo (2001) describes the three main types of the discovery method as 1) Pure Discovery in which students are given (or can themselves suggest) a topic or problem to work on and are then freed to explore the topic with a minimum of guidelines or suggestions by the teacher. Learners mostly plan strategies for acquiring information or solving the problem. 2) Guide Discovery where learners are given a topic or problem and given materials and a suggested procedure to follow so that they arrive at conclusions by themselves. 3) Guide learning demands that the teacher leads the student through a carefully planned sequence of activities to arrive at the learning object.

Discussion Method

Baidoo (2001) states that in broad terms, when two or more people interact with each other verbally we say that they are involved in a discussion. In the classroom, discussion of one type or another often takes place; sometimes it is deliberate and at other times, it is spontaneous. From this point of view, the discussion method can be described as an activity in which learners talk together in order to share information

about a topic or problem to seek possible evidence of a solution to a problem. A discussion method is constituted by a class, which seeks to examine a problem by means of free flow arguments. Essentially the members pool knowledge and ideas in the cooperative task of endeavouring to understand a problem by learning from one another. Speaking, listening, observing are essential attributes of the discussion method.

Discussion methods available to the teacher include 1) Whole class discussion which generally refers to when teachers engage the class in a free flow interaction in which the teacher simply leads a discussion involving the class as a whole. Here, the teacher acts as the director of the discussion, asks questions, clarifies students' comments, and makes tentative summary to help students to understand the topic. 2) Small group discussion which includes debates, panels, forum and symposium and involves the breaking up of a class into groups encourages individual's activity and full participation on the part of students and the teacher. A task is assigned to all groups or a different task is assigned to each individual group. The process or procedure to follow is clearly stated and the time limit is imposed (Baidoo, 2001). This shows that teachers have several teaching methods to choose from to help them achieve their objectives in the classroom and guide their students to learn what they are taught.

2.13 Learning

Wirth and Perkins (2008) in discussing learning, ask what is really meant when we use the word 'learn'? They explain that learning is something we all do from the moment of birth, so most of us likely take this very complex process for granted. Although many of us have a general sense of what it means to learn, there are often

many assumptions involved. According to Wirth and Perkins, teachers often assume that because they are 'teaching', students must be learning just as students assume that because they have read their text and memorized facts, they have learned something. They pose questions such as' what are the roles of students and teachers in the learning process? Are certain kinds of learning and thinking more valuable than others? How do grades reflect a student's thinking and learning?' in their quest to know what is meant by 'to learn'.

According to Wirth and Perkins (2008), the past few decades have seen considerable advances in understanding the brain and learning. These new findings have significant implications for what instructors teach and how students learn. They suggest that if we are to know if 'significant learning' is taking place in the classroom, we must be capable of recognizing it when it occurs. They refer to the dictionary definition of 'learn' and the different answers given as 1) to acquire knowledge of a subject or skill through education or experience, 2) to gain information about somebody or something, or 3) to memorize something, for example, facts, a poem, a piece of music, or a dance. These definitions are not particularly insightful, although they remind us that the word can be used to describe the acquisition of both knowledge and skill, and that acquisition can be by a variety of means, including education, experience, or memorization.

The Oxford English Dictionary also provides a definition that acknowledges the importance of teaching as a vehicle for learning.

Still, we are left without a clear understanding of what it means to "acquire knowledge or skill'. This is because other things that 'we acquire' are obtained by

physical means. The questions to ask therefore are: How does this relate to learning? Are there different degrees of 'acquisition' and, if so, do they represent equal types of learning? For example, is memorizing a fact the same as learning to interpret a complex text? How about learning to play a musical instrument?

Taking a different view, Atkinson et al. (1993) describe learning as "a relatively permanent change in behavior that results from practice." Others like Simon (1996) have pointed out that the purpose of learning has recently shifted from being able to recall information ('surface learning') to being able to find and use it ('deep learning'). Until several decades ago, most college teachers thought that teaching simply involved filling a student's head with information. Knowledge was transmitted from an authority 'the teacher' to a learner 'the student', generally by lecture. This thinking and practice are firmly entrenched in most classrooms despite the fact that the ineffectiveness of lecture-based teaching has been known for quite some time.

According to Wirth and Perkins (2008), modern cognitive psychology tells us that learning is a constructive, not receptive, process. According to Glaser (1991), this theory of learning (constructivism) holds that understanding comes through experiences and interaction with the environment, and that the learner uses a foundation of previous knowledge to construct new understanding. Consequently, the learner has primary responsibility for constructing knowledge and understanding, not the teacher. In a constructivist classroom, the teacher is not the "authority" but a guide or facilitator who assists students in learning. This indicates that learning depends on the learner's interaction with the environment; the teacher only serves as a facilitator.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter describes the general procedure adopted to collect data for the study. It includes the following: research design, library research, population for the study, sampling design, sources of primary and secondary data, data collection instrument, data collection procedures, as well as data analysis plan. The study was aimed at investigating how Senior High School Visual Art teachers are using computers to teach Graphic Design.

3.2 Research Design

The qualitative research approach was adopted for this study. Qualitative research refers to several methods of data collection, which include focus groups, field observation, in-depth interviews and case studies (Biklen and Bogdan, 1992) as cited in Puwurayire (2010). According to the authors, a researcher might want to know more than just 'to what extent' or 'how well' something is done. He or she might wish to obtain a more complete picture, for example, of what goes on in a particular classroom or school. This indicates that some researchers are more interested in the quality of a particular activity than in how often it occurs or how it should otherwise be evaluated. Research studies that investigate the quality of relationships; activities, situations, or materials are frequently referred to as qualitative research (Fraenkel and Wallen, 2000).

There are certain general features that characterize most qualitative research studies. In this method of investigating, the natural setting is the direct set of data and the

researcher is the instrument. Qualitative researchers go directly to the particular setting in which they are interested to observe and collect data. They spend a considerable amount of time actually being in a school, sitting in a faculty meetings, attending parent-teachers association meetings, observing teachers in their classrooms and in other locales, and in general, observing and interviewing individuals as they go about their daily routines. In qualitative research (Ary, et al., 1991; Miles & Huberman, 1994) data are collected in the form of pictures rather than numbers. The kind of data collected in qualitative research include interviews, transcripts, field notes, photographs, audio recordings, videotapes, diaries, personal comments, textbooks passages and anything else that can convey the actual words or actions of people.

Schwandt (1994) states that qualitative research focuses on the cause and effect explanation and toward personal interpretation, its emphasis on holistic treatment of phenomena. According to Eisner (1991), qualitative research is the search for qualities which are the characteristics of our experience. Leedy and Ormrod (2005) indicate that qualitative research seeks to understand the human and social behaviour from the participants' point of view which could be in the social setting such as a community, school or institution.

Qualitative methods provide avenues that can lead to the discovery of deeper levels of meaning into the subject studied. It investigates the quality of relationships, activities, situations or materials. The ultimate goal of this type of enquiry is to portray the complex pattern of what is being studied sufficiently and deeper so that someone who has not experienced it can understand. In this study the qualitative research design

facilitated investigation of the methods and skills used by Graphic Design teachers in the transfer of knowledge and skills to students in Senior High Schools. Though qualitative research emphasizes the description and interpretation of data in words, data in terms of numeracy was collected in the process and analyzed to understand naturalistic enquiry.

Characteristics of Qualitative Research

a) The natural setting is the direct force of data and the researcher is the key instrument in qualitative research.

b) Data are collected in the form of words or pictures such as field notes, interview transcripts, photographs rather than numbers.

c) Researchers are both concerned with process and product; they tend to analyze data inductively.

Advantages of Qualitative Research

According to Osuala (2005), qualitative research has the following advantages:

a) Qualitative research helps to gain insider's view of the field.

b) Information gathered through qualitative research also enables data to be presented in a more descriptive and narrative style.

c) Qualitative research method has the advantage of generating awareness in terms of history, capability of understanding trends in development in programmes, and an approach to enquire the course of occurrences.

d) Qualitative research study enables the researcher to gain new insights, develop new concepts and discover problems that exist within the phenomenon.

e) It mostly allows a researcher to view behaviour in a natural setting with influences often associated with experimental or survey research.

f) It offers a unique and rich approach to understanding what, how and why events occur in relation to a particular setting.

g) It also involves directly observing and notifying as well as the use of video devices to supplement and enhance data collection and analysis.

h) Data is described in narrative form as close as possible to the form in which they were collected, and in much detail so that one who has not experienced the situation or events can understand and appreciate it. In simple terms, qualitative research enables a researcher to describe, interpret, verify as well as evaluate a given phenomenon.

Despite the above Advantages there are some Weaknesses Associated with Qualitative Method:

a) Some sample sizes are generally too small to allow the researcher to generalize the data beyond the samples selected for the particular study. Hence, qualitative research is mostly used as a preliminary step to further investigate, rather than the final phase of project.

b) The data collection is often employed to prepare more elaborate qualitative analysis of all the information required for a particular study.

c) Poor planning where it is devoid of key issues may make the project produce nothing of value.

d) It involves extensive periods and is labour intensive in the collection of data. It also has the probability of involving researcher bias and impression management by subjects.

In order to know exactly what Senior High School Graphic Design teachers in Ghana are doing with the computers at their disposal and to assess the effectiveness of computer usage and the quality of students works in the classrooms where they are used, the researcher adopted the qualitative research method which, according to Fraenkel and Wallen (2000), investigates the quality of relations, activities and situations in a study.

In spite of the limitations, qualitative research methods offered the most appropriate means of:

a) Obtaining first-hand information on how well Senior High School Visual Art teachers selected are teaching Graphic Design with the limited computers available.

b) Observing teaching and learning processes with computer and the level of knowledge and skills acquired by the students in the schools studied.

c) Gathering data on the effectiveness of computer and the quality of Graphic Design works by students in the selected schools.

d) Gathering data from interviews to obtain a good description of how the use of computer in teaching Graphic Design can complement the traditional way of teaching Graphic Design where every design is done manually.

Descriptive Research

The descriptive research method of qualitative research design was adopted by the researcher for this project. Key (1997) states that descriptive research is used to obtain information concerning the current status of phenomena to describe "what exists" with respect to variables or conditions in a situation.

The concern of this research was to find out and describe how Graphic Design teachers teach Graphic Design with computers to students offering Visual Art in selected Senior High Schools. The relevance of the descriptive approach in the field of education has been addressed by many scholars such as Cohen and Manion (1989), Kane (1995), Best and Kahn (1995). These scholars agree that descriptive research provides opportunities for researchers to gain valuable insights into the current status of a phenomenon with respect to variables or conditions in a situation. The descriptive research approach therefore offered the best means of describing the issues outlined for the study.

3.3 Population for the Study

Population in research refers to the aggregate or totality of objects or individuals regarding which inferences are to be made in the sampling study (Sidhu, 2003) as cited in Puwurayire (2010). In this study, four Senior High Schools Graphic Design students and teachers involve in Central Region constituted the population studied. The four schools represented 33% of the twelve Senior High Schools (SHS) in the Central Region. The accessible population for the study was Visual Arts students who offer Graphic Design in four selected schools and their teachers: the schools were Mfantsiman, Holy Child, Wesley Girls' and Mfantsipim. The four schools differ in size, location and programmes offered. Mfantsiman, Holy Child and Wesley Girls' SHS are all girls' schools while Mfantsipim is a boys' school.

In the case of students, only those in SHS 3 and 4 were selected as respondents for the study .According to the Curriculum Research Development Division, Ministry of Education teaching syllabus for Graphic Design (2008), its states that computer as a

Graphic Design tool in designing should be introduced in the third year third term. A survey conducted indicated that students in the selected schools had been introduced into the usage of computers in designing therefore their selection as respondents for the study. It can be seen from Table 3.1 that Mfantsiman had the highest population of Graphic Design students (105) who constituted 44.1% of the total of 238 students sampled for the study. Wesley Girls had the least number of students (31) who formed 13.0% of the population.

Table 3.1 Target Population of Graphic Design Students

Name of Schools	Number of Students	% of Total
Mfantsipim	**63**	**26.5**
Mfantsiman	**105**	**44.1**
Holy Child	**39**	**16.4**
Wesley Girls	**31**	**13.0**
Total	**238**	**100.0**

Source: Field survey. 2009:

The four schools also had nine Graphic Design teachers as the target population. Two each in Mfantsipim, Mfantsiman and Holy Child whereas Wesley Girls had three teachers, although this is the school that had the lowest number of Graphic Design students. Table 3.2 shows the target population of Graphic Design Teachers in the selected schools.

Table 3.2 Target Population of Graphic Design Teachers

Name of Schools	Number of Teachers	% of Total
Mfantsipim	2	22
Mfantsiman	2	22
Holy Child	2	22
Wesley Girls	3	33
Total	9	100.0

Table 3.3 Accessible Population of Graphic Design Students in the Selected Schools

Name of Schools	Number of Students	% of Total
Mfantsipim	30	24.6
Mfantsiman	47	38.5
Holy Child	25	20.4
Wesley Girls	20	16.5
Total	122	100

Source: Field survey. 2009

Table 3.4 Accessible Population of Graphic Design Teachers in the Selected Schools

Name of Schools	Number of Teachers	% of Total
Mfantsipim	**1**	**20**
Mfantsiman	**1**	**20**
Holy Child	**1**	**20**
Wesley Girls	**2**	**40**
Total	**5**	**100**

Source: Field survey. 2009

3.4 Sample and Sampling

Lokesh (1997) as cited in Puwurayire (2010), defines sampling as the process by which a relatively small number of individuals or measure of individuals, objects or events are selected and analyzed in order to find out something about the entire population from which it was selected. After making a decision on the sample, researchers try as much as possible to, in most instances, obtain a sample that is representatives of the population of interest that means they prefer random sampling. According to Sidhu (2003) as cited in Puwurayire (2010), sampling is the process of selecting a representative unit from a population. Similarly, Cohen and Manion (1994) explain that in sampling, the researcher endeavours to collect information from smaller group or subsets of the population in such a way that the knowledge gained is representative of the total population under study.

According to Ross (2000), purposive sampling involves selecting members from a population to comprise a sample because they possess specific attributes of interest that address the purpose of a particular research problem under investigation. On the other hand, Morgan (2008) explains that in random sampling, every data source in the population has an equal chance of being included in the sample. Because random samples are probability samples, this creates the possibility for generalizing to a larger population, but this generalizing ability is not absolute.

The purposive and simple random sampling techniques were used for this study. Purposive sampling was used because the study focused only on schools that offered Graphic Design as an option of the Visual Arts programme in the Central Region and also had access to computers. Teachers included in the study were those who were teaching Graphic Design. Schools that had computers but were not using them were not included in the sample. The simple random sampling was used to select the individual Graphic Design students as respondents' for the study.

In this study the sample consisted of 122 Graphic Design students and 5 Graphic Design teachers. The students were grouped and were asked to pick papers which had A and B on it. Those who picked A were selected as respondents for the study. The 5 teachers were using computers in teaching Graphic Design.

3.5 Data Collection Instruments

Data collection instruments adopted for the study were observation and interview. Direct observation of behaviour has become an important measure of evaluating the effects of using computer in teaching Graphic Design. For example, more can be told about the complete development of a child from day to day than in any other way. In

the field of education, observation comes handy to judge a teacher's performance in teaching. Assessment of practice skills can also be better done by observation. Observation is recognized as the most direct means to studying people when one is interested in their overt behaviour. Observation underlines all research; it plays a part in the survey procedure. It is a more natural way of gathering data. Data collection through observation may yield more real and true data than by any other method.

Kumekpor (2002), explains that participant observation involves the idea of being both a spectator and an actor at the same time when observing and recording information. Contributing to this point, Best and Kahn (1998) emphatically state that observation in qualitative research consists of detailed observation of behaviour, events and the context surrounding the event and the behaviours. According to Ary, Jacobs and Razavieh (2002), in normal cases, observation is employed when children are to be studied while busy in different activities such as games, dramatics or social services. To them, observation is indispensable for studies on infants who can neither understand our queries nor express themselves clearly. As Cohen and Manion (1994) stress, observation is recognized as the most direct means of studying people when one is interested in their overt behavior, adding that it is a natural way of gathering data. Again, in the view of Sidhu (2003), observation as a research tool must always be expert, directed by specific purpose, systematic, carefully focused and thoroughly recorded and also like other research procedures, observation must be subjected to accuracy, validity and reliability.

Observation can be in two forms – Participant and Non-participant. Best (1991) notes that in participant observation, the observer works his way into the group to be

observed to be accepted as a member in such a way that as a regular member, he or she is no longer regarded as an outsider against whom the group needs to guard itself. On the other hand in non-participant observation, the observer remains aloof from the group.

Some Limitations of Observation

Firstly, establishing the validity of observation is always difficult. Many of the items of observation cannot be defined with sufficient precision. To attempt to define or isolate these aspects may involve false definitions and consequently invalidity of the data. Also, the problem of subjectivity is also involved. A person tends to see what he or she knows. If a teacher, a doctor and an architect inspects a school building, each will see the things that are specifically known to him and other things are likely to escape his or her attention. There is the danger of concentrating observation of the aspects of limited significance simply because they can be recorded objectively and accurately.

Last but not the least, observation is self-interfering. It introduces in itself bias, the direction and extent of which is relatively unknown and unknowable. Such distortions are difficult to eliminate, but it can be minimized through proper choice and location of observers, inconspicuous recording and other attempts such as establishing observer naturally.

Reasons for Choosing Observation as a Data Collection Instrument

In this study, the researcher adopted the participant approach as observer to be close to the teachers and students while classes were going on in order to observe how the

limited computers were used in teaching, the method used in teaching and the interactions that took place between the teachers and their students as the lessons progressed. The observations also enabled the researcher to critically study the effectiveness of computers and the level of knowledge and skills acquired by the students and how they responded to the lessons and class exercises. Observation also helped the researcher to learn from the teachers how the computers used influenced their teaching and how students responded to the lessons. Observation also enabled the researcher to see practical works that the students did in their classrooms in order to record the skills and knowledge they acquired through the demonstration their teachers did using the computers and how they used the computers in designing concepts. What necessitated the choice of observation was the need for first hand information of the real problems teachers and students are facing through the use of computer in teaching Graphic Design. This could only be obtained through observing classes in progress to validate the data from interviews conducted.

In all, four observations were made in each school and each lasted for eighty minutes. At the early stages of the research, the researcher played a role as a complete observer. The researcher was more concerned with making general observations and recording general impressions. The layout of the computer lab was observed, the number of computers in the computer lab, the number of students in the class, the students work habits, the social atmosphere of the classroom, methods of teaching and classroom management techniques. Later, the researcher moved from the role as complete observer to a participant observer where the teaching methods, how the teachers teach with the limited computers and the level of knowledge and skill acquired by the students in their design process were observed.

Interview

Interviewing is the careful asking of relevant questions of selected individuals. It is an important way for a researcher to check, verify or refute impressions gained through observation. The methods provide a means to gain information about things that cannot be observed directly (Fraenkel and Wallen, 1993). Interviews involve the researcher gathering data directly from others through face-to-face or telephone contact. They explained that, the interview is superior to other methods of data gathering devices because after the researcher gains rapport or establishes a friendly relationship with the subject, certain types of information an individual might be reluctant to put into writing may be obtained.

Some Advantages of Interview as a Data Collection Instrument

a) The researcher is personally present to remove any doubt or suspicion regarding the nature of the enquiry. The answers are, therefore, not biased because any misunderstanding gets rectified.

b) The interviewer can probe into casual factors, determine attitudes, discover the origin of the problem, involve the interviewee in an analysis of his or her own problems and also secure cooperation in the analysis.

c) It permits an even exchange of ideas and information. It is not one-way communication. It provides opportunity for give and take.

d) The respondent's difficulties (like poor expression and bad hand writing) are also avoided as every schedule is filled by the interviewer.

e) It helps the investigator to gain an impression of the person concerned.

f) There is no chance of the respondent rectifying, notifying or editing earlier answers in the light of latter questions.

Disadvantages of Interview as a Data Collection Instrument

a) For an adequate coverage, a large number of field workers may have to be engaged and trained in the work of data collection. All this entails a lot of expenditure and a research worker with limited financial means can find himself or herself in a great difficulty in adopting this method.

b) It is a completely costly gathering data collection tool than other techniques. When the survey covers a wide geographic area, interview becomes expensive, crucial and costly in time and effort since it's almost invariable necessitates call-backs, long waits and travels.

c) Since the objectivity, sensitivity and insight of the interviewers is crucial, this procedure requires a level of expertness not ordinarily possessed by an average research worker. That is why it is considered as one of the most difficult techniques to employ.

Reasons for Using Interview as a Data Collection Instrument

In this study, interviews drew the researcher closer to the teachers in the schools and because of the friendship that grew between the two sides through the regular visits, some information was given which would not have been realised if the researcher had given out questionnaire to these people. Another advantage of the interview techniques was that it enabled the researcher to discuss and explain the purpose of the study to the population and ensure that they understood the interview questions; hence, clarifications were made when answers given were not clear.

Structured interview which involved specific type of sequence of questions was conducted for the study .The interviews which were conducted personally by the

researcher sought to find out what methods were used in teaching Graphic Design and the effectiveness of computers in teaching Graphic Design. Selected Graphic Design teachers and students were interviewed to seek their opinion on the effectiveness of computers in the Graphic Design curriculum.

3.6 Types of Data Collected

Both primary and secondary data were used by the researcher to enrich the study as the researcher had the opportunity to collect data from different sources.

3.6.1 Primary data

The primary data was obtained through interviews, and personal observation of teaching and learning activities to obtain responses from 127 students and teachers in the selected schools. The 122 students consisted of 20 SHS 4 students and 10 SHS 3 students of Mfantsipim; 30 SHS 4 students and 17 SHS 3 students of Mfantsiman; 12 SHS 4 students and 8 SHS 3 students of Wesley Girls; and, 15 SHS 4 students and 10 SHS 3 students of Holy Child. The 122 students consisted of 30 boys and 92 girls of which 77 are in SHS 4 and 45 are in SHS 3. Their age ranges from 17 to 21 years. These students had already had introductory lessons in computing from their IT classes. Some had learnt the basic components of computers so they knew about hardware (the systems unit, monitor, keyboard and mouse) and software (the Windows Operating System). Some were also conversant with basic operations such as booting, launching a programme, creating files, typing, saving, opening files, closing files, shutting down the computer. Some of the students could also practice the skills of clicking and moving objects without any difficulty. Above all some were

able to design with Microsoft Word and Graphic Design software such as Adobe Photoshop and Corel Draw.

All the five male teachers were aged between 35 and 49 years, with their classroom teaching experience ranging from 5 to 10 years. Interviews conducted revealed that three of the teachers had acquired their skills and knowledge in designing from special IT class they had had while the remaining teachers had acquired their skills and knowledge in IT at the University where they studied Graphic Design.

3.6.2 Secondary data

The secondary data were collected mostly from libraries which include KNUST libraries, UEW libraries, UCC libraries, documentary sources such as books, publications, periodicals, thesis and the internet. The data consist of information directly related and relevant to the study.

3.7 Administration of Instruments

The researcher visited the selected schools and discussed the intention with the teachers concerned. The researcher personally checked the number of computers in each school. A date was agreed with the teachers in each school for the researcher to observe their lessons. The teachers were interviewed to solicit information on the study using the structured interview guide shown as Appendix C. In each school, the students were briefed and dates were agreed to interview them. It took the researcher a series of follow- ups spanning over eight weeks to complete the interviews. The information gathered on tape recorder was later transcribed for analysis.

3.8 Data Analysis Plan

Summaries of the data collected were prepared immediately after transcribing the field notes from the interviews and observed lessons into individual reports. The results are discussed in chapter four.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Overview

This chapter consists of the analysis and the interpretation of findings derived from the responses of respondents based on the study interviews conducted and observations made in the schools. It provides an overview of the usage of computer in the four selected Senior High Schools in the Central Region.

4.2 Interviews with Graphic Design Teachers on their level of experience in Computer Graphic Design.

All the five teachers interviewed in the four schools had had university education. This is because it is a Ghana Education Service (G.E.S) regulation that teachers at the Senior High School level should have at least a first degree. The interviews revealed that teachers in all four schools have had between five and fourteen years' classroom teaching experience in Graphic Design. One of the Mfantsipim teachers was employed only a year ago and was found to be conversant with current I.C.T. technologies relevant to the teaching of Graphic Design. The teachers in Mfantsiman, Holy Child and Wesley Girls were all teaching Graphic Design before computers were introduced into the Graphic Design curriculum for Senior High School education. Although the Graphic Design syllabus was modified to incorporate computer usage, the five teachers were not given any in- service training by GES on how to use computers in teaching the subject and no textbooks were provided to guide the teachers to carry out their teaching duties as required. The question then is, how were these teachers expected to apply the new technology as a tool for teaching and

also cope with the requirements of the new teaching syllabus? How were the teachers expected to blend modern computer software they had no knowledge or skills of to influence student learning? What skills did they have to implement the educational reform and revised syllabus?

4.3 Content of Graphic Design Syllabus

The interviews revealed that the content of the Graphic Design syllabus had been designed for students to acquire effective manipulative skills using the relevant tools such as the computer and other materials to design and execute projects as the outlined topics for Year 2 to Year 4. The syllabus (Table 2.1) shows that each year's work consists of sections which are also made up of units of the required topics intend to provide a means for students to acquire specific skills and knowledge in Graphic Design which includes: drawing and illustration, poster designing, greeting cards, lettering, sign writing, calligraphy, layout, design and construction of articles with paper, print making, package designing, book craft, and designing of visual communication items. Interviews conducted indicated that all the five Graphic Design teachers in the four schools were following the content of the Graphic Design syllabus but were not systematically working with the units as specified in the syllabus. This is because they need to acquire the exact tools and materials to execute their designs. Where those tools and materials are not readily available, they move to another topic till the basic tools are acquired.

using multiple styles can make teaching and learning an exciting and compelling experience that can help students to take in new information, to understand concepts, acquire skills and achieve positive learning out-comes. It is therefore important for the Graphic Design teachers to structure their instructions to promote retentive learning.

4.6 Classroom observation on methods used in teaching Graphic Design with computers.

Contrary to what the Graphic Design teachers said during the interviews on the methods they used in teaching Graphic Design with computer, the observations in the selected schools revealed that two of the teachers were not teaching using the methods they had mentioned during the interview session. Though teachers in Mfantsipim, Mfantsiman and Holy Child made mention of demonstration as the method they used in teaching Graphic Design with computers, the Mfantsipim teacher who was the first to be observed in the four schools was found using only the discussion method to teach "Book Cover Design" based on "Insects in Africa". The teacher introduced the lesson by showing samples of book covers and also asked the students to look for information on "butterflies in Africa" from the internet and use it to design a book cover.

In this instance, there was no demonstration of the internet search or how to design a book cover. But from the researcher's interactions with the students, it became clear that some of the students had already learned how to use the computer in designing before coming to school. This made nineteen of the students able to do the work their teacher asked them to do. The problem was with eleven students who had little or no

knowledge of using computers to design.These students were assisted by their colleagues who were able to do their works.

In the second lesson observed in Mfantsipim, the teacher used the discussion and demonstration methods for teaching. The topic was "designing of banner". In this lesson the teacher invited the students around his desk in groups and demonstrated on the computer how to design a banner. After that the teacher grouped them with four students to a computer where they practiced how to design a banner. As this went on the teacher went round to assist them as some students encountered problems in the execution of their design. The students who were very conversant in using the computer to design were made the leaders of their groups where they assisted those who had difficulties with their work. Figure 4.1 shows a sample of a book cover and Figure 4.2 also shows a sample of banner Mfantsipim students did using computers.

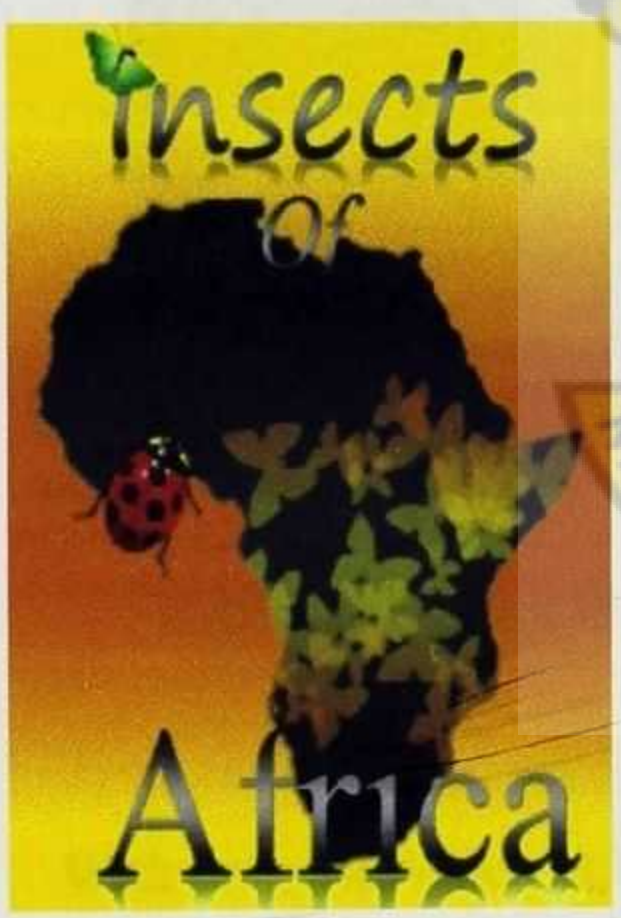

Figure 4.1: Book Cover

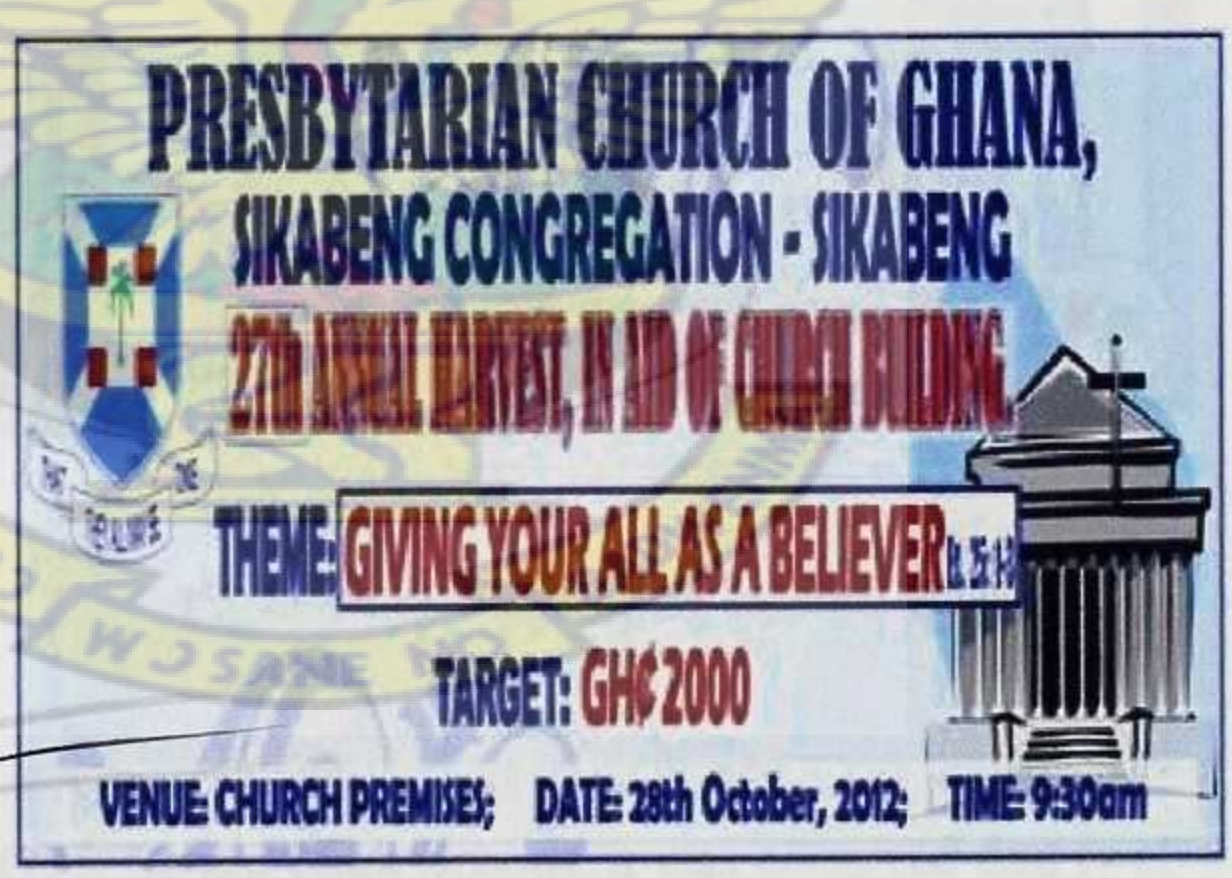

Figure 4.2: Banner

In Mfantsiman Senior High School, the teacher used the demonstration method by projecting his desktop work onto a white wall for the students to experience and

repeat whatever he did. The topic was on "wall hanging designing" and the students were to design a sample wall hanging. The teacher introduced the lesson by showing the students samples of wall hangings. The teacher started the lesson by loading CorelDraw Version 9 page on the computer. He then typed a text on the page and selected suitable fonts for the text and arranged them to create balance on the page. He used the pick tool to select a colour for the background and the text and paused for the students to start designing. As they worked the teacher went round to assist the students as some of them forgot the entire process the teacher used to arrive at the design of his wall hanging. Figures 4.3 and 4.4 are samples of works designed by Mfantsiman students.

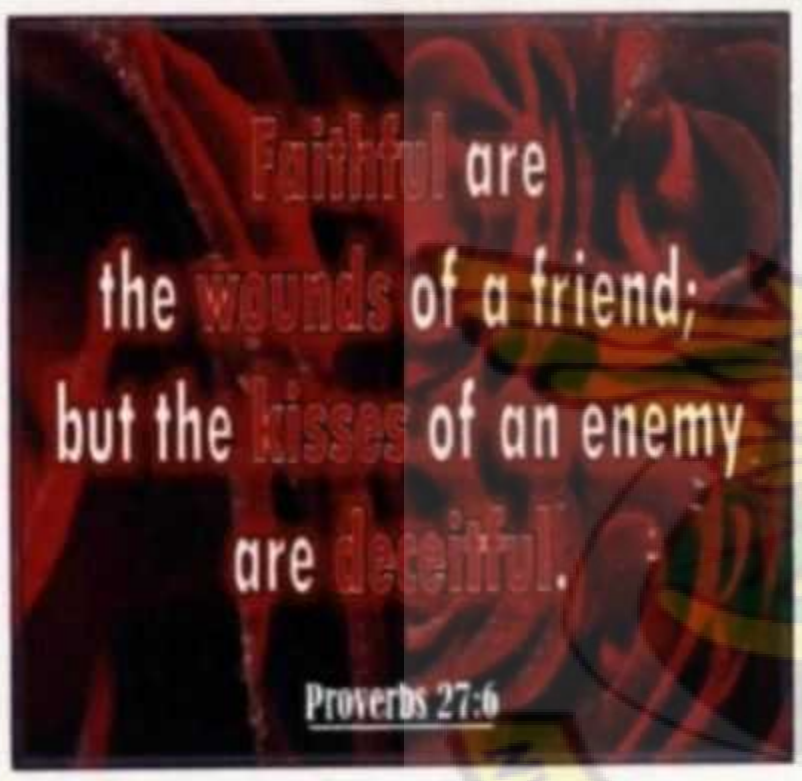

Figure 4.3: Wall Hanging

Figure 4.4: Packaging Design-Paper Bag

With the observation at Wesley Girls Senior High School, it was observed that twelve out of the twenty students were already experts in the area of designing with the computer and this was evident in their performance. They knew how to use all the tools and were conversant with Corel Draw and Adobe Photoshop. Though the teacher made mention of demonstration, discussion, learner-centred and hands-on-techniques as the methods he used in teaching graphic design with the computer, the

observation revealed the use of discussion and learner-centred methods only in the lessons observed. For example when teaching "designing a postage stamp with the focus on Panafest", it was observed that the teacher introduced the topic by discussing the topic at length with the students who participated in the lesson by contributing answers and asking questions on the issues raised. After this the teacher asked the students to design on the computer, a postage stamp with the theme on Panafest. Figure 4.5 is a sample stamp designed with computer by a Wesley Girls Senior High School student.

Figure 4.5: Postage Stamp

In Holy Child Senior High School, the researcher realised during the observation that the teacher combined discussion and demonstration in teaching the lessons. The teacher started the discussion as he introduced the topic which was "designing a package for a company that produces fruit drinks". The discussion started on the items that should appear on the package. Here the teacher engaged the students to mention the items that will be appropriate for the packaging which resulted in the students mentioning different kinds of fruits such as mango, pear, orange, pineapple,

watermelon, guava, apple, banana, grapes and strawberry. They also talked about the logo of the company, name of the company, name of the product and other important information that must be included in the packaging designing. The teacher then projected some examples of his own packaging works on the screen for discussion.

Later this teacher demonstrated the process by selecting fruits from scanned pictures onto the computer for the work. Then he typed the name of the product as "Natural fruit drink". He selected different fonts to see which would be appropriate and suitable for the work. Then went to the colour box, picked the select tool and selected colours which are lighter for the background and another colour for the text. The teacher discussed the selection of colours for the background and the text with the class and told the class that the colours used for the text and the background in packaging should not "fight" but they should complement and harmonise in the work and it should also have a bearing on the illustration. The students were then asked to design a package for a company that produces fruit drink. Figures 4.6 and 4.7 show samples of works designed with computer in Holy Child School.

Figure 4.6: Packaging Design-Paper Bag

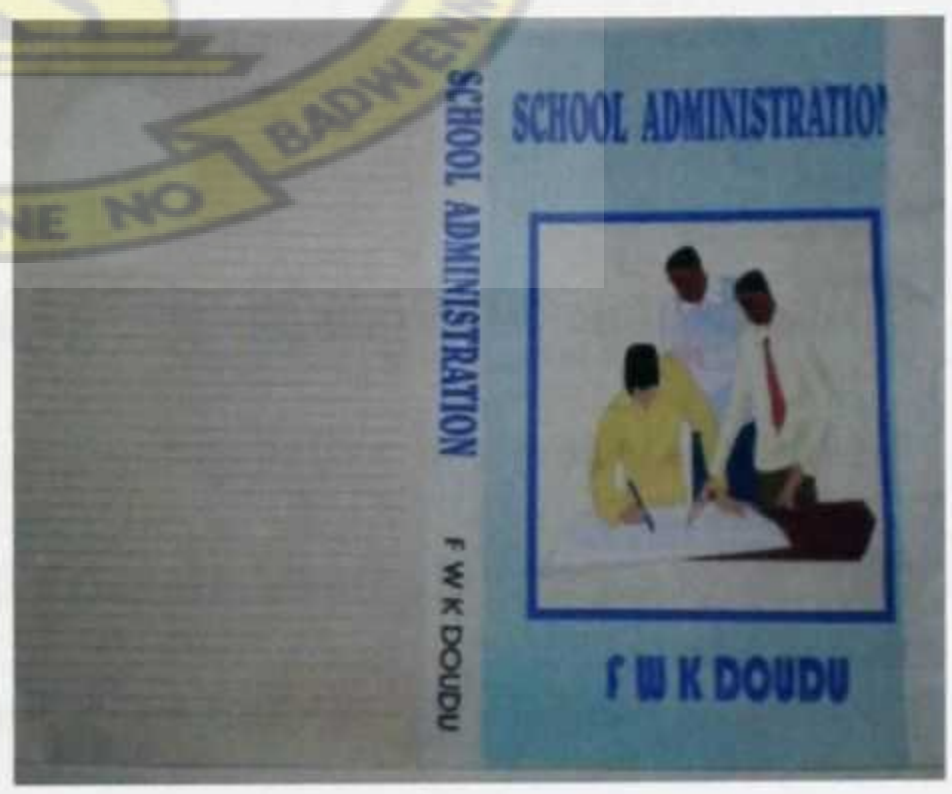

Figure 4.7: Book Cover

The discussions shows that the teachers in the four schools did not exactly use the teaching methods they made mention of during the interview session and there were not enough computers for students to use to do their works comfortably. Some of the teachers in their teaching also concentrated on few students who were already good in using the computer to design. However, students from the four schools managed to execute the works they were assigned to do.

4.7 Teaching Styles used by the Teachers and their Effects on the Students

The style of teaching observed in the four selected schools studied were similar in that almost all of them used the discussion method, demonstration method and a little bit of hands on techniques to deliver the observed lessons. The researcher observed that the teachers did not spend enough time on the topics treated with the students to enable them ensure that every student present had grasped what was taught using the computer. This was so because the teachers probably assumed that some of the students were already conversant with designing with the computer. This assumption made it difficult for some of the graphic design students to get the full meaning of what they were taught in class to enable them follow the procedures they were shown to execute their works.

In addition to this, all the four teachers observed concentrated more on the students who had had tuition in using the computer for designing before and were in tune with what went on during the lessons and neglected those who were slow in grasping what was being taught. It was observed at Mfantsipim and Wesley Girls where the endowed students in computer designing were invited during the break periods and after school by their teachers to give them extra tuition for the same work that they

had assigned to all the students and were required to submit them during the next lesson. The slow learners were therefore not catered for properly, which the researcher considered inappropriate for the teachers to do.

Using the computer as a tool in designing is a new programme which has been introduced into the graphic design curriculum and much attention needs to be given to students through the demonstration method to enable all the students to acquire more skills and knowledge and to also become conversant with the tools and use them to practice designing on their own so that they would not copy from their friends' works, as was the case with some students in Wesley Girls and Holy Child Schools. The observation revealed that the styles of teaching adopted by the four teachers encouraged most of the students to learn from their colleagues. Though it is good sometimes for students to learn from colleague students, it was the duty of the teachers to give all the students first-hand requisite skills to equip them to be independent in executing their works and not to rely on other students to execute their works inside or outside the classroom.

With the teachers who used demonstration methods in teaching, it was realised that as the students observed the demonstration, some did the exact works the teachers' made so there was no creativity and works produced by the students were not original. Here even though demonstration is necessary when introducing new skills, it is beneficial in developing right skills, it builds confidence and makes lessons real. Though demonstration consumes a lot of time in giving students the opportunity to understand the processes involved, it helped the students to be creative.

In Wesley Girls Senior High School, the researcher realised that the teacher had mastery over the use of computer to design; however, the only problem at that time was the unavailability of computers to execute what had been discussed with the students. After the lesson, the two desktops which belonged to the teacher at the department were given to four good students to practice what was discussed. Two out of the four students came out within an hour with marvelous works. The teacher corrected their mistakes, this time using the hands-on- technique method of teaching where he designed alongside them using different text and illustration. He then tasked the students to assist the remaining students to design theirs at the computer laboratory after school.

Although the discussion method introduces the lesson and offers the students an idea of what is expected of them at the end of the lesson (Baidoo, 2009), much attention should be focused on the demonstration method and the hands-on technique of teaching. This will help the teacher to identify those students who have difficulty understanding the issues so that they could be assisted rather than leaving them at the mercy of other students to do the assigned work with them. This, when done properly, will cater for individual differences and equal acquisition of knowledge to enhance the students' design skills. This strategy will also help improve the students' performance and push them to be more creative in their works.

4.8 Comparing Manual Graphic Design with Computer Works done in the Schools

Mfantsipim Senior High School

Figure 4.8 is a computer generated book cover design and Figure 4.9 was done manually. It can be seen that the colour orange in Figure 4.9 of the manual work is blurring and not appealing to the eye. The hand written inscriptions 'african garments', Figure 4.9 on the book cover are small and are not clearly seen.

Computer Work

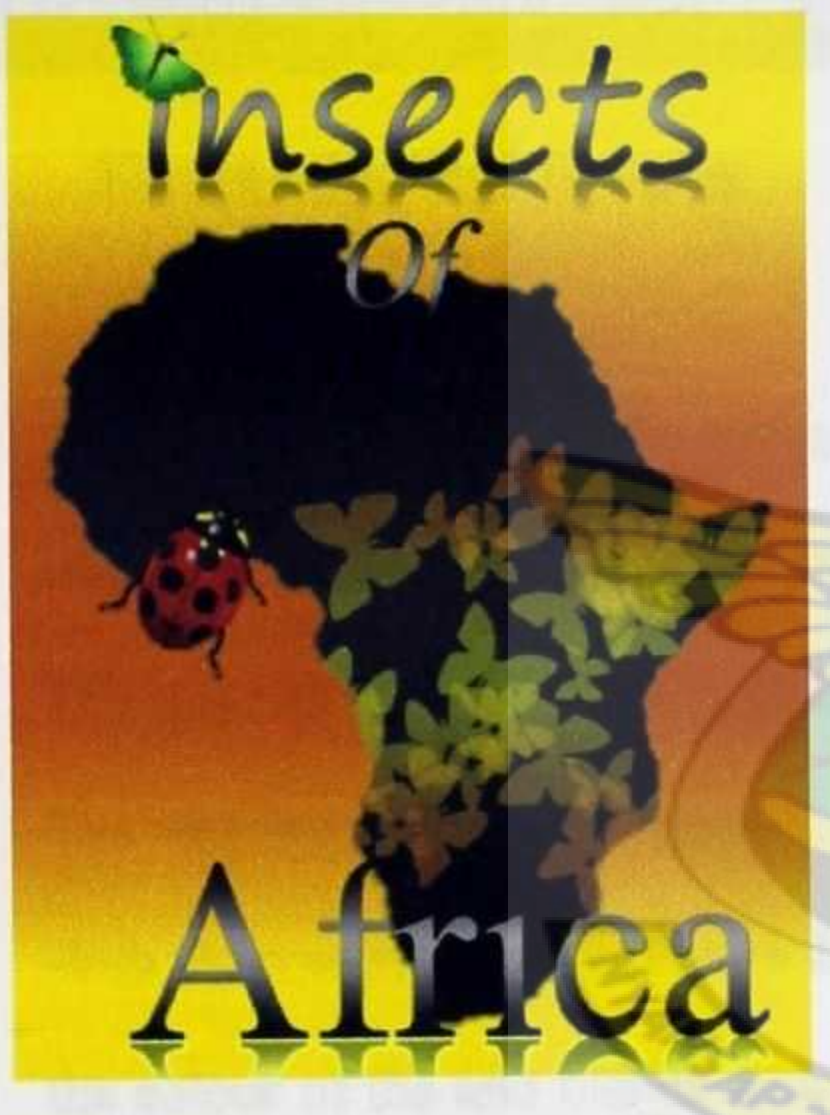

Figure 4.8: Book Cover Design

Manual Work

Figure 4.9: Book Cover Design

The inscriptions on the computer work (Figure 4.8) are equally spaced but that of the manual work (Figure 4.9) is not equally spaced. It can be seen that the inscription "AFRICAN" at the top of Figure 4.9 is not centred or balanced on the page. Moreover, the information being communicated by the computer work can be clearly envisaged but same cannot be said of the manual work.

Mfantsiman Girls Senior High School

Computer Work

Figure 4.10: Wall Hanging

Manual Work

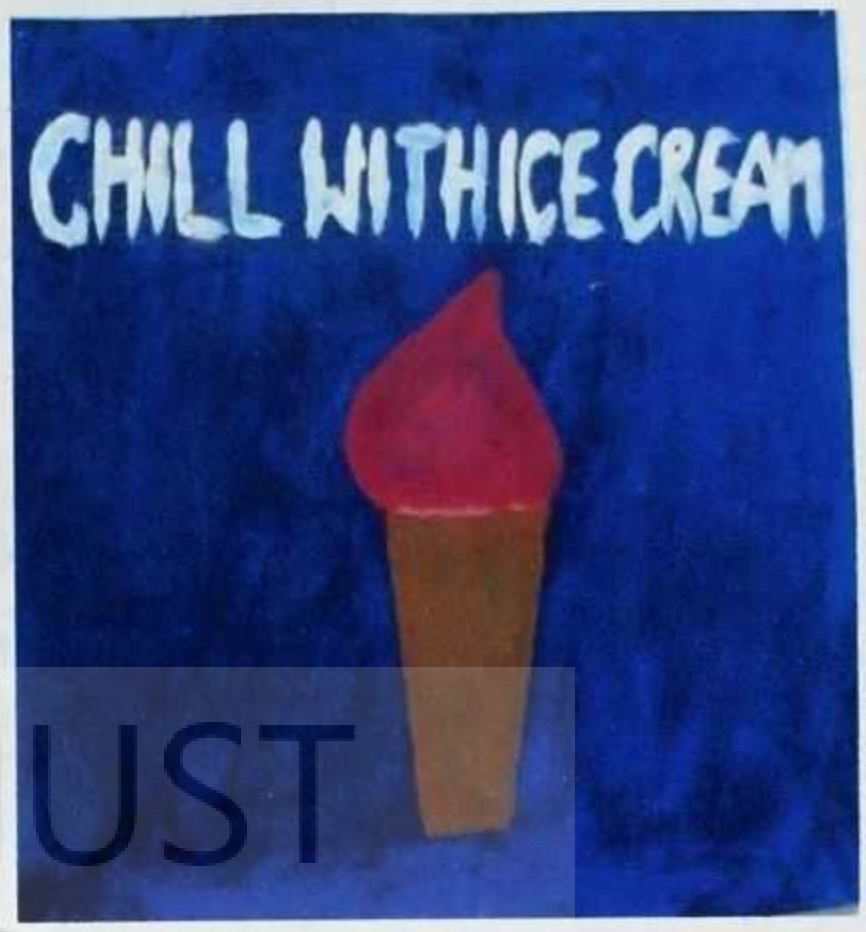

Figure 4.11: Wall Hanging

The colour used to paint the background of the design in Figure 4.11 was not properly mixed so the brush strokes are clearly seen depicting dark and light tones in the work. The manual work has a poor finishing as some pencil marks are seen on the work. The text are not equally spaced, for instance "WITH ICE" seems to be one word. With the computer work (Figure 4.10) though the background colour seems a bit dark, the colour of the text blends with the background colour and the text is very legible. The words are equally spaced and balanced on the page.

With regards to Figure 4.12 and Figure 4.13, it can be seen that the colours used on the computer work blends and matches with the colours of the text.

Computer Work

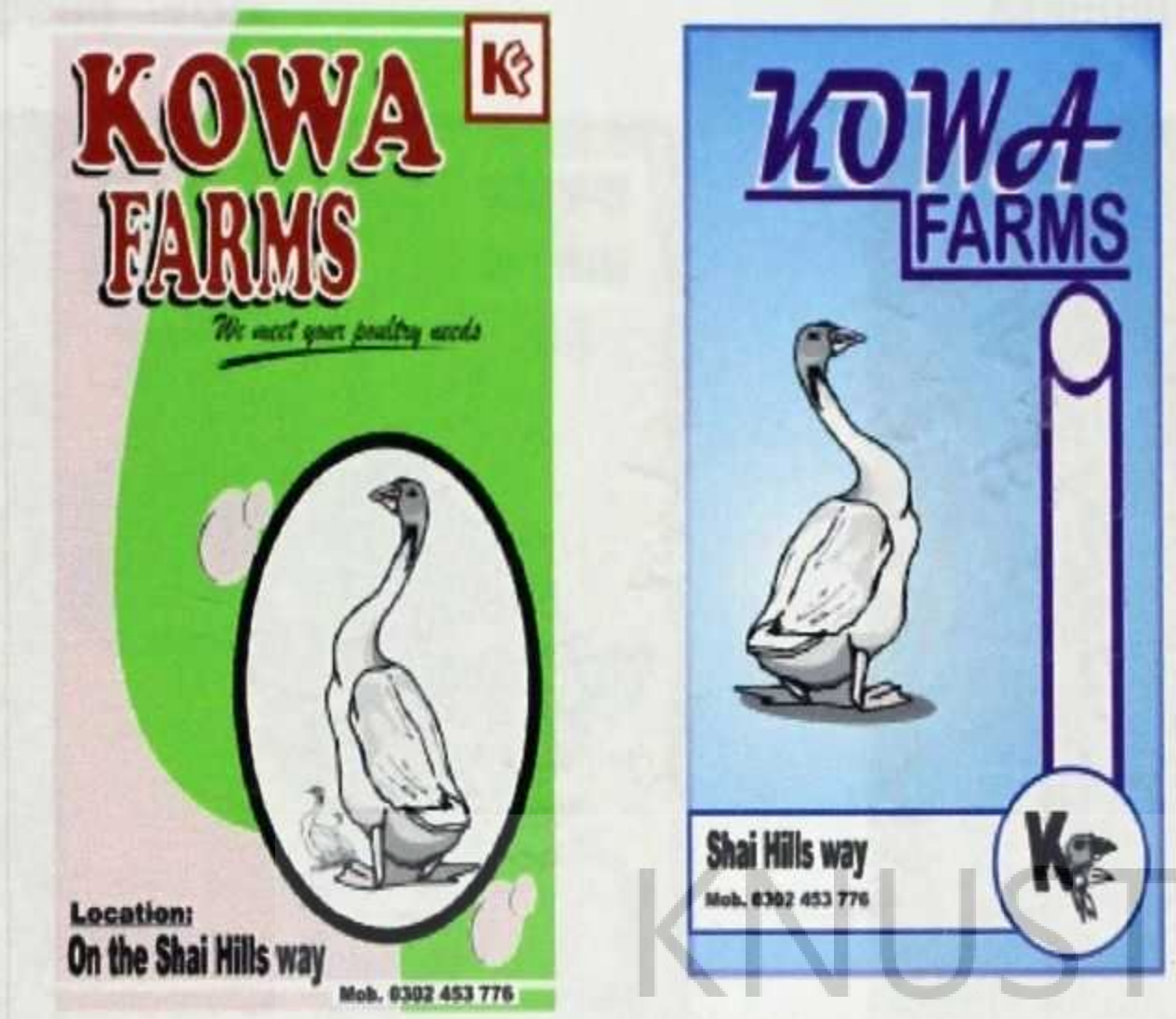

Figure 4.12 Packaging Design – Paper Bag

Manual Work

Figure 4.13 Packaging Design – Paper Bag

The lettering in the computer work has uniform strokes and thickness but the lettering in the manual work has different strokes and thickness. The background colours of the manual work are very strong and look appealing to the eyes.

Wesley Girls Senior High School

Computer Work

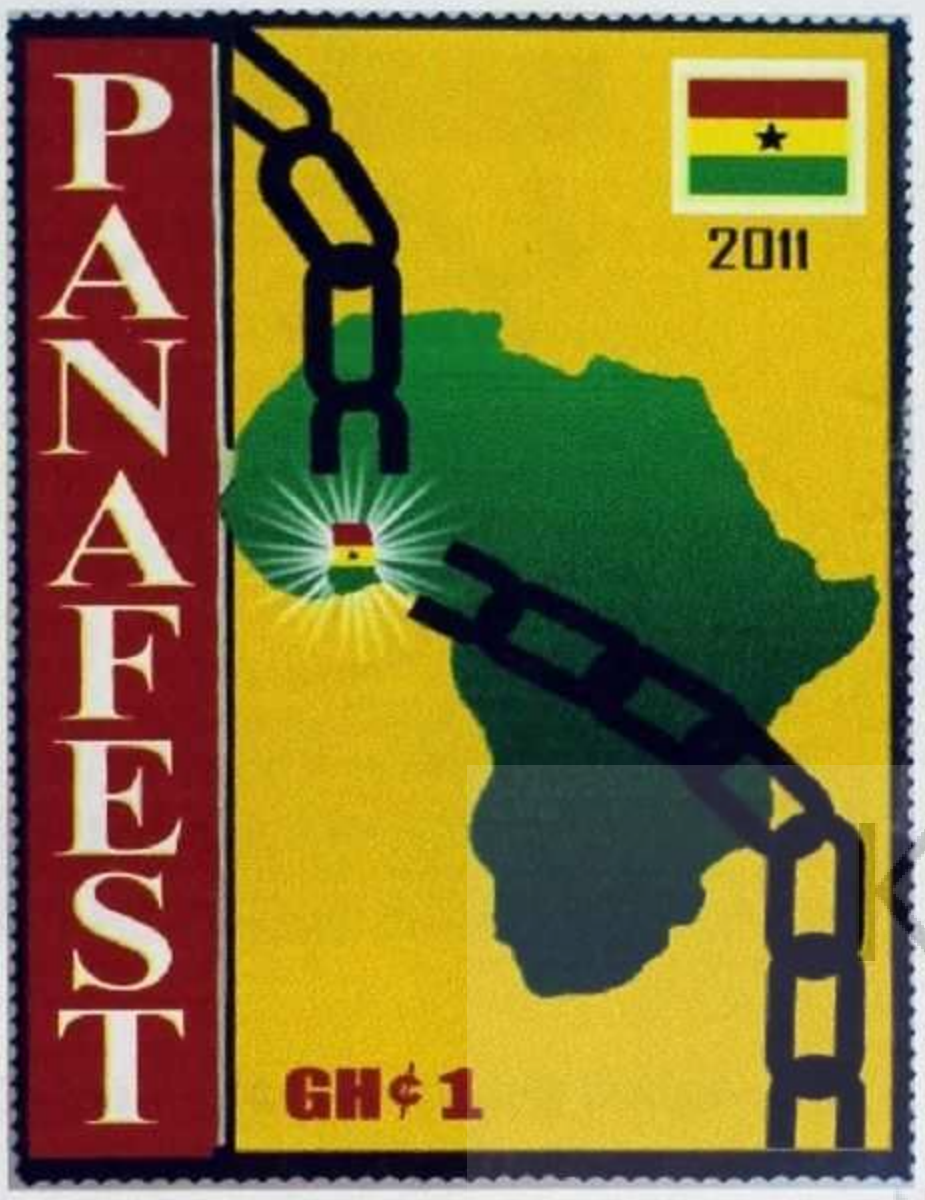

Figure 4.14 Postage Stamp

Manual Work

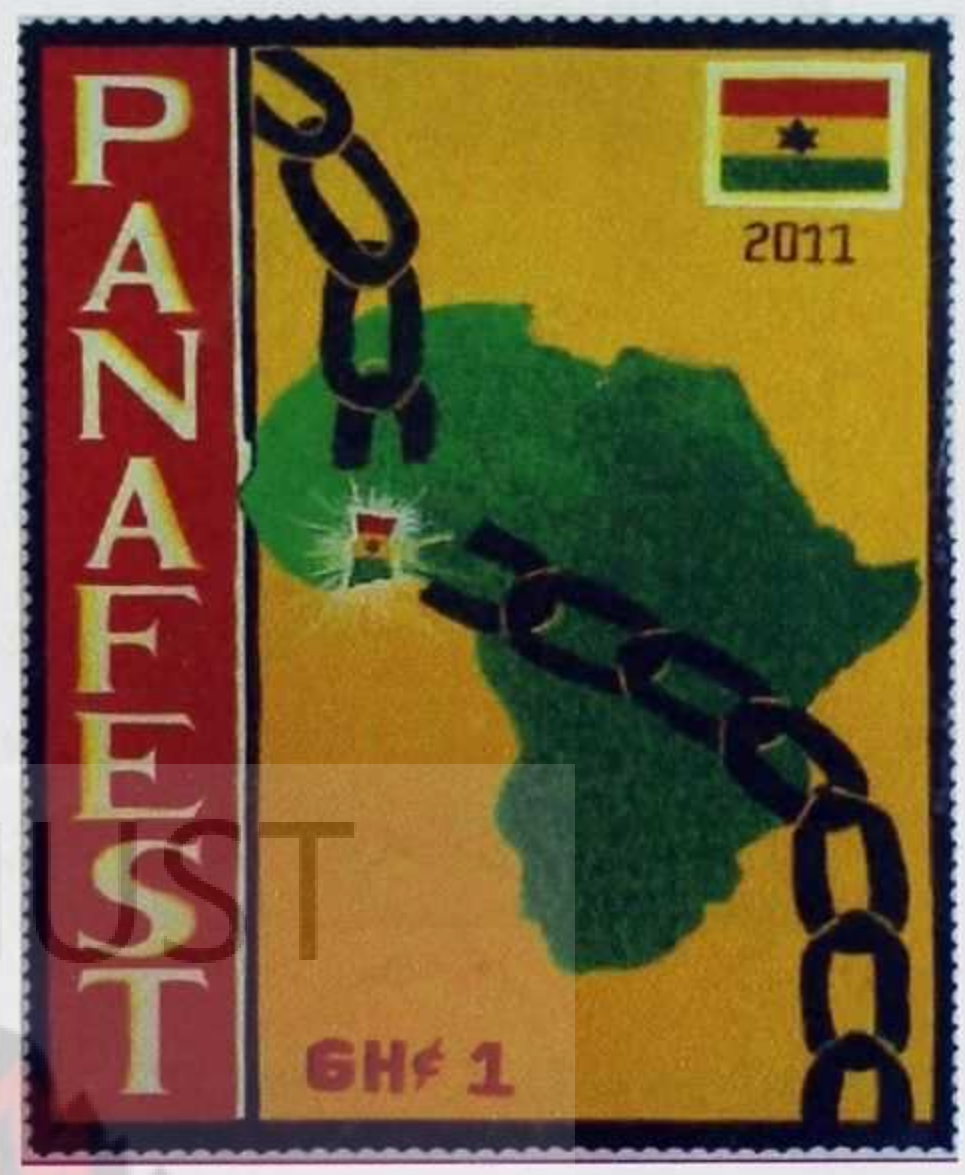

Figure 4.15 Postage Stamp

Although the two works in Figure 4.14 and Figure 4 .15 look very similar in terms of appearance, some differences can be seen in the two works when looked at very critically. The computer work (Figure 4.14) is very sharp as compared to that of the manual work. The dark green in the map of the manual work does not blend into the light green well as seen in the computer work. The rendition of the black star in the manual work (Figure 4.15) is distorted; instead of five points it has six points. There is irregular spacing of letters in the manual rendering but in the computer work, the letter spacing is regular and precise. The shape of the Ghana map in the computer work is well done, but that of the manual work is a little distorted.

Computer Work

Figure 4.16: Packaging design

Manual Work

Figure 4.17: Packaging design

The concept of the manual work (Figure 4.17) is the same as the computer work (Figure 4.16). The student tried to portray whatever is in the computer work in the manual work. Although the colours in both works are very close, the manual work appears darker. This means that the student was not able to mix and paint the exact colours seen on the computer work. The computer work also looks sharper than the manual work. The circle of the handmade work in which the cock and the hen are found has unequal thickness but the computer work is a perfect circle with equal thickness. The eggs at the bottom of the manual work do not resemble eggs as seen in the computer work.

4.9 How Students of the four schools perceived graphic designing with computer and manual graphic designing

Based on interviews the researcher had with the students of the four schools, all the students were quick to voice out that although they do not always get computers for their design works which prevents them from being totally confident with using computers for their works, they prefer to use the computer for their graphic design works. Some of the reasons the students gave as to why they prefer using computers were that, the computer helps them to create and explore a lot of ideas for their works within a short time. They said the computer gives them room to design with many different fonts and colours to see which fonts and colours will be suitable for their designs. The computer also allows them to import pictures, crop pictures and perform many functions without wasting much time but that is not so when designing manually. According to the students, designing manually is tedious and takes a lot of time. According to some of the students interviewed, they can spent a day on the computer to arrive at their design works but with the manual rendering, it can take them almost one week to finish with their works.

Based on the responses, it was noted that the computer helps the students to generate a lot of ideas and improves the creativeness of their works. The use of computer in teaching graphic design enhances teaching and learning and it sharpens the students' skills and equips them for effective design works. The computer serves as an aid, extending the skill and working speed of the students. It speeds up the design process. However, the researcher also found out that the computer had a negative effect on the students' creativity in the sense that most of them felt very lazy starting their computer works with thumbnail drawings and sketches. The students were importing

pictures from the internet for their works indiscriminately without taking time to understand the images they were importing into their works. The researcher believes the use of computer in teaching Graphic Design should go hand in hand with the manual rendering so that students would acquire both skills and be confident to go into the job market rather than to be well equipped in computer usage and be deficient in the manual rendering. The acquisition of both skills would enhance their skills in designing.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The chapter outlines the summary of the study, research findings, conclusions drawn from the findings and recommendations.

5. 1 Summary

The study has unearthed many issues that need to be given attention if Graphic Design education is to be enhanced in Ghana's Senior High Schools. Both teachers and students face numerous problems which are hindrances to the attainment of quality education envisioned by the educational policy makers. The lack of physical resources is a great concern to the four schools visited.

Prominent among them is the non-availability of Ghana Education Service recommended textbooks to guide the teaching of Graphic Design. This has given the teachers in the sampled schools no choice but to depend only on the teaching syllabus and other materials they can lay hands on for the teaching of the subject. To worsen the situation, there are no books at all on Graphic Design in the school libraries. This has negatively affected the teaching and learning of the subject a great deal.

The need for computers for the teaching of Graphic Design cannot be over emphasized in today's ICT world. As was revealed from the study, none of the schools visited had a computer supplied by the school in the Visual Arts department, let alone a computer lab for Visual Arts Students to use for the study of Graphic Design. This situation has compelled the teachers to teach the subject with more theory than practical lessons, little practical work is done and hence the students will have less practical skills to do their works.

Graphic Design is a practical course that has to be taught through demonstration and project methods work. However, it emerged in the study that much of the teaching conducted (75% of Graphic Design lessons observed) were based on the discussion method. In contrast to Bigge's and Shermis' (1999) idea that practices that promote effective teaching include learner-centred teaching and the use of motivational techniques during lessons, most of the lessons observed in the schools were teacher-centred. This does not give the students the hands-on experience needed for the acquisition of skills in Graphic Design.

Lack of facilities for teaching and the execution of Graphic Design works are the major problems bedevilling quality teaching and learning in the schools visited. Facilities such as printers, projectors, scanners and suitable studio furniture for practical work are not available in the Visual Arts departments. This has its own implications for the quality of design works produced by students.

5.2: Conclusions

The lack of Graphic Design textbooks has affected the teaching and learning of the subject a great deal. The students do not have any reference books for their personal studies. They have no choice but to depend only on the notes given to them by their teachers. Teaching is very teacher-centred as the teacher has to do much of the talking while the students play a passive role of listening. This situation kills the spirit of exploration in students; thus limiting students' contribution during lessons and consequently resulting in academic under achievement.

Like any other computer software, learning to use Graphic Design software can best be done through practical demonstrations on the computer. Lack of computers for the

teaching of Graphic Design deprives the students the opportunity to acquire the necessary skills and knowledge outlined in the syllabus and this can lead to poor performance in the West African School Certificate Examination should computer based questions be asked.

Graphic Design is a hands-on subject which demands a practical approach of teaching. There are different learning styles that every learner is comfortable with. Therefore the use of the discussion method satisfies only the auditory learners and does not promote skill acquisition. This method of teaching renders students passive as they sit to receive the information presented by the teacher. As was the case in the sampled schools, the students were not actively involved enough in the teaching-learning process. It stands to reason therefore that the discussion method of teaching is not the ideal means of teaching Graphic Design using computers. The discussion method should be used to introduce the lesson and much time should be spent on the demonstration method and the hands-on-technique.

One primary objective of teaching Graphic Design, as outlined in the Visual Arts syllabus, is the acquisition of skills. The achievement of this objective is greatly dependent on the availability of such physical resources as studios and facilities for the execution of Graphic Design works. Lack of these physical resources negatively impacts on teaching and students' learning outcomes.

5.3: Recommendations

The following recommendations can be implemented to improve teaching and learning of Graphic Design in Senior High Schools in Ghana:

1. Graphic Design educators could collaborate with Ghanaian writers and publishers to publish appropriate up-to date Graphic Design text books based on the recent syllabus provided by the Curriculum Research and Development Division (CRDD) of the Ministry of Education that GES could adopt as text books for Graphic Design in Senior High Schools nationwide.

2. For students to be skillful in the use of computers for the designing of visual communication media items as stated in the Graphic Design syllabus, the Ghana government should equip the Visual Arts departments in all Senior High Schools with computers and also supply the relevant software for effective teaching and learning of the subject.

3. It is advisable for teachers to use the multi-sensory approach of teaching such as demonstration and project methods. These methods activate different senses and tend to satisfy a greater number of students since it caters for the visual, verbal, kinesthetic and auditory learners. The discussion method of teaching should be minimal in teaching Graphic Design because it does not promote skills acquisition.

4. To ensure that the students acquire the skills and knowledge outlined in the Graphic Design syllabus, the government should provide schools with well furnished art studios to create the right environment for the execution of Graphic Design work.

5. To promote effective learning and ensure good performance of students in Graphic Design, the Ghana Education Service should organize workshops and seminars regularly for Visual Arts teachers on how to use the computer to access information from the internet to enhance teaching and learning and to provide the students with skills that would enable them to fit into the job market.

6. Regular field trips and excursions could be organized by Visual Arts teachers for their Graphic Design students to visit prints houses, workshops or studios of renowned Graphic designers in order to make the students have a feel of the Graphic Design industry outside the school walls.

7. Further studies could be conducted into how to improve teaching and learning of Graphic Design. An area such as the effect of teacher-student population on the teaching of Graphic Design with limited computers should be researched into in detail to help both the design students and their teachers.

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APPENDIX

APPENDIX A:

INTERVIEW GUIDE FOR GRAPHIC DESIGN TEACHERS IN SENIOR HIGH SCHOOLS

1. Sex of the teacher Male☐ Female☐

2. Age 20 – 24☐ 25 -29☐ 30 – 34☐
   35 – 39☐ 40 – 44☐ 45 and above☐

3. Highest academic attainment
   Diploma☐ First Degree☐ Second Degre☐

4. Number of years taught.....

5. How many students in SHS 3 and SHS 4 offer Graphic Design?

   SHS 3☐ SHS 4☐

6. Which methods do you use in teaching Graphic Design?.....
   .....
   .....

7. What is your opinion on the required SHS syllabus on the use of computer in teaching Graphic Design? .....
   .....
   .....
   .....

8. Are you computer literate in Graphic Design?
   Yes☐ No☐

9. Do you use computer in teaching Graphic Design?
   .....

10. What account for the use of computer in teaching Graphic Design?
    .....
    .....
    .....

11. What do you use the computer to teach?.....
.....
.....
.....

12. How many periods in a week do you use the computer to teach?
.....

13. Which software are available for Graphic Design?
.....
.....

14. Which software do you use in teaching Graphic Design?
.....
.....

15. How do you use the software to teach?
.....
.....
.....

16. Which computer accessories are needed in teaching Graphic Design
.....
.....
.....

17. Is the Visual Art Department having its own computers and accessories to teach Graphic Design?
.....
.....

18. How many are they?.....

19. Is the ICT lab oratory having sufficient computers well installed with software to teach Graphic Design?.....
.....

20. How many are they?.....
.....

21. How many students sit behind a computer while teaching?
.....

22. Do you use projector in teaching?.....

23. Is the teaching and learning effective?.....

.....

.....

.....

24. What times do you visit the ICT laboratory for your lessons?.....

.....

.....

25. What is the relationship between ICT Staff and Graphic Design teachers?

.....

.....

.....

26. Is it necessary teaching Graphic Design with computer?.....

.....

.....

.....

27. What kind of skills and knowledge do Graphic Design teachers need to teach Graphic Design more effectively with computers?.....

.....

.....

.....

28. Is computer beneficial to only Graphic Design students?.....

.....

.....

.....

Will you encourage Graphic Design students to use only computers in designing?

If YES why?.....

.....

.....

If NO why?.....

.....

.....

29. What other subjects can we use computer to teach?.....

.....

.....

.....

.....

30. Any other comments?.....

.....

.....

.....

.....

.....

.....

.....

APPENDIX B

OBSERVATION CHECK LIST

1. What kind of teaching method is used by the teacher?

2. Did the teacher use teaching and learning materials?

Yes ☐ No ☐

3. Teacher – student relationship

1☐ 2☐ 3☐ 4☐ 5☐

4. Number of computers used in teaching.

5. Number of students that sit behind a computer while teaching.

6. Does the teacher make use of projector?

Yes ☐ No ☐

7. Software used.

8. What type of questions does he ask?

Close questions ☐ Open questions ☐ Leading questions ☐

9. How many seconds wait time does he give after asking a question?

1-5 seconds ☐ 5-10 seconds ☐ 10-15 seconds ☐

10. Teacher demonstrates good understanding of topic?

1☐ 2☐ 3☐ 4☐ 5☐

11. Did the teacher prepare note for the lesson?

Yes ☐ No ☐

12. Teacher's introduction of lesson

1☐ 2☐ 3☐ 4☐ 5☐

13. Teacher's presentation of lesson?

1☐ 2☐ 3☐ 4☐ 5☐

14. How does the teacher conclude and evaluate the lesson?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

15. Are students supervised?

Yes ☐ No ☐

16. Are the students involved in the lesson?

Yes ☐ No ☐

17. Students' attentiveness

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

18. Students' responses to the use of computer?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Keys. 1 = poor

2 = below average

3 = average

4 = good

5 = excellent

APPENDIX C

INTERVIEW GUIDE FOR GRAPHIC DESIGN STUDENTS

1. Name of school.....

2. Sex Male ☐ Female ☐

3. Age.....

4. Class SHS 3☐ SHS 4☐

5. Do you know what computer Graphics is about?.....

   If YES, what is it? .....

   .....

   .....

6. Are you computer literate in Graphic Design?.....

   If YES, where did you learn using computer in designing?.....

   .....

7. Which software do you use in designing?.....

   .....

   .....

8. Is it necessary learning Graphic Design with computer?.....

   If YES, why?.....

   .....

   .....

   .....

   If NO,why?.....

   .....

   .....

   .....

9. What is the difference between designing manually and designing with computer?.....
.....
.....
.....

10. Which one do you prefer?.....
.....
.....

11. What skills and knowledge have you acquired by using computer in designing?
.....
.....
.....

12. Do you have enough computers for your lessons?.....

13. Are you comfortable learning in turns?.....

14. Is the teaching and learning effective with limited computers?.....

15 Is computer beneficial to only Graphic Design students?.....